Border Area Economic Development Strategy - Draft

October 20, 2014

Table of Contents

01. Project Introduction

Introduction

In 2011, the Camino Real Regional Leadership Consortium ("Consortium") – a partnership of Doña Ana County, the City of Las Cruces, and several community and nonprofit entities—secured a three-year, $2-million-dollar Partnership for Sustainable Communities Regional Planning Grant from the U.S. Department of Housing and Urban Development (HUD). The grant launched Viva Doña Ana, a multi-faceted project that addresses community issues with the overall goal of improving the Region's quality of life.

As part of Viva Doña Ana, the Consortium authorized development of the Border Area Economic Development Strategy (BAEDS), one of seven collaborative efforts designed to address a specific community challenge. In early 2013, the Consortium secured the services of AECOM Technical Services Inc. (AECOM) and its partner, Border Research, to assist in developing the BAEDS for the Border Area in southern Doña Ana County.

Border Area Economic Development Strategy Goals

The BAEDS is intended to identify how Doña Ana County might support, leverage, and benefit from the activities of a host of partners. Goals include:

- Expediting business development in and around the Santa Teresa Port-of-Entry (POE) through leveraged investment and coordination of public policy;
- Capitalizing on existing and emerging conditions in southern Doña Ana County to diversify economic activity including the recruitment of new businesses, the retention and growth of existing businesses and support for start-ups;
- Leveraging transcontinental rail connections and trade across the US-Mexico border to strengthen existing communities in southern Doña Ana County by creating affordable housing, supporting existing transportation system infrastructure (including intermodal connectivity between truck, rail, and air), and strengthening workforce development capacity, and developing and supporting community facilities such as schools, parks, utilities, libraries, community centers, and roads;
- Leveraging economic activity in and around the Santa Teresa Port of Entry—and broadened coordination of economic development efforts—to expand job opportunities and increase hiring rates for unemployed and underemployed residents of Doña Ana County;

These goals must be part of the measurable outcomes of any economic development strategy and, accordingly, should be incorporated into infrastructure plans for, Doña Ana County, state governments of New Mexico and Texas, US federal agencies involved in border trade and security, current Bi-national planning between New Mexico and Chihuahua, and local, state and federal units of government in Mexico.

Acknowledgements

Contributions made by the following organizations were instrumental in supporting completion of this effort:

- Doña Ana County Staff and Elected Leadership
- The Camino Real Regional Leadership Consortium
- Our stakeholders, public and private

Geography

Initially, the BAEDS focused on the broad 53-mile southern border of southern Doña Ana County in New Mexico as the primary study area. The report has also focused on a smaller core study area that includes the Santa Teresa border crossing, as well as the adjacent municipality of Sunland Park. Over the course of the study, this core study area was refined to follow the existing border for the Camino Real Regional Utility Authority (CRRUA), which is an independent legal and separate governmental entity created jointly by Doña Ana County and Sunland Park. CRRUA is authorized to own, operate, and maintain public water and waste water systems, and to provide public water wastewater utility services, and is responsible for planning and developing infrastructure improvements in the Border Area definition. Maps depicting these areas are on the following page:

The report also considers the influence of three broader metropolitan area definitions that impact this effort:

- The Paso del Norte (the Region), which includes portions of El Paso County, Otero County, Doña Ana County, and Ciudad Juarez in Mexico's State of Chihuahua.
- El Paso Metropolitan Statistical Area (MSA): Including El Paso and Hudspeth Counties in Texas
- El Paso-Las Cruces Combined Statistical Area: including El Paso and Hudspeth Counties in Texas and Doña Ana County in New Mexico.

In thinking about these geographies, it is significant that Doña Ana County is not included in the MSA definition for El Paso. For this reason, the effort has relied on additional data to clarify trends in Doña Ana County, as well as the El Paso MSA.

Figure 1. Regional Map

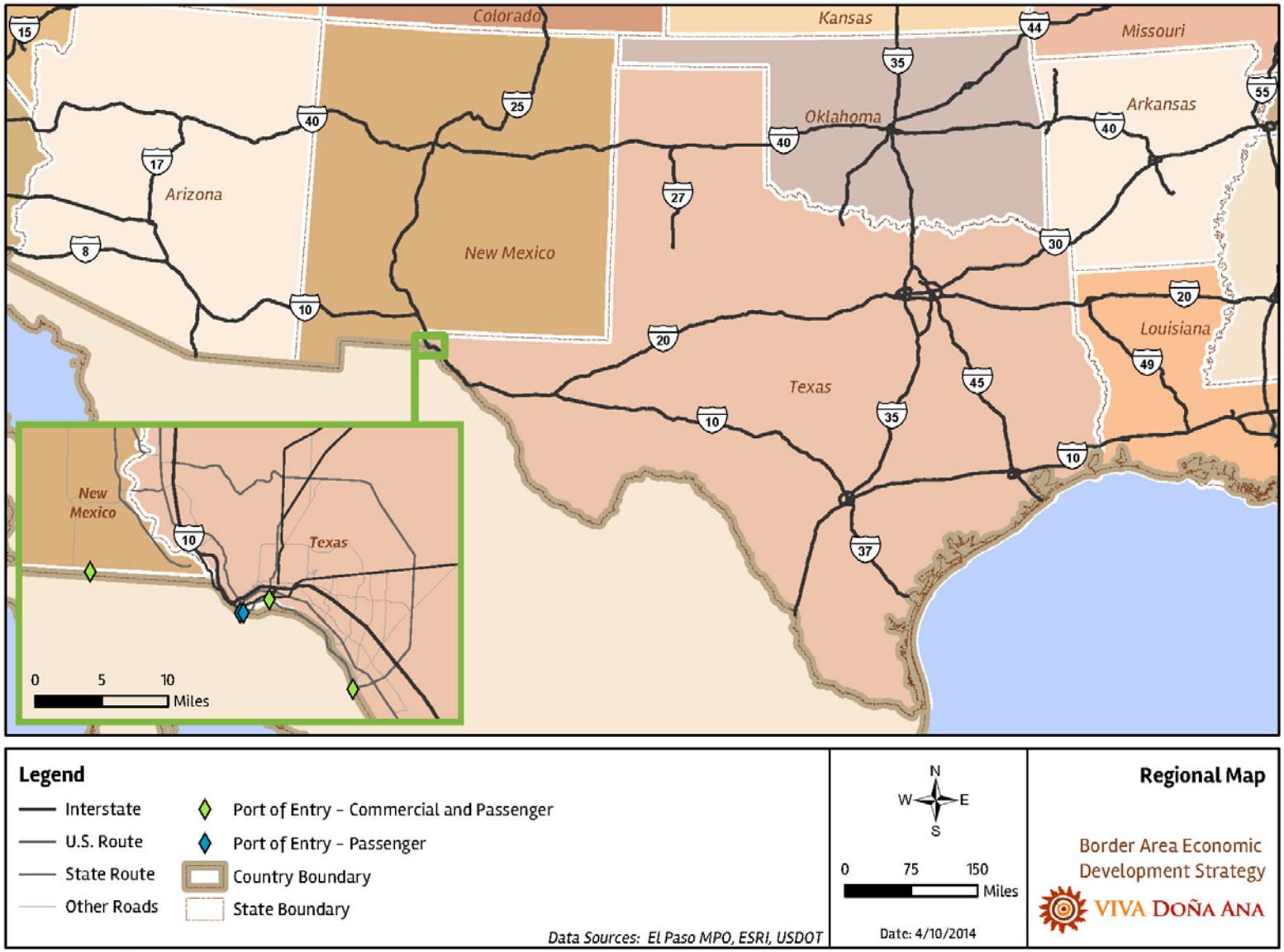


Figure 2. Southern Border of Doña Ana County

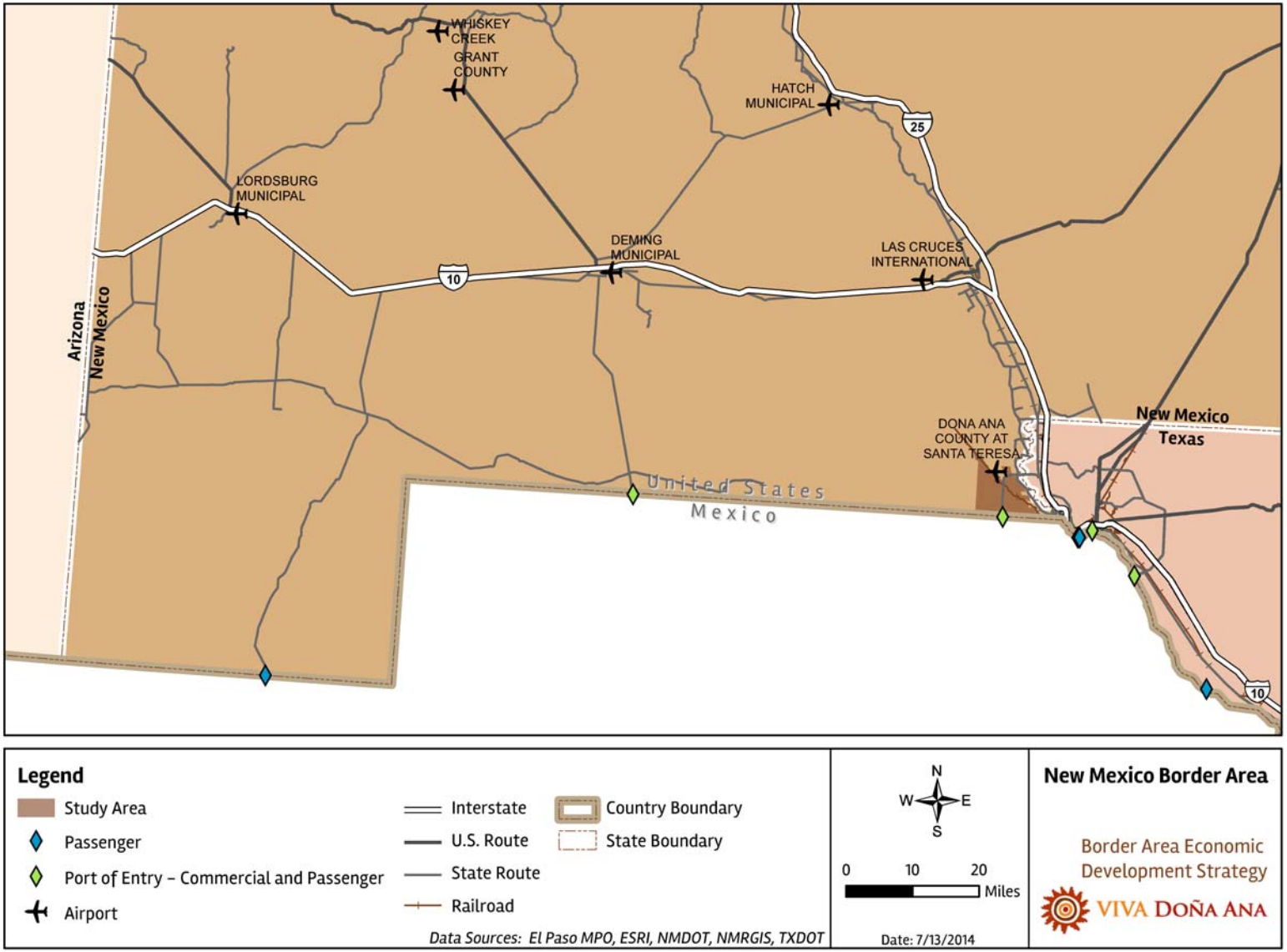


Figure 3. El Paso and Southern Doña Ana County

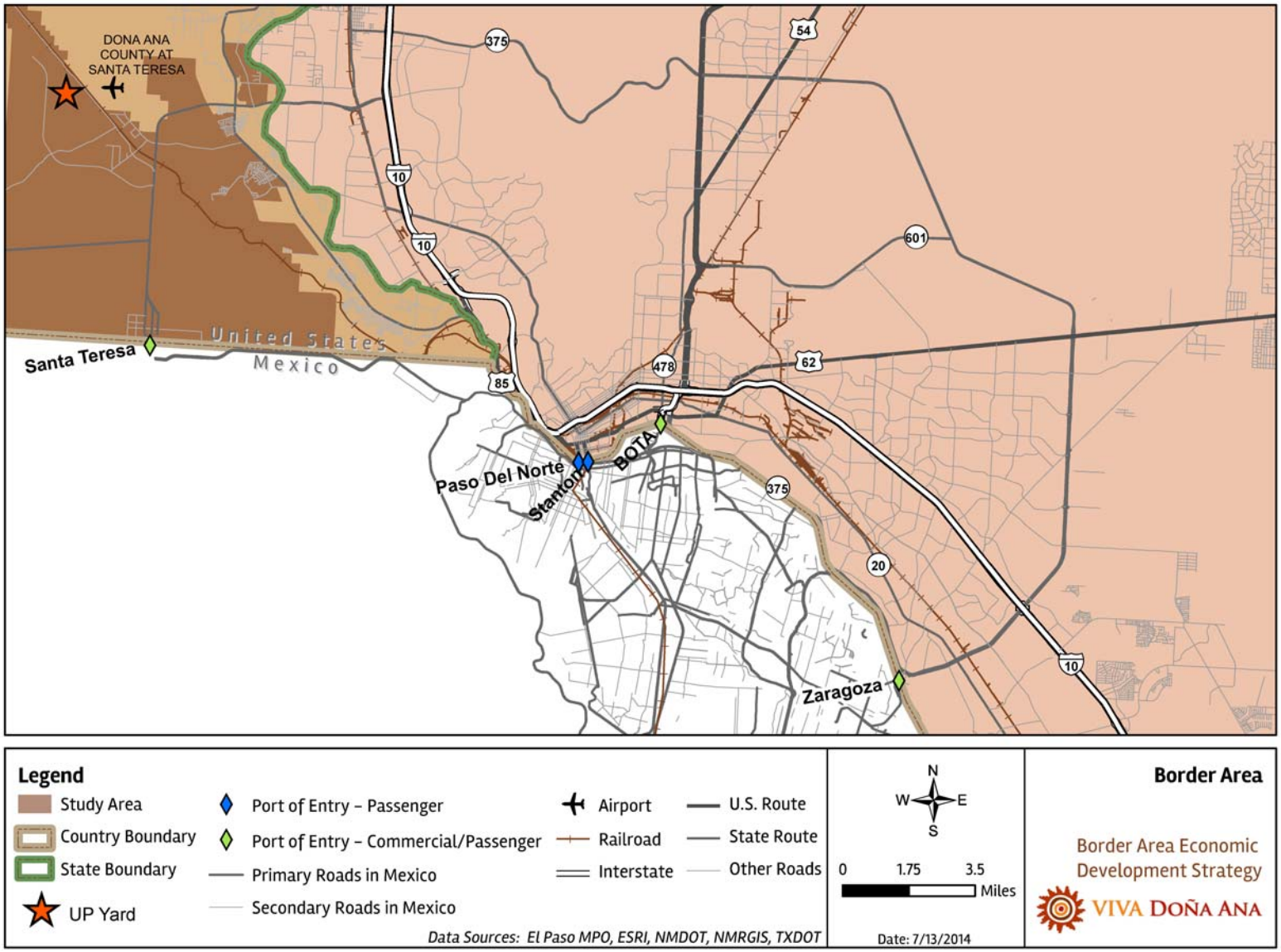
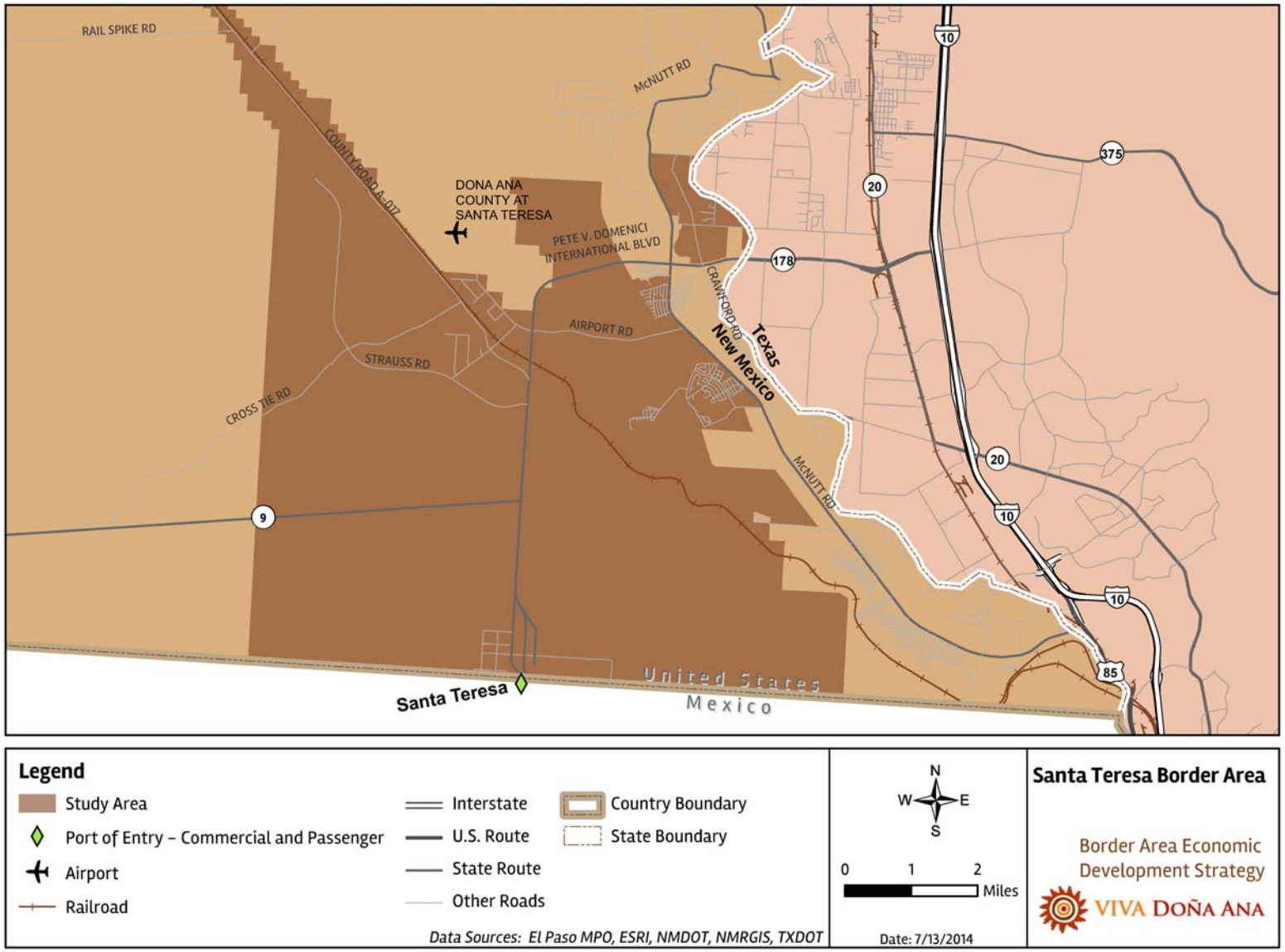


Figure 4. Core Study Area



Data Sources

Economic and demographic performance metrics have been extracted from a number of sources. The information was evaluated to help frame an understanding of strengths, weaknesses, opportunities, and threats that will influence the Region.

Federal Sources

Congressional Budget Office (CBO)

Federal Aviation Administration (FAA)

U.S. Census Bureau

U.S. Council for Automotive Research

U.S. Department of Agriculture

U.S. Department of Commerce, Bureau of Economic Analysis (BEA)

U.S. Department of Commerce

U.S. Department of Energy

U.S. Department of Labor, Bureau of Labor Statistics (BLS)

U.S. Department of Transportation / Federal Highway Administration

U.S. Energy Information Administration (EIA)

U.S. Federal Reserve System

Mexican Data Sources

Centro de Información Económica de Social (CIES)

Instituto Nacional De Estadistica Y Geograpfia

State of Chihuahua

News and Other Publications

Bloomberg News

The Economist

Journal of Commerce

New York Times

Wall Street Journal

Other Sources

American Railroad Development Association

American Transportation Research Institute

ACCRA Cost of Living Index

The Brookings Institution

Carnegie Mellon Center for Economic Development

Center for Automotive Research

The CoStar Group

The Council for Community and Economic Research

Council on Competitiveness

ESRI Business Solutions

Institute of Transport and Logistics Studies, University of Sydney

International Economic Development Council

International Trade Commission

Texas Transportation Institute

Transportation Research Board

McKinsey & Company

Pew Center on the States

Price Waterhouse Coopers (PwC)

The effort acknowledges several studies that have been completed recently which have influenced and shaped this effort:

- FHWA Freight and Land Use Handbook, April 2012
- Best Practices in Urban Freight Management: Lessons from an International Survey, July 2012
- TxDOT State Rail Plan, 2012
- NmDOT State Rail Plan, 2012
- Freight Facts and Figures 2012, Office of Freight Management and Operations, U.S. DOT, 2012
- U.S. Port and Inland Waterways Modernization: Preparing for Post-Panamax Vessels, U.S. Army Corps of Engineers, 2012
- Preserving & Protecting Freight Infrastructure and Routes, Transportation Research Board, 2012
- Performance Measures for Freight Transportation, Transportation Research Board, 2011
- Building the Supply Chain of the Future, McKinsey Quarterly, 2011

Abbreviations

3PL – Third Party Logistics Provider

ARRA -American Recovery and Reinvestment Act

BAEDS - Border Area Economic Development Strategy

BCC - Border Crossing Card

BIA - Border Industrial Alliance

BNSF – Burlington Northern Santa Fe Railroad

CBP – US Customs and Border Protection

CN – Canadian National Railroad

CP – Canadian Pacific Railroad

CNG – Compressed Natural Gas

CRRUA - Camino Real Regional Utility Authority

EPA – Environmental Protection Agency

FAST - Free and Secure Trade Program

FHWA – Federal Highway Administration

FRA – Federal Railroad Administration

GSA - General Services Administration

HUD - U.S. Department of Housing and Urban Development

ITS – Intelligent Transportation Systems

JWC - U.S.-Mexico Joint Working Committee

MSA – Metropolitan Statistical Area

MVEDA - Mesilla Valley Economic Development Association

MPO – Metropolitan Planning Organization

NS – Norfolk Southern Railroad

POE - Port of Entry

TEU – Twenty Food Equivalent Unit

TRB – Transportation Research Board

UP – Union Pacific Railroad

USDOT – United States Department of Transportation

02. Stakeholder Engagement Insights

Introduction

A cornerstone of the BAEDS community engagement process was to ensure participation with individuals and organizations that play a role in Border Area economic development. The process was intended to address the need for relationship building among economic development stakeholders, to be sensitive to "public meeting burnout" as expressed by some members of the community, and to be complementary with the broader engagement and education efforts that are unfolding through Viva Doña Ana.

Key Issues Identified during Stakeholder Committee Meeting

The Stakeholder Committee held its first meeting in August, 2013. The participants identified several strengths regarding the Border Area:

- The Santa Teresa border crossing is a major strength, particularly given the Union Pacific (UP) $450-million investment in a refueling, cargo transfer and rail car sorting facility north of the POE.
- The Santa Teresa Border Area is seeing increased interest as a business location by companies who are currently based in El Paso.
- The Santa Teresa POE is benefiting from the recent completion of a $10-million-dollar American Recovery and Reinvestment Act (ARRA) project that expanded vehicle lanes from 2 to 4; expanded commercial inspection lanes from two to three; and expanded passenger and commercial vehicle queuing areas. This project is among only a handful of US-Mexico POE improvements that have received federal funding in the past four years and has placed Santa Teresa in a more competitive position compared with larger, more congested regional ports.
- The overweight cargo zone designation is an asset for the POE, providing a six-mile radius from the Santa Teresa crossing for companies moving over-weight cargoes into the U.S. The designation allows companies to avoid the cost and time of breaking down truckloads before goods reach US warehouse facilities within six miles. Southbound cargo can also be loaded to a higher weight limit.
- New Mexico's Governor is from the southern part of the state and has paid significant attention to the Border Area. Interest from the state's top elected official has the potential to leverage the border region, attracting new investment, support infrastructure development and create new commercial opportunities.
- The potential Anapra-Sunland Park border crossing is an opportunity. The proposed non-commercial POE has attracted public and private interest and, if approved, could lead to additional development, investment, and job creation.
- The Santa Teresa border crossing affects several jurisdictions, including El Paso (City and County), the City and Municipio of Juárez, Chihuahua state, Doña Ana County, and the States of Texas and New Mexico. Each of these entities holds different resources and together can serve to diversify the region's economic potential.

- Santa Teresa is located along a primary North American freight rail corridor that connects the Ports of Los Angeles and Long Beach, with destinations such as Chicago, Dallas and Houston.
- Housing development is unfolding in the Border Area, which is expected to help the area develop a greater sense of community and quality of life. At the same time, increased traffic will also drive conversations about limited connectivity between Santa Teresa and El Paso, with clear implications for increased traffic congestion.
- The Mesilla Valley Economic Development Association (MVEDA) and the Border Industrial Alliance (BIA) provide leverage for economic development activities. MVEDA works "on the ground," to pursue and develop leads for new businesses, while the BIA works at the state level to support economic development initiatives and remove barriers to bi-national trade.
- The U.S. Department of Homeland Security now allows Mexican citizens holding a Border Crossing Card (BCC) to travel up to 55 miles into New Mexico for personal purposes (shopping, visiting family or friends, attending conferences, vacationing, medical visits, recreation and entertainment) without having first to stop at the border and fill out a visa application. These visitors are permitted to stay in the New Mexico Border Area for up to 30 days, spending dollars in the local economy.
- Unlike other El Paso area POE's, Santa Teresa offers considerable vacant land to support further expansion of distribution and manufacturing activities. It is also one of a very small number of POE's that are not impacted by the need for infrastructure to cross over the Rio Grande River.
- Over the course of this study, CRRUA's capability and responsibility for implementation of infrastructure projects has been activated. The Authority now has professional staff and is participating as a stakeholder in the process. Importantly, they also have planning and zoning authority in the Border Area, and contract with Doña Ana County to provide capacity for planning and zoning.

Stakeholders identified specific challenges, which are summarized below:

- Lack of adequate education, job readiness, and workforce skills among job seekers. Interviews reinforced that many residents possess life experience, but lack certifications (high school diploma or GED) that are required for U.S. employment. Addressing these challenges will require an understanding of the type of jobs being created and the entry-level skills required for these new positions.
- When potential businesses consider the region, they examine the demographics, which are relatively weak with respect to education and training. Improving graduation levels at high schools, vocational institutions and colleges will require a long-term investment by the County's border communities and the social, religious and educational institutions that serve them.
- Transportation network connections between the Border Area and I-10 are weak. These connections are important avenues for commercial and non-commercial traffic and will

require expansion. New and expanded roads are likely to be required as the current road network does not adequately accommodate large commercial trucks. Options for improved transportation for travel between Santa Teresa and Las Cruces were discussed, including the High Mesa Road.

- Regional utility infrastructure (water, sewer, internet, and electricity) must be expanded and upgraded to accommodate long-term requirements for business and trade.
- Improvements to water and wastewater infrastructure pose challenges in this arid region and are likely to require creative solutions in design and development. A proactive, forward-seeking approach is essential to guaranteeing future water supplies.
- The Doña Ana County International Jetport at Santa Teresa has plans for a new, longer crosswind runway and other improvements to meet future business growth along the border, linked in part with plans by companies such as Foxconn for expedited air cargo.
- New and growing communities in the Border Area will require their own infrastructure, social institutions and services, including retail shops, medical facilities, and social and educational services. Most people who live in southern Doña Ana County currently go to El Paso to shop or obtain services. People need to be able to work and shop near where they live.
- Water quality remains a concern in the Border Area. Groundwater supplies are the only reliable source of municipal and industrial water, with naturally occurring concentrations of arsenic that exceed U.S. federal standards for safe drinking water. The process of removing arsenic from groundwater is expensive when spread over the small number of businesses and users currently living in the area.
- While there is general agreement on the need for coordination between US and Mexican government agencies on cross-border development, there is concern that current channels of communication are inadequate to address the requirements for border planning and infrastructure. U.S. and Mexican Government agencies sometimes do operate under different policies or conflicting rules. US Government officials need to routinely communicate with their counterparts on the Mexican side to improve planning and development of infrastructure and for adopting sensible policies that facilitate trade and commerce. This fragmentation slows the pace of regional economic growth.
- Recent announcements by New Mexico's Governor Martinez and Chihuahua's Governor Duarte regarding a cross border master plan bode well for improved cooperation and coordination.

Key Issues Identified in Engagement and Education Workshop

The Engagement and Education workshops yielded additional insights:

- Desirable employment opportunities (full-time positions with benefits) appear unavailable to south valley residents, and many young people resort to performing "odd jobs" to make a living.
- Opportunities for workforce training appear limited, at least to the young. A lack of area employment resources reportedly compounds the problem.
- There was a sense that welfare benefits seem to be a preferred option for those who otherwise have part-time jobs or are underemployed.
- The desert's limited water resources discourage support for new residential and industrial growth.
- The need for utility infrastructure upgrades in the Border Area

Stakeholder Interviews

The stakeholder interviews furthered AECOM's understanding of key infrastructure, community, and organizational issues related to the border region. Interviews were conducted with a broad range of individuals employed in the public and private sectors. On the public sector side, interviews were conducted with representatives of nonprofit development organizations, Colonias, utility service providers, and city, county and state agencies. On the private side, interviews were completed with railroads, as well as customs brokers / third party logistics providers (3PL's), and local manufacturers. Interviews were conducted with local residential, commercial and industrial brokers to better frame local real estate market conditions in the Border Area. Below are major themes identified by stakeholders:

- From a housing standpoint, property taxes are lower in New Mexico than Texas, offset by the lack of state income taxes in Texas. The residential market in Sunland Park and Santa Teresa was reportedly slower in 2013, with fewer transactions and few units available for sale; the pace has improved in 2014, reportedly.
- For freight that crosses the border, operational decisions made by US Customs have the largest single impact on the predictability and velocity of freight movement. Interviews also reinforced the reality of duplicated services, with both US Customs as well as state DOT's providing "vehicle inspection services" for example.
- The Santa Teresa POE has been authorized as a pilot location for testing the concept of "pre-clearance," whereby exports are pre-approved for importation. A pilot project at the Foxconn facility would theoretically improve the predictable velocity of goods movement across the border.

- For companies moving goods across the border, the decision over which POE to use is not made by the individual truck driver. Rather, as US Customs requires paperwork and prior notification of commercial cargo, the decision regarding POE choice is made by the company or Third Party Logistics Provider.
- For companies operating in Cd. Juárez, there is a preference for border crossings in El Paso. For companies that are located further south of Juárez, the Santa Teresa POE is a more viable option.
- As logistics is largely a cost of doing business, logistics providers will look at sites in Santa Teresa, in part due to lower land costs and property taxes, as well as immediate proximity to the new UP intermodal yard.
- Existing industrial parks near the POE have covenants, conditions and restrictions (CC&R's) in place that require property owners to maintain higher standards for their buildings and landscaping. As growth in the Border Area unfolds, how these CC&R's will be managed and maintained is important.
- Interviews pointed to concern over access to potable water supplies, with companies such as Verde in control of considerable "paper" water rights, offset by reports that owners of larger distribution buildings are concerned about the availability of sufficient water to meet fire suppression demands.
- Over the course of this study, the evolution of Verde Realty into relationships with Brookfield Properties LLC and a merger with Industrial Developments International (IDI) was noted.
- Manufacturers noted concern over recently evolving Mexican Federal Government policy shifts regarding taxation of exports. For Maquilas that export to the US, the new legislation would likely shift how freight is moved, and impact treatment of "virtual exports", which relates to how semi-manufactured goods and components are moved domestically in Mexico between Maquilas from a customs duty standpoint. For companies that are exporting less to the US, the new policy would appear to have more significant implications. Increased taxes are also a reaction to reports from organizations such as OECD, which point to unusually low Mexican federal tax rates in general.
- Interviews suggest that the Maquila industry is changing, as well as the Mexican Government's criteria for what qualifies as a Maquila operation. Originally, a Maquila qualified for duty-free status based on the percentage of sales being exported to the US (>90%). With these companies increasingly moving beyond final assembly into R&D as well as design, the nature of what they produce, their productivity, and their end markets are changing.
- Concerns regarding perceived infrastructure shortcomings in the areas of water, wastewater, and electricity must be addressed. Interviews also mentioned concern regarding internet connectivity.

- There are opportunities for renewable energy development and businesses focusing on new or emerging technologies, particularly if relationships can be strengthened with entities such as New Mexico State University and White Sands Missile Range.

Implications

The interviews uncovered several key findings that were not previously well understood:

Prepare for Growth

By some measures, Doña Ana County is the fastest growing county in the Paso del Norte. While it is clear that that a share of regional growth is already in the process of shifting toward Santa Teresa (linked with perceived lower costs of business), the new UP intermodal yard is expected to trigger additional growth, as supply chains shift, and distributors choose to locate close by. At the same time, local and state governments face a looming set of infrastructure issues, principally the need to better connect the Border Area with I-10. The inability to manage growth and sustain infrastructure reinvestment will otherwise reduce Doña Ana's future pace of growth.

Monitor Freight Impacts

The new UP intermodal yard is going to alter regional supply chains, shift how trucks move through the Region, lead to increased truck traffic through the Border Area, and influence the location decisions of companies involved in manufacturing and distribution. From interviews with MPO and DOT officials, as well as a review of collected data, it is apparent that existing data regarding truck traffic through the region is both fragmented and limited. Issues include:

- Traffic counts for Doña Ana County included truck ADT, but the heavy vehicle counts seemed low.
- While the El Paso MPO has traffic count information, they do not appear to count trucks.
- TxDOT has traffic volume maps on their website which do include trucks. Efforts to acquire GIS based truck counts were unsuccessful.

Experience in places such as Chicago that have seen growth of these larger intermodal yards reinforces the need to plan for growth in truck volumes. While these new yards do create new economic opportunities and are instrumental in allowing companies to control their distribution costs, they also create challenges for host communities, such as the Town of Ellwood (near Joliet). The town supported companies such as Centerpoint with incentives for new distribution centers aligned with separate UP and BNSF intermodal yards, but now finds the resulting truck traffic to be a problem that is difficult to mitigate.

Regional Fragmentation

The Paso del Norte is unique in how multiple levels of political fragmentation impact the economic performance of what is otherwise a metropolitan area with 2.4 million residents, ranking as the 21st largest metro area in the US (between Pittsburgh and Denver in population). Broad fragmenting issues build from the politics of two countries, three states, and three counties, linked with the ongoing challenge of both securing the border and ensuring the flow of goods across the border.

For Doña Ana County, the interviews reinforced a clearer sense of leadership fragmentation specific to the Border Area, with an array of organizations (public and private) that currently play a role, and can influence the path forward. These actors include:

- IDI / Gazeley (Verde)
- Doña Ana County
- Camino Real Regional Utility Authority
- New Mexico Border Authority
- City of Sunland Park (incorporated)
- Santa Teresa Area (unincorporated)
- Border Industrial Association
- Mesilla Valley Economic Development Alliance
- El Paso Electric

The Role of Doña Ana County Government

For Doña Ana County, concerns begin with acknowledgment that many secondary roads near the POE appear to be county-owned. When combined with increased use of the overweight truck route along Pete V. Domenici Highway, these secondary roads will experience greater wear, and will eventually require maintenance / upgrades to offset the impact of heavier trucks.

With growth in infrastructure costs as a specific driver, Doña Ana County will need to define its long-term role in the Border Area, particularly as it relates to road infrastructure. The core question relates to whether the County should serve as only an enabling organization, or should it be the entity that can lead on a day-to-day basis, funding infrastructure, and making decisions that will dictate the pace of future growth. If Doña Ana chooses a modest role, the interviews reinforce the need for additional financing mechanisms or other governing entities to step forward, ensuring that basic municipal services and infrastructure needs will be provided.

03. Economic Base Perspective

Introduction

This section begins with a summary of population and economic data for jurisdictions that make up the Region and Border Area. As the US Census MSA definition for El Paso does not include Doña Ana County, the effort has relied on county-specific data were available. The effort compares population and job growth in reference to national averages and offers insight into employment by industry sector. Tables are included that show labor quotients for Doña Ana and El Paso counties, providing insight on the strengths and weaknesses that make Doña Ana County and the border region unique.

Border Region Employment Change

Population and employment trends for El Paso and Doña Ana Counties are summarized below, along with a comparison of similar data identified for the Municipio (County) of Juárez. The defined region supports a population of more than 2.4 million people and providing some 747,000 jobs. According to the US Federal Reserve Bank of Dallas, Doña Ana and El Paso counties together, along with Juárez, comprise one of the largest centers of industrial production in North America.

US Employment Trends

Doña Ana County ranks at the top in employment growth, exceeding neighboring El Paso County and that of the US as a whole. From 1990 through 2012, average annual employment growth in Doña Ana County was calculated at 2.1% nearly double the 1.2% rate in nearby El Paso County and exceeding the rate of 1.3% for the US overall. The numbers are somewhat tempered with total employment. In 2012, for example, El Paso County (accounting for 79.4% of the two-county population) provided 77.3% of total employment.

Figure 5. Total Employment, El Paso and Doña Ana Counties, Noted Years

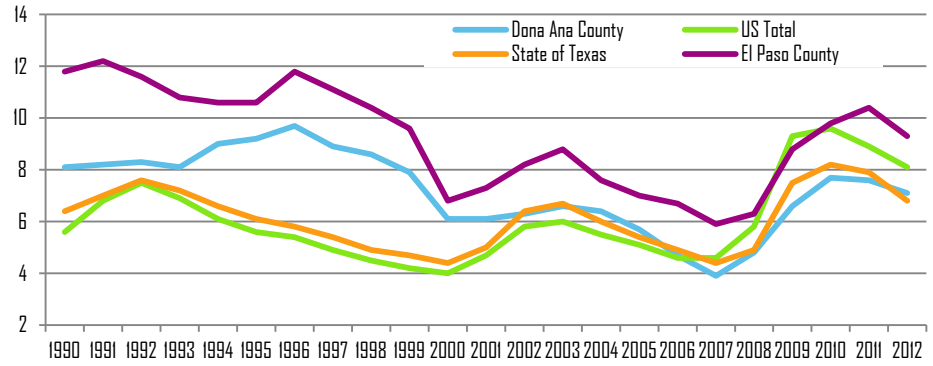
Year	Doña Ana	El Paso	Total US Region
1990	55,312	228,522	283,834
1995	58,653	256,259	314,912
2000	71,730	256,110	327,840
2005	79,908	270,725	350,633
2006	82,271	271,954	354,225
2007	83,777	273,559	357,336
2008	84,896	278,829	363,725
2009	84,020	281,942	365,962
2010	84,818	290,859	375,677
2011	85,356	292,062	377,418
2012	86,542	294,304	380,846
CAGR 1990 to 2012	2.1%	1.2%	1.3%

Source: Stats America

Employment Discussion

A comparison of regional U.S. unemployment also favors Doña Ana County with recent unemployment ranging 2 to 4% lower in Doña Ana than in El Paso, and more recently lower than the US as a whole. Of note, in both border counties, unemployment trends run in parallel and are more closely tied with each other than with trends for the state of Texas or the U.S., particularly in the 1990's. The above figure points to this relationship, which speaks to the Region's evolving level of regional economic integration.

Figure 6. Unemployment Rate Comparisons, Noted Geographies and Years



Source: Stats America

The following figure summarizes employment trends for Doña Ana and El Paso Counties as well as the Juarez Municipio. Employment trends for the three jurisdictions are notable, with Juarez seeing an overall decline in employment, offset by growth in El Paso and Doña Ana Counties. At the same time, since 2009, growth rates in Juarez have significantly increased, at a 4.9% annualized rate, well above rates in El Paso and Doña Ana. Since 2009, rates of employment growth in Doña Ana have slowed considerably.

Figure 7. Total Employment, El Paso / Juarez Region, Noted Years

Area	2000	2005	2010	2011	2012	CAGR 00 to 12	CAGR 09 to 12
Juárez Municipio	420,557	370,538	332,075	360,361	366,153	-1.1%	4.9%
El Paso County	324,080	346,369	390,092	392,396	397,825	1.7%	1.3%
Doña Ana County	74,819	85,708	92,057	92,733	93,431	1.9%	0.8%
Total	819,456	802,615	814,224	845,490	857,409	0.4%	2.7%

Source: Sistema Estatal y Municipal de Base de Datos (SIMBAD), INEGI. Quarterly Census of Employment & Wages, Bureau of Labor Statistics

The above figure also shows that since 2009, with dramatic growth in Juarez, Doña Ana County's share of regional employment has slowed, falling from 11.5% in 2009 to 10.9% in 2012. As the above figure combines employment from two sources, the total employment

numbers and relationships between the geographies should be viewed in "order of magnitude" terms.

Bi-National Population

Among the three regional counties, Doña Ana again ranks at the top in compound annual growth with a calculated rate of 1.7%. This compares with 1.6% for El Paso County and 1.1% for Juarez for the same years.

Figure 8. Total Population, El Paso / Juarez Region, Noted Years

Year	Doña Ana County	El Paso County	Juárez Municipio	Combined Region
2000	175,098	681,729	1,218,817	2,075,644
2001	176,496	689,163	1,234,913	2,100,572
2002	178,464	696,446	1,251,222	2,126,132
2003	182,045	705,200	1,267,746	2,154,991
2004	184,939	717,652	1,284,488	2,187,079
2005	189,199	728,095	1,301,452	2,218,746
2006	193,701	744,795	1,307,531	2,246,027
2007	197,853	755,578	1,313,638	2,267,069
2008	200,855	769,930	1,319,774	2,290,559
2009	205,401	786,759	1,325,938	2,318,098
2010	210,325	803,506	1,332,131	2,345,962
2011	212,944	817,982	1,381,953	2,412,879
2012	214,445	827,398	1,390,525	2,432,368
CAGR	1.7%	1.6%	1.1%	1.3%

Source: US Census / Centro de Información Económica de Social (CIES), State of Chihuahua. 2010

Compound annual growth for the region is calculated at 1.3%. Annual shifts in population also seem to favor Doña Ana County with a compound rate of 0.37% compared to 0.29% for El Paso and 0.22% for Juarez. The following figure speaks to the apparent shift in population at least through 2010, with Doña Ana increasing its share of the regional population at a faster pace. Trends from 2010 to 2012 are notable, pointing to a modest reversal for Juarez, which may have increased its share of regional population.

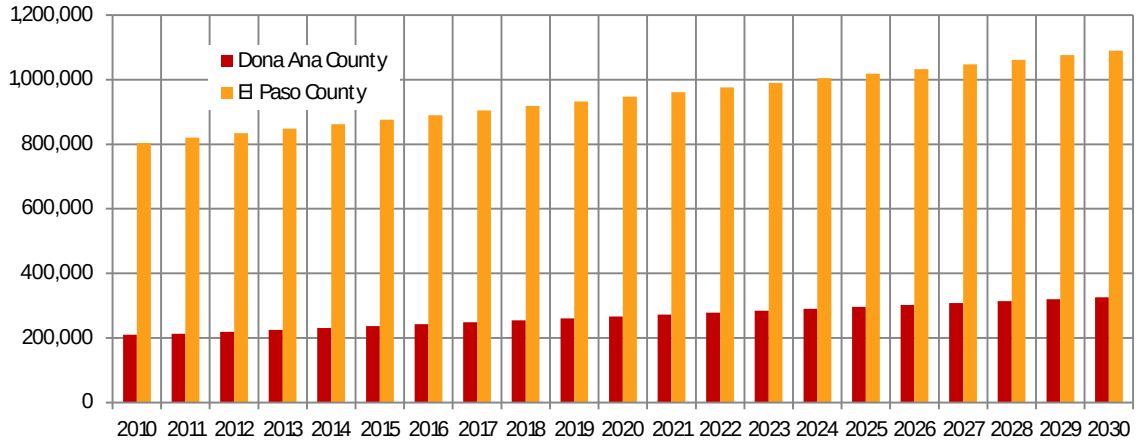
Figure 9. Shift in Total Population, El Paso / Juarez Region, Noted Years

Year	Doña Ana County	El Paso County	Juárez Municipio
2000	8.4%	32.8%	58.7%
2005	8.5%	32.8%	58.7%
2010	9.0%	34.3%	56.8%
2012	8.8%	34.0%	57.2%
CAGR	0.37%	0.29%	-0.22%

Source: US Census / Centro de Información Económica de Social (CIES), Chihuahua. 2010

The figure below summarizes population growth forecasts for Doña Ana and El Paso Counties out to 2030. The forecasts, developed by Woods & Poole, speak to expectations for growth. Key drivers include the notion that Doña Ana will capture an increasing share of regional population growth over the next 20 years, with an anticipated annualized growth rate of 2.2%, compared to El Paso County's anticipated growth rate at 1.5% on an annualized basis. For Doña Ana, the forecast portends an increase in market share from 21% to 23% of regional population by 2030.

Figure 10. Population Forecast Comparisons, Noted Geographies and Years

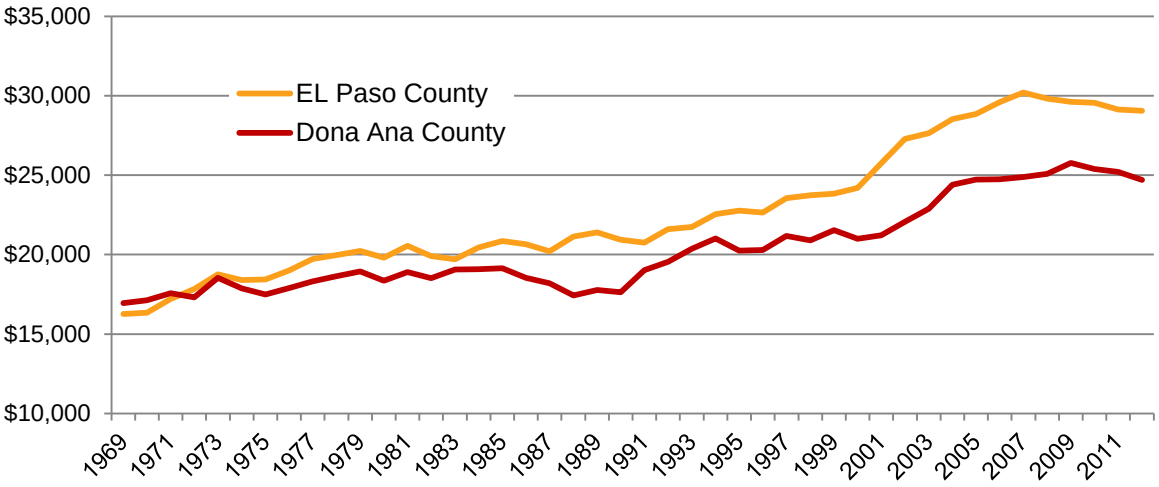


Source: Woods & Poole

GDP Growth

The following figure summarizes growth in gross metropolitan area product (GDP) for El Paso and Doña Ana Counties between 1969 and 2012. The analysis shows that GDP growth has been generally positive, with El Paso County seeing generally stronger growth over the period.

Figure 11. Gross Domestic Product Per Capita Growth, El Paso & Doña Ana Counties



Source: Woods & Poole

Since 2005, annual growth in county GDP has slowed markedly in comparison to long-term averages. For El Paso County, the average annual growth rate since 2005 is about 2.3%, compared to a 30-year average annual growth rate of 3.4%. Trends are similar for Doña Ana County, with a post 2005 growth rate of 2.3% compared to a 30-year average of 3.6%. The above figure suggests that growth slowed in El Paso County first, by 2005.

Employment by Industry Sector Doña Ana and El Paso Counties

The figures below summarize employment by sector breakdowns for Doña Ana and El Paso Counties for 2001 and 2012. For Doña Ana County, an examination of employment by industry sector shows a heavy reliance on government employment, a metric that has been reported at length in local newspapers. About one in every five jobs remains tied to government at some level. El Paso County also demonstrates significant reliance on government-funded employment in the military sector (7.3% of all jobs in 2012) with heavy build up in recent years at the U.S. Army installation at Fort Bliss. The manufacturing sector, a hallmark of employment in Ciudad Juárez, supports a smaller subset of the labor pool in Doña Ana and El Paso counties with 3.5% and 4.8% of respective county totals for 2012.

The figures indicate that Doña Ana County added private employment at a faster rate from 2001 to 2012 compared to El Paso County (2.4% compared to 1.9% annualized growth. The health care sector in Doña Ana County saw the largest increase in employment, adding over 5,300 jobs over the noted period, expanding at a 4.2% annualized rate. Government was the second largest sector in terms of total job creation, adding about 1,600 positions.

At the broadest level, the figures below reinforce a regional economy that remains either out of balance economically, or overly dependent on government spending. Ideally, we would see between 4 and 5 sectors each supporting about 10% of employment. For Doña Ana County, three sectors passed this threshold.

Figure 12. Employment by Sector Analysis, Doña Ana County, Noted Years

Sector	Total Employment		% of Total Jobs		Total Change		CAGR
	2001	2012	2000	2012	01-12	09-12	01-12
Total employment	75,712	93,440			17,728	2,432	1.9%
Wage and salary employment	62,557	75,683	82.6%	81.0%	13,126	1,194	1.7%
Proprietor's employment	13,155	17,757	17.4%	19.0%	4,602	1,238	2.8%
Farm proprietors employment	1,937	1,728	2.6%	1.8%	-209	229	-1.0%
Nonfarm proprietors employment	11,218	16,029	14.8%	17.2%	4,811	1,009	3.3%
Farm employment	3,210	3,243	4.2%	3.5%	33	214	0.1%
Nonfarm employment	72,502	90,197	95.8%	96.5%	17,695	2,218	2.0%
Private employment	52,903	68,914	69.9%	73.8%	16,011	3,257	2.4%
Forestry, fishing, & relate	D	1,232	D	1.3%	D!	164	D
Mining	D	103	D	0.1%	D	-56	D
Utilities	285	402	0.4%	0.4%	117	36	3.2%
Construction	4,532	5,676	6.0%	6.1%	1,144	-112	2.1%
Manufacturing	3,352	3,226	4.4%	3.5%	-126	-4	-0.3%

Sector	Total Employment		% of Total Jobs		Total Change		CAGR
	2001	2012	2000	2012	01-12	09-12	01-12
Wholesale trade	1,377	1,413	1.8%	1.5%	36	-150	0.2%
Retail Trade	7,656	9,035	10.1%	9.7%	1,379	595	1.5%
Transportation & warehousing	1,827	2,556	2.4%	2.7%	729	163	3.1%
Information	1,032	1,101	1.4%	1.2%	69	80	0.6%
Finance and insurance	1,789	2,490	2.4%	2.7%	701	-93	3.1%
Real estate and Leasing	1,776	2,653	2.3%	2.8%	877	12	3.7%
Professional Services	3,528	4,825	4.7%	5.2%	1,297	19	2.9%
Management of companies	79	91	0.1%	0.1%	12	-50	1.3%
Administrative / waste svcs.	3,921	4,856	5.2%	5.2%	935	-257	2.0%
Educational services	576	991	0.8%	1.1%	415	106	5.1%
Health Care & social assistance	9,309	14,656	12.3%	15.7%	5,347	2,041	4.2%
Arts, entertainment, & recreation	1,447	1,793	1.9%	1.9%	346	-111	2.0%
Accommodation & Food Services	5,141	7,013	6.8%	7.5%	1,872	489	2.9%
Other service	3,727	4,802	4.9%	5.1%	1,075	385	2.3%
Government and Related	19,599	21,283	25.9%	22.8%	1,684	-1,039	0.8%
Federal, civilian	3,350	3,881	4.4%	4.2%	531	-170	1.3%
Military	630	595	0.8%	0.6%	-35	11	-0.5%
State and local	15,619	16,807	20.6%	18.0%	1,188	-880	0.7%
State government	8,580	8,175	11.3%	8.7%	-405	-795	-0.4%
Local government	7,039	8,632	9.3%	9.2%	1,593	-85	1.9%

Source: Stats America

Figure 13. Employment by Sector Analysis, El Paso County, Noted Years

Sector	Total Employment		% of Total Jobs		Total Change		CAGR
	2001	2012	2000	2012	01-12	09-12	01-12
Total Employment	321,565	409,192			87,627	26,628	2.2%
Wage and salary employment	274,007	324,924	85.2%	79.4%	50,917	19,601	1.6%
Proprietor's employment	47,558	84,268	14.8%	20.6%	36,710	7,027	5.3%
Farm proprietors employment	576	481	0.2%	0.1%	-95	-8	-1.6%
Nonfarm proprietors employment	46,982	83,787	14.6%	20.5%	36,805	7,035	5.4%
Farm employment	1,274	765	0.4%	0.2%	-509	-80	-4.5%
Nonfarm employment	320,291	408,427	99.6%	99.8%	88,136	26,708	2.2%
Private employment	251,875	310,914	78.3%	76.0%	59,039	15,320	1.9%
Forestry, fishing, & Ag related	507	679	0.2%	0.2%	172	197	2.7%
Mining	663	655	0.2%	0.2%	-8	46	-0.1%
Utilities	1,391	1,158	0.4%	0.3%	-233	-38	-1.7%

Sector	Total Employment		% of Total Jobs		Total Change		CAGR
	2001	2012	2000	2012	01-12	09-12	01-12
Construction	18,300	23,895	5.7%	5.8%	5,595	-2,550	2.5%
Manufacturing	36,053	19,821	11.2%	4.8%	-16,232	650	-5.3%
Wholesale trade	11,554	12,464	3.6%	3.0%	910	677	0.7%
Retail Trade	38,626	44,540	12.0%	10.9%	5,914	2,396	1.3%
Transportation & warehousing	14,190	18,284	4.4%	4.5%	4,094	386	2.3%
Information	5,388	5,871	1.7%	1.4%	483	-17	0.8%
Finance and insurance	9,563	16,440	3.0%	4.0%	6,877	1,399	5.0%
Real estate and rental and leasing	9,036	15,185	2.8%	3.7%	6,149	2,254	4.8%
Professional & technical services	10,410	14,270	3.2%	3.5%	3,860	660	2.9%
Management of companies	1,017	882	0.3%	0.2%	-135	-343	-1.3%
Administrative & waste services	20,099	30,259	6.3%	7.4%	10,160	-1,499	3.8%
Educational services	3,233	5,087	1.0%	1.2%	1,854	480	4.2%
Health care and social assistance	27,010	41,327	8.4%	10.1%	14,317	4,161	3.9%
Arts, entertainment, & recreation	3,371	4,594	1.0%	1.1%	1,223	508	2.9%
Accommodation & food services	22,388	31,812	7.0%	7.8%	9,424	3,706	3.2%
Other services	19,076	23,691	5.9%	5.8%	4,615	2,247	2.0%
Government & Related	68,416	97,513	21.3%	23.8%	29,097	11,388	3.3%
Federal, civilian	8,482	13,098	2.6%	3.2%	4,616	1,432	4.0%
Military	11,740	29,914	3.7%	7.3%	18,174	9,030	8.9%
State and local	48,194	54,501	15.0%	13.3%	6,307	926	1.1%
State government	7,733	9,618	2.4%	2.4%	1,885	785	2.0%
Local government	40,461	44,883	12.6%	11.0%	4,422	141	0.9%

Source: Stats America

Location Quotient Analysis

Location quotient (LQ) analysis provides a way to quantify the regional concentration of a particular industry compared to national averages It reveals what makes a region unique compared to national averages (i.e. a location quotient that is greater than 1.0). For example, the figure on the following full page shows that in 2012, government related employment in El Paso County had an LQ of 1.78, up from a 1.52 in 2001. For Doña Ana County, the LQ points to stronger regional concentration in farm employment (2.38), health care (1.42 in 2012), and in government and government-related civilian employment (1.7) compared to national averages. The analysis also shows that Doña Ana County is under represented in retail trade (0.96 in 2012), manufacturing (0.49), and transportation & warehousing (0.84).

Figure 14. Location Quotients, Doña Ana County and El Paso County, Noted Years

Sector	Doña Ana County			El Paso County		
	2001	2007	2012	2001	2007	2012
Wage and salary employment	1.00	1.03	1.04	1.03	1.01	1.02
Proprietor's employment	1.02	0.88	0.85	0.87	0.95	0.92
Farm proprietors employment	1.93	1.61	1.78	0.14	0.13	0.11
Nonfarm proprietors employment	0.94	0.84	0.80	0.93	0.99	0.96
Farm employment	2.29	2.42	2.38	0.21	0.15	0.13
Nonfarm employment	0.98	0.98	0.98	1.01	1.01	1.01
Private employment	0.83	0.85	0.87	0.93	0.92	0.89
Forestry, fishing, & Ag related	D	2.46	2.74	0.33	0.28	0.34
Mining	D	0.32	0.15	0.42	0.23	0.22
Utilities	1.01	1.12	1.34	1.16	0.95	0.88
Construction	1.01	1.19	1.24	0.96	1.05	1.19
Manufacturing	0.43	0.48	0.49	1.10	0.75	0.69
Wholesale trade	0.48	0.48	0.43	0.95	0.97	0.87
Retail Trade	0.92	0.93	0.96	1.09	1.12	1.08
Transportation and warehousing	0.73	0.84	0.84	1.33	1.52	1.37
Information	0.56	0.68	0.65	0.69	0.78	0.79
Finance and insurance	0.50	0.48	0.48	0.63	0.68	0.72
Real estate and rental and leasing	0.70	0.68	0.62	0.84	0.81	0.81
Professional and technical services	0.75	0.72	0.76	0.52	0.56	0.51
Management of companies	0.10	0.15	0.08	0.29	0.26	0.18
Administrative & waste services	0.89	0.69	0.84	1.08	1.25	1.20
Educational services	0.42	0.44	0.45	0.55	0.55	0.53
Health care and social assistance	1.33	1.37	1.42	0.91	0.93	0.91
Arts, entertainment, and recreation	1.00	1.03	0.86	0.55	0.51	0.50
Accommodation and food services	1.04	1.08	1.05	1.07	1.08	1.09
Other services	0.90	0.84	0.88	1.08	1.05	0.99
Government and Related	1.85	1.79	1.70	1.52	1.57	1.78
Federal, civilian	2.68	2.67	2.59	1.60	1.78	2.00
Military	0.66	0.55	0.56	2.92	3.84	6.39
State and local	1.86	1.79	1.69	1.35	1.30	1.25
State government	3.73	3.38	3.00	0.79	0.79	0.80

D=Disclosure / Source: Stats America

Growth in Wages by Sector

Compound annual growth in wages by sector finds a notable decrease in manufacturing wages in both Doña Ana and El Paso Counties. The percent of total wages increased in both counties in the healthcare and government sectors. Once again, the El Paso military sector demonstrates strength with a remarkable 11.3% average annual rate of growth.

Figure 15. Percentage of Total Wages by Sector, Noted Counties & Noted Years

Sector	Doña Ana County			EL Paso County		
	2001	2011	CAGR	2001	2011	CAGR
Forestry, fishing, & Ag Related	D	0.9%		0.1%	0.1%	1.1%
Mining	D	0.1%		0.3%	0.1%	-15.7%
Utilities	0.7%	0.9%	1.7%	1.4%	0.7%	-7.1%
Construction	6.1%	5.4%	-1.2%	5.6%	6.8%	1.9%
Manufacturing	4.7%	4.5%	-0.4%	11.8%	6.5%	-5.8%
Durable goods manufacturing	2.3%	3.0%	2.8%	5.9%	3.6%	-4.7%
Nondurable goods manufacturing	2.4%	1.5%	-4.8%	5.9%	2.9%	-7.1%
Wholesale trade	1.8%	1.7%	-0.5%	4.4%	3.9%	-1.2%
Retail Trade	7.5%	5.9%	-2.4%	7.9%	6.9%	-1.3%
Transportation and warehousing	2.7%	3.5%	2.7%	7.0%	5.1%	-3.1%
Information	1.6%	1.1%	-3.6%	1.7%	1.5%	-1.5%
Finance and insurance	2.6%	2.6%	-0.2%	3.0%	2.5%	-1.6%
Real estate and rental and leasing	0.8%	0.8%	0.5%	7.3%	3.5%	-7.1%
Professional and technical services	5.8%	7.1%	2.2%	3.3%	3.3%	-0.1%
Management of companies	0.1%	0.1%	-0.6%	0.3%	0.1%	-11.0%
Administrative and waste services	2.7%	4.1%	4.1%	3.1%	3.7%	1.8%
Educational services	0.2%	0.5%	7.6%	0.5%	0.6%	2.7%
Health care and social assistance	11.2%	13.7%	2.0%	9.1%	9.6%	0.6%
Arts, entertainment &recreation	0.9%	0.9%	0.5%	0.4%	0.3%	-4.2%
Accommodation & food services	3.7%	3.4%	-0.9%	3.2%	2.9%	-0.8%
Other services	5.4%	3.3%	-5.0%	3.3%	3.2%	-0.5%
Government and Related	35.2%	34.6%	-0.2%	26.2%	38.7%	4.0%
Federal, civilian	11.6%	12.2%	0.5%	5.3%	7.2%	3.1%
Military	0.6%	0.7%	2.3%	5.6%	16.4%	11.3%
State and local	23.1%	21.7%	-0.6%	15.3%	15.1%	-0.1%
State government	10.9%	10.8%	-0.1%	2.7%	2.6%	-0.3%
Local government	12.2%	11.0%	-1.0%	12.6%	12.5%	-0.1%

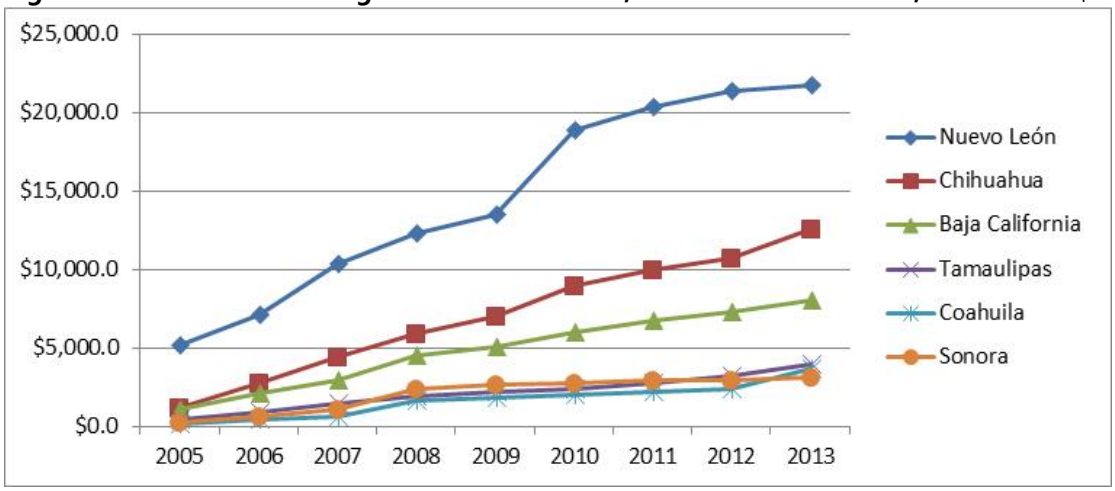
D=Disclosure

Source: Stats America

Mexican Border State Economic Trends

Across the border in Mexico, employment in the "formal" sector is well documented due to government reporting requirements and employer tax obligations. After the downsizing that occurred in the U.S. as the result of the 2008 recession, growth in employment slowed throughout Mexico. By 2010, however, Mexico began to witness a surge in foreign investment, as shown below, with Nuevo Leon and Chihuahua seeing exceptional growth.

Figure 16. Cumulative Foreign Direct Investment, Mexico Border States, Millions of $



Source: Mexico, Ministry of Economy

The figure below summarizes population trends for border states in Mexico. Chihuahua saw the smallest total increase in population from 2005 to 2013, adding about 357,000 residents. States such as Baja and Nuevo Leon experienced more pronounced growth.

Figure 17. Total Population, Mexican Border States, Noted Years

Year	Baja California	Coahuila	Chihuahua	Nuevo León	Sonora	Tamaulipas	National Total
2005	2,844,469	2,495,200	3,241,444	4,199,292	2,394,861	3,024,238	103,263,388
2006	2,912,674	2,587,518	3,270,309	4,330,486	2,501,653	3,075,303	107,151,011
2007	2,977,440	2,625,332	3,322,439	4,408,836	2,542,078	3,129,386	108,408,827
2008	3,041,783	2,664,019	3,376,544	4,487,206	2,586,060	3,184,546	109,787,388
2009	3,105,709	2,703,905	3,431,517	4,566,871	2,632,192	3,239,174	111,299,015
2010	3,155,070	2,748,391	3,406,465	4,653,458	2,662,480	3,268,554	112,336,538
2011	3,224,844	2,782,013	3,525,273	4,723,273	2,727,032	3,334,664	114,255,555
2012	3,275,399	2,818,077	3,559,248	4,797,263	2,767,364	3,376,515	115,682,868
2013	3,328,623	2,854,334	3,598,792	4,868,844	2,809,806	3,419,338	117,053,750
CAGR	2.0%	1.7%	1.3%	1.9%	2.0%	1.5%	1.6%

Source: Sistema Estatal y Municipal de Base de Datos, Instituto Nacional de Estadística y Geografía. 2005 and 2010; Data for 2006-2009 and 2011-2013 data are provided as mid-year estimates released by Mexico's Consejo Nacional de Población (CONAPO), November 2012

The figure below summarizes shifts in the percentage share of employment for noted Mexican states. Notable is the decrease in market share for Chihuahua, which lost market share over the noted period, pointing to population growth at a slower rate.

Figure 18. Percentage of Total Population by State, Mexican Border States, Noted Years

Year	Baja California	Coahuila	Chihuahua	Nuevo León	Sonora	Tamaulipas
2005	15.6%	13.7%	17.8%	23.1%	13.2%	16.6%
2006	15.6%	13.9%	17.5%	23.2%	13.4%	16.5%
2007	15.7%	13.8%	17.5%	23.2%	13.4%	16.5%
2008	15.7%	13.8%	17.5%	23.2%	13.4%	16.5%
2009	15.8%	13.7%	17.4%	23.2%	13.4%	16.5%
2010	15.9%	13.8%	17.1%	23.4%	13.4%	16.4%
2011	15.9%	13.7%	17.4%	23.2%	13.4%	16.4%
2012	15.9%	13.7%	17.3%	23.3%	13.4%	16.4%
2013	15.9%	13.7%	17.2%	23.3%	13.5%	16.4%
CAGR	0.2%	0.0%	-0.4%	0.1%	0.3%	-0.2%

Source: AECOM Analysis of Sistema Estatal y Municipal de Base de Datos, Instituto Nacional de Estadística y Geografía. Consejo Nacional de Población (CONAPO), November 2012

While population growth has been relatively modest, Data from INEGI shows sizable increases from 2010 through 2013 in employment. Much of the recent employment gain went to Chihuahua (Juárez). The figure below points to a CAGR of 4% for Chihuahua since 2010, doubling the prior rate of annualized growth.

Figure 19. Total Employment, Mexican Border States, Noted Years

Year	Baja California	Coahuila	Chihuahua	Nuevo León	Sonora	Tamaulipas	Border Total
2005	1,129,092	946,635	1,217,064	1,762,696	970,453	1,217,455	7,243,395
2006	1,196,727	972,430	1,320,975	1,834,913	990,722	1,272,517	7,588,284
2007	1,220,971	1,020,697	1,348,205	1,909,779	965,456	1,275,417	7,740,525
2008	1,280,838	1,078,081	1,384,501	1,937,961	1,003,963	1,343,332	8,028,676
2009	1,303,467	1,033,820	1,305,031	1,921,594	999,293	1,302,452	7,865,657
2010	1,325,960	1,039,788	1,285,142	1,960,456	1,006,085	1,302,804	7,920,235
2011	1,326,386	1,110,948	1,253,291	2,068,905	1,091,029	1,355,501	8,206,060
2012	1,364,750	1,178,802	1,337,579	2,115,484	1,193,300	1,416,479	8,606,394
2013	1,419,177	1,209,674	1,445,720	2,093,055	1,187,698	1,437,938	8,793,262
CAGR 05-13	2.9%	3.1%	2.2%	2.2%	2.6%	2.1%	2.5%
CAGR 10-13	2.3%	5.2%	4.0%	2.2%	5.7%	3.3%	3.5%

Source: Sistema Estatal y Municipal de Base de Datos, Instituto Nacional de Estadística y Geografía. 2005-2010 data are based on actual counts. 2011-2013 data are estimates, referenced to 2010

For Chihuahua, while growth has been stronger since 2010 in employment, the rate of growth needs to be seen in terms of the adjacent states, which have also grown strongly; as a result, Chihuahua has seen its share of employment decrease slightly.

Figure 20. Share of Total Employment, Mexican Border States, Noted Years

Year	Baja California	Coahuila	Chihuahua	Nuevo León	Sonora	Tamaulipas
2005	15.6%	13.1%	16.8%	24.3%	13.4%	16.8%
2006	15.8%	12.8%	17.4%	24.2%	13.1%	16.8%
2007	15.8%	13.2%	17.4%	24.7%	12.5%	16.5%
2008	16.0%	13.4%	17.2%	24.1%	12.5%	16.7%
2009	16.6%	13.1%	16.6%	24.4%	12.7%	16.6%
2010	16.7%	13.1%	16.2%	24.8%	12.7%	16.4%
2011	16.2%	13.5%	15.3%	25.2%	13.3%	16.5%
2012	15.9%	13.7%	15.5%	24.6%	13.9%	16.5%
2013	16.1%	13.8%	16.4%	23.8%	13.5%	16.4%
CAGR 05-13	0.4%	0.6%	-0.3%	-0.3%	0.1%	-0.3%

Source: AECOM Analysis

The Maquiladora Program

In 1964, the U.S. government ended the Bracero Program, a decades-old agreement that allowed for employment in the U.S. of Mexican farm workers. Within a year, the Mexican government launched the Border Industrialization Program (BIP) or Maquiladora Program to address the problem of growing unemployment along its northern border. The BIP was designed to encourage foreign investment in manufacturing plants or *Maquiladoras*[1] along Mexico's northern border. Corporations were allowed to import raw materials and components on a temporary, duty-free basis for assembly by Mexican labor and re-export the resulting products. Under the Maquiladora Program, also known as the "in-bond" program, foreign corporations would deposit a bond with the Secretaría de Comercio y Fomento Industrial (Mexican Department of Commerce and Industry) for the value of the duty waived and, when the assembled products were exported, the bond would be returned.

Over the course of nearly five decades, the Mexican Maquiladora industry has witnessed a number of changes. During the 1960s, U.S. corporations established labor-intensive assembly operations to capture the advantages of Mexico's comparatively low labor costs. By the early 1980s, a variety of U.S. manufacturers – from coupon clipping services to auto parts production to aerospace suppliers – had invested in Mexican assembly plants. Japanese, Korean and European investors soon followed, establishing operations along Mexico's northern border that allowed their products to compete in the U.S. market.

[1] Maquiladora is derived from *maquilar*, the service provided by a miller when he grinds wheat into flour. Similarly, a maquiladora provides a service without taking ownership of the goods.

In the late 1980s, some firms moved away from low-skilled assembly work to more advanced manufacturing operations. Economic data provided by Banco De Mexico show the percentage of "technical workers" employed by Maquiladoras increased more than 180 percent from the early 1980s to the 1990s.[2] An example of one such operation is the Delphi Mexico Testing Center in Ciudad Juárez, a General Motors' spinoff, which operates a sophisticated product testing facility and employs hundreds of skilled technicians and engineers.

As Maquiladoras evolved, the Mexican government initiated a series of changes to its border program. On May 3, 1990, the President of Mexico, responding to complaints from domestic companies who wished to compete with foreign-owned manufacturers, enacted the PITEX program.[3] The new program allowed Mexican domestic companies to operate in a similar fashion as foreign-owned Maquiladoras, but encouraged the use of Mexican suppliers and required the domestic firms to export a certain percentage of their production. In practice, PITEX fostered expansion of manufacturing from border locations to new industrial parks in the interior of the nation.

Beginning in November of 2006, the Mexican government combined the PITEX and Maquiladora programs under a third program, IMMEX.4 The new program effectively consolidated the two earlier programs under one administrative banner, but has also made it difficult--through combined recordkeeping-- to separate the impact of Mexico's original Maquila Program from its domestic-oriented manufacturing. In 2006, the final year that data was collected for the original Maquiladora program, Mexico's Secretaría de Economía reported 2,062 Maquila plants employing a total 905,097 workers were in operation in the border region. In the same year, the Secretaría highlighted the state of Chihuahua as ranking first in Maquila employment among all border states, accounting for 26 percent of total industry employment.[5]

Mexico's Maquiladora Program has been altered by other developments. The North American Free Trade Agreement (NAFTA), implemented in 1994, favorably impacted employment growth in the industry. Data provided by INEGI, Mexico's counterpart to the U.S. Census Bureau, show that the five years before NAFTA, employment in the Maquila sector grew at the rate of 47%. In the five years after 1994, this figure jumped to 86%.[6]

A significant impact to Mexico's Maquiladora industry occurred at the time of China's entry into World Trade Organization in 2001. After growing rapidly during the 1990s, the industry experienced a sharp decline in the early 2000s. By 2002, employment in the sector had

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[2] Banco de Mexico statistics program. Accessed Oct. 20, 2013, at http://www.banxico.org.mx/estadisticas/statistics.html#GI

[3] *Programa de Importación Temporal para Producir Artículos de Exportación*

[4] *Decreto para el Fomento de la Industria Manufacturera, Maquiladora y de Servicios de Exportación*

[5] Reported by Mexico's *Secretaría de Economía*. Accessed Oct. 23, 2013, at http://www.economia.gob.mx/industry/foreign-trade-instruments/immex

[6] Wikipedia reference, found at http://en.wikipedia.org/wiki/Maquiladora

contracted 21% and production had contracted about 30%.[7] Facing growing competition from China and elsewhere, the Maquila engaged in changes to improve their overall efficiency. The Mexican government assisted the industry by streamlining reporting requirements. Industry observers have noted that this period of declining growth allowed the Maquiladoras to regroup and gave some relief to border cities, which had been under pressure to provide new infrastructure and social services at a rapid pace.[8] Since 2008, the Mexican manufacturing industry has again experienced growth. Banco de México reports 31% growth in manufacturing employment from 2008 through 2012. The bank is reporting continued rapid growth in employment through the first half of 2013.[9]

Pacto de México

A recent political development in Mexico City has raised a new debate over the future of Mexico's manufacturing industry. On Dec. 2, 2012, soon after entering office, Mexican President Enrique Peña Nieto signed the Pacto de México, an economic and social agreement adopted by representatives of the country's three primary political parties. The Pacto, as defined in its vision statement, is designed to promote greater democratic representation among Mexico's citizens. Key to the agreement is reform of the nation's tax system. On Oct. 31, 2013, the agreement was adopted by the Mexican Senate, the final political hurdle prior to its implementation. As proposed, the agreement will raise the income tax rate on Mexico's wealthy and middle classes and is projected to increase the overall tax rate on domestic manufacturing. It impacts border commerce specifically by eliminating a long-standing preferential value-added tax on regional transactions.

Manufacturing and trade organizations in the U.S. and Mexico have warned the new law may dampen the current upward trend in foreign investment in Mexico and could reverse growth in the nation's manufacturing employment. Nonetheless, the new reform and its key tax provisions appear to have won support among a broad base of Mexico's political leaders.[10] Some facts about Mexico's Maquiladora industry include:

- As far back as 1985, Maquiladoras overtook tourism as Mexico's largest source of foreign exchange.
- Since 1996, Maquiladoras have ranked as the second largest industry in Mexico behind petroleum.
- Although Maquiladora employment suffered in the early 2000s, Maquiladora production still constituted more than 50 percent of all U.S.-Mexico trade.

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[7] U.S. Government Accounting Office. "International Trade: Mexico's Maquiladora Decline Affects U.S.-Mexico Border Communities and Trade; Recovery Depends in Part on Mexico's Actions," GAO-03-891. July 2003
[8] Ibid. GAO-03-891
[9] Accessed Oct. 23, 2013, at http://www.banxico.org.mx/estadisticas/statistics.html#GI
[10] Information on the Pacto por México was accessed Nov. 3, 2013, at www.pactopormexico.org, Mexico's official website. News of Mexican Senate passage of the Pacto por México was retrieved from various newspaper websites.

- By 2005, Maquiladora exports accounted for half of Mexico's foreign exports.

Economic Benefits for U.S. Border Communities

Many in the U.S. have debated the economic impact of the Mexican Maquiladora industry. At a national level, Maquiladoras are important because they allow U.S. companies to stay competitive in the global market. By offering lower production costs, Maquiladoras enable U.S. companies to provide goods at lower cost. At a larger level, Maquiladoras and U.S. companies are part of a North American production model that helps North America maintain a competitive edge with manufacturing regions around the world.

At the local level, cities on the U.S. side of the border have benefited from the flow of trade created by Maquiladoras. According to the U.S. Government Accounting Office, between 1990 and 2002, more than half a million jobs were added to the U.S. border region. Between 1995 and 2002, employment growth in the U.S. border region exceeded the U.S. national average overall. These gains are notable because the border region historically has suffered from high rates of unemployment.

Studies have attempted to measure the impact of Maquiladora trade on a specific U.S. border community. One study from 2001 found that Mexico's Maquiladoras purchased $136 million in services and supplies from a single Texas border community, thereby sustaining thousands of jobs in the same community. A 2011 study by the Federal Reserve Bank of Dallas identified Maquiladora production as having significant positive impact on U.S. border city employment, particularly in the transportation and service sectors.[11]

State-Supported Development around the Santa Teresa-San Jerónimo POE

The state of Chihuahua has actively teamed with the state of New Mexico to leverage investment in its own San Jerónimo POE on the Mexican side of the border. In 2004, Chihuahua's outgoing governor, Patricio Martínez García, purchased 200 hectares (494 acres) southeast of the existing POE from land owner Eloy Vallina. The governor placed the land on the books of Promotora de la Industria Chihuahuense, an agency of the Chihuahua Department of Economy that owns and manages industrial parks. More recently, Chihuahua Governor César Duarte Jáquez collaborated with New Mexico Governor Susana Martinez to promote the Santa Teresa-San Jerónimo area with the promise of a large-scale residential and commercial development south of the border. Mexico's regional planning organization, IMIP, published a series of maps highlighting this bi-national plan. The Chihuahua plan includes a number of integrated projects. Maps on the following pages highlight these proposed projects:

- Construction of a 55-kilometer (34 mile) rail line connecting San Jerónimo with Ferromex's existing Juárez-Chihuahua line at a location south of Juárez. The new rail line

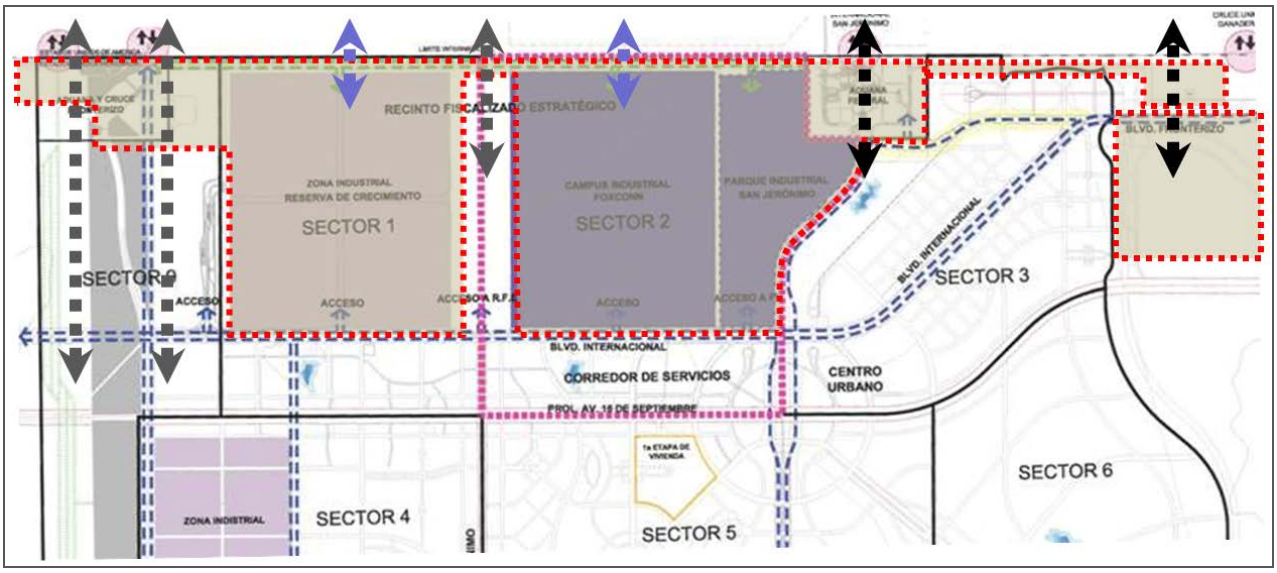
[11]Cañas, Jesús *et al.* "The Impact of the Maquiladora Industry on U.S. Border Cities," Federal Reserve Bank of Dallas, Working Paper 1107. May 17, 2011.

would bypass the urban areas of Juárez, crossing into New Mexico west of the Santa Teresa POE.

- Construction of a rail-truck intermodal yard south of Juárez, located near the junction of the proposed new rail line, next to the Samalayuca-San Jerónimo highway.
- Opening of a free trade zone along the Mexican side of the border. Development of a free trade zone was a condition placed on Foxconn prior to its gaining permission to build an assembly plant in San Jerónimo.
- Rerouting of the last leg of the Anapra-San Jerónimo highway to swing south, permitting more efficient access for Juárez traffic entering the Santa Teresa-San Jerónimo POE. Development of a network of roadways within the San Jerónimo industrial area.
- Development of a proposed vocational training and higher education center, known as the Ciudad del Conocimiento (City of Knowledge), south of Juárez on Boulevard Fundadores/Avenida del Desierto.

In December 2013, Governor Cesar Duarte announced that Chinese investors were evaluating projects to supported consolidated rail, road and border crossing infrastructure. On the US side, Doña Ana County officials have successfully expanded Foreign Trade Zone 197, incorporating the alternative site framework. The new structure extends the Foreign Trade Zone to cover essentially the entire county.

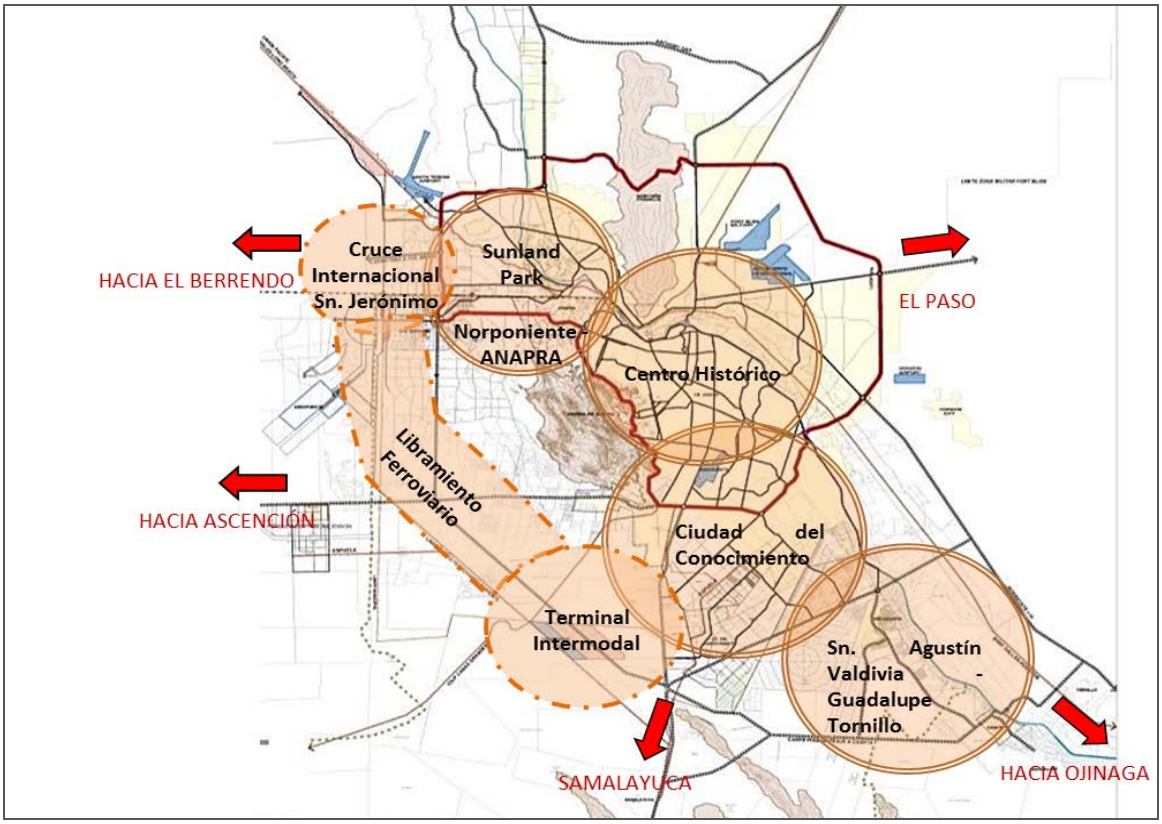
Figure 21. San Jerónimo Border Area showing proposed development plans



Source: IMIP

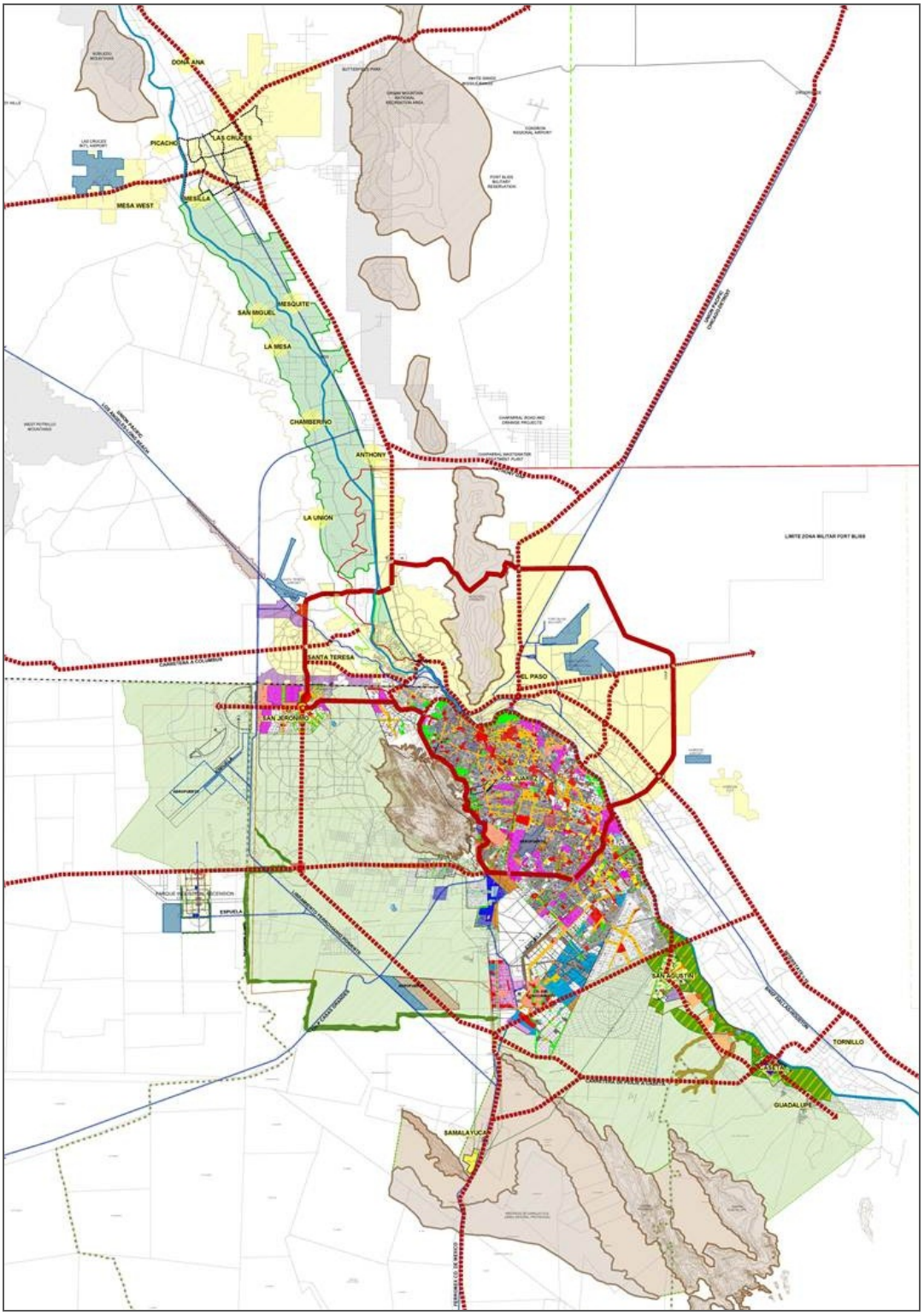
Note: Red lines show proposed Juárez-San Jerónimo Free Trading Zone. Arrows to the left show the location of proposed cross-border rail line.

Figure 22. Proposed Integrated Transportation System



Source: IMIP

Figure 23. Existing and Future Transportation Connections



Source: IMIP

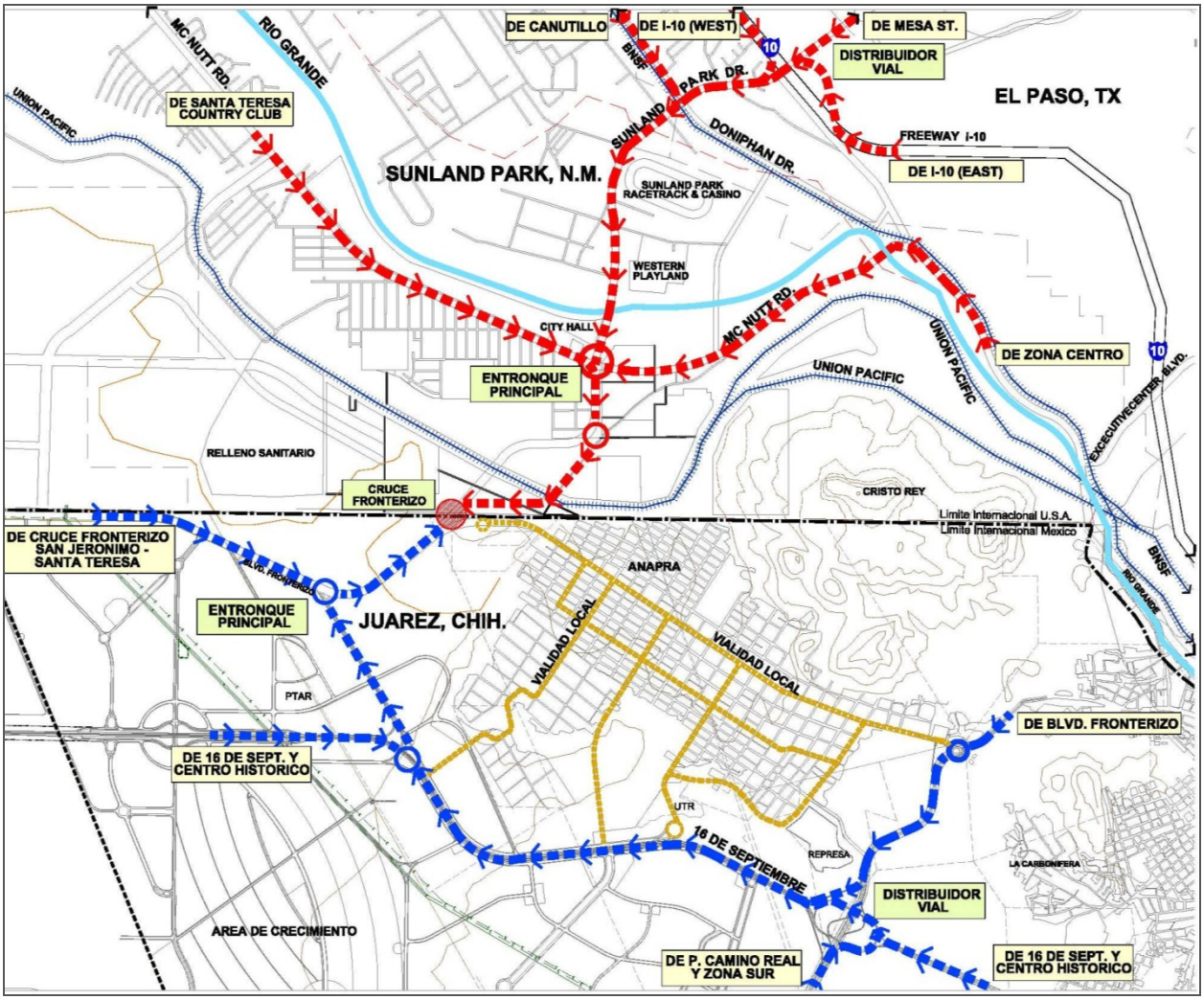
Background

Interest in cross-border planning and development was fostered in 1994 with creation of the U.S.-Mexico Joint Working Committee (JWC), an outgrowth of NAFTA created via MOU between the U.S. Department of Transportation (USDOT) and Mexico's Secretariat of Communication and Transportation (SCT). Significant to its mission, the JWC publishes regional Master Plans that prioritize ongoing and future port-of-entry and roadway requirements.

In 2012, the JWC commissioned development of an El Paso-Santa Teresa-Chihuahua Border Master Plan. The plan was assigned to the Texas Department of Transportation, which contracted the work to the Center for Transportation Research at the University of Texas. A draft of the plan was unveiled in February 2013 at a large event in El Paso. After a lengthy public comment period, the draft was revised and published as final in October of the same year. The plan's final version lists priority infrastructure projects with impacts for Doña Ana County. Some of these identified priorities include:

- Construct new rail POE to divert cargo away from the urban area of the City of Juárez in conjunction with the Samalayuca-Jerónimo rail loop.
- Construct a new urban 4-lane highway to connect to the Anapra-Sunland Park and Santa Teresa/Jerónimo POEs without passing through the Rancho Anapra neighborhood.
- The construction of a commercial and bus inspection facility.
- Construct a highway access road to the Santa Teresa/Jerónimo POE bridge
- Future plans to construct a new POE. The City of Sunland Park reported these plans, but limited information is available for this proposed POE.
- The construction of the Santa Teresa Commercial and Weight Inspection Station.
- Perform pavement preservation and design and construction of multi-use path on NM 136, including drainage and erosion control.
- Improve A-017 (Strauss Road) and Industrial Drive, and relocate St. John's access point on NM 136. Reconstruction and rehabilitation will include infrastructure and professional services.
- Perform bridge rehabilitation/widening of Missouri Avenue Bridge.
- Perform pavement preservation of Sunland Park Drive, from Texas State line to McNutt Road (NM 273).
- Perform IH 10 pavement preservation, from Las Cruces to Texas State line.
- Construct new roundabout at the intersection of NM 404 and NM 213. New pavement with signing, lighting, and traffic control will be placed to assist with congestion and traffic control in the area.
- Widen access road to Mexican Customs from 2 to 3 lanes to increase capacity and to separate heavy vehicles.

Figure 24. Road network for proposed Sunland Park-Camino Real POE



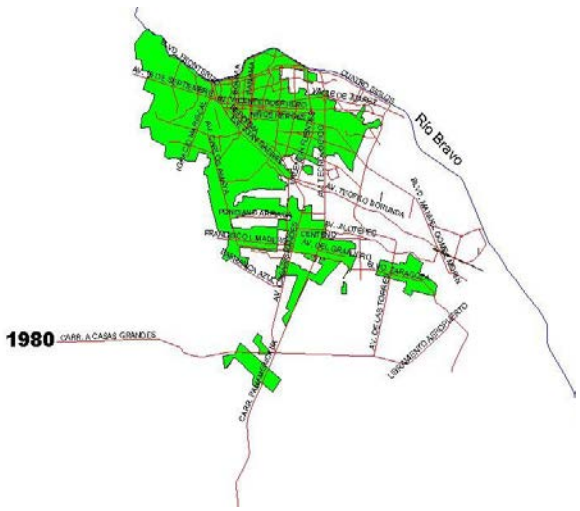
Source: IMIP

Ciudad Juárez Land Use Patterns

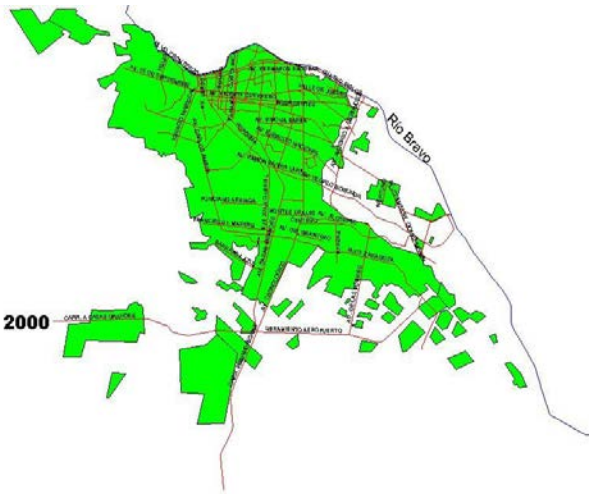
The following set of maps from the Instituto de Municipal de Investigación y Planeación (IMIP) reinforces the general geographic trajectory of new development in the city since the 1960's. The maps reinforce a general trajectory of new development on the Mexican side of the border to the south and east, rather than the west or northwest, toward the Border Area.

1960 -

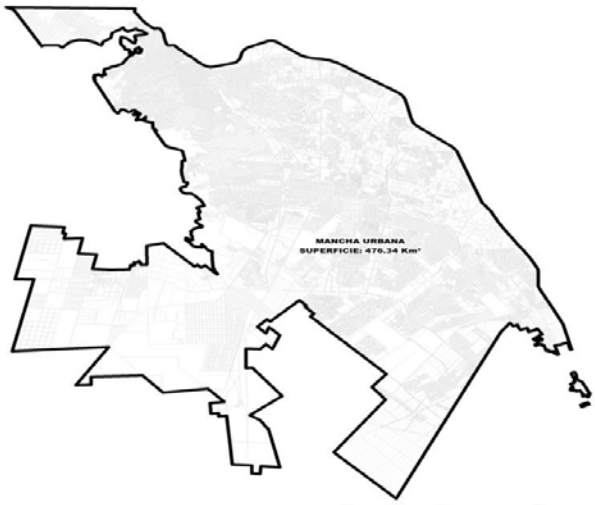
1980 -



2000 -



2012 -



Where Workers Work and Live in Doña Ana County

Reflecting the focus on the Border Area, the balance of workers who work and workers who live in the Border Area was evaluated using the US Census "On the Map" tool. The study area used in this case is essentially Sunland Park and Santa Teresa. The following table highlights a breakdown of employment in specific industries within this defined market. The following figure highlights changes in total employment, showing a total increase in jobs for the study area, growing from 3,908 to 5,098 over the noted period. Over that time, while manufacturing saw a significant decrease (1,220 to 694 jobs) other sectors grew, including accommodations and food services, and arts and entertainment. Among typically higher wage sectors, professional services grew strongly, adding about 150 jobs.

Figure 25. Employment by Industry, BAEDS Study Area, Santa Teresa / Sunland Park

Industry Sector	2002	2011	CAGR
Agriculture, Forestry, Fishing	353	223	-5.0%
Mining & Energy Extraction	1	3	13.0%
Utilities	15	62	17.1%
Construction	189	199	0.6%
Manufacturing	1,220	694	-6.1%
Wholesale Trade	171	202	1.9%
Retail Trade	156	92	-5.7%
Transportation & Warehousing	302	282	-0.8%
Information	3	2	-4.4%
Finance and Insurance	36	67	7.1%
Real Estate / Leasing	35	35	0.0%
Professional & Technical Services	50	201	16.7%
Management of Companies	29	0	-100.0%
Administration & Support	317	393	2.4%
Educational Services	7	37	20.3%
Health Care & Social Assistance	192	711	15.7%
Arts, Entertainment, and Recreation	583	682	1.8%
Accommodation & Food Services	119	298	10.7%
Other Services	19	81	17.5%
Public Administration	111	834	25.1%
Total	3,908	5,098	3.0%

Source: US Census On The Map

The figure below summarizes trends regarding the share of workers who work in the Santa Teresa area as a percentage of the broader two-county area. The table shows that Agriculture supports about 6% of regional employment, and Arts and Entertainment supports about 21%, reflecting the impact of the Sunland Park Racetrack and Casino. In total, while Santa Teresa accounts for a modest share of regional employment, its rate of growth is notable, achieving net growth between 2002 and 2011 in spite of the recession.

Following figures and maps look more precisely at the flow of people commuting into or out of the Border Area.

Figure 26. Employment by Sector Comparisons, noted Geographies

Sector	Santa Teresa	Doña Ana County	El Paso County	Metro Area	Santa Teresa Border Area Share
Agriculture, Forestry, Fishing	223	2,556	1,012	3,568	6.3%
Mining & Energy Extraction	3	90	148	238	1.3%
Utilities	62	629	2,380	3,009	2.1%
Construction	199	3,990	15,558	19,548	1.0%
Manufacturing	694	3,062	17,643	20,705	3.4%
Wholesale Trade	202	1,264	11,469	12,733	1.6%
Retail Trade	92	7,153	41,864	49,017	0.2%
Transportation & Warehousing	282	1,687	14,357	16,044	1.8%
Information	2	917	6,885	7,802	0.0%
Finance and Insurance	67	1,676	9,314	10,990	0.6%
Real Estate / Leasing	35	765	5,665	6,430	0.5%
Professional & Technical Services	201	4,276	11,323	15,599	1.3%
Management of Companies	0	105	561	666	0.0%
Administration & Support	393	3,659	24,240	27,899	1.4%
Educational Services	37	11,088	41,682	52,770	0.1%
Health Care & Social Assistance	711	11,797	39,187	50,984	1.4%
Arts, Entertainment, and Recreation	682	1,213	2,035	3,248	21.0%
Accommodation & Food Services	298	6,244	31,263	37,507	0.8%
Other Services	81	1,341	6,653	7,994	1.0%
Public Administration	834	4,100	14,527	18,627	4.5%
Total	5,098	67,612	297,766	365,378	1.4%

Source: US Census On The Map

Figure 24 highlights the work destinations of workers who reside in the Border Area. The figure shows that about 3,000 people leave the Border Area to work every day, commuting to El Paso, with a smaller number (702) who both live and work in the Border Area. Las Cruces emerges as the third largest commuter destination for workers who reside in the Border Area.

Figure 27. 2011 Border Area Residents' Work Destinations

District	County	State	#	%
El Paso CCD	El Paso	TX	3,036	53.0%
Border Area	Doña Ana	NM	702	12.3%
Las Cruces CCD	Doña Ana	NM	517	9.0%
El Paso Northwest CCD	El Paso	TX	513	9.0%
Anthony CCD	Doña Ana	NM	390	6.8%
El Paso East CCD	El Paso	TX	189	3.3%
South Doña Ana CCD	Doña Ana	NM	80	1.4%
Alamogordo CCD	Otero	NM	50	0.9%
Belen CCD	Valencia	NM	41	0.7%
Roswell CCD	Chaves	NM	28	0.5%
Doña Ana-Hill CCD	Doña Ana	NM	27	0.5%
All Other Locations	N/A	N/A	152	2.7%
Total			*5,725*	*100.0%*

Note: CCD = County Census Divisions

Source: U.S. Census Bureau, On The Map Application and LEHD Origin-Destination Employment Statistics

The figure below highlights the resident origins for workers who work in the Border Area. The figure again shows that El Paso is the largest origin (1,589 workers), followed by the Border Area itself (702). The Las Cruces area supports a modest share of workers who work in the Border Area (5.9%).

Figure 28. 2011 Border Area Workers' Home Destinations

District	County	State	#	%
El Paso CCD	El Paso	TX	1,589	36.6%
Border Area	Doña Ana	NM	702	16.2%
El Paso Northwest CCD	El Paso	TX	687	15.8%
Las Cruces CCD	Doña Ana	NM	254	5.9%
El Paso East CCD	El Paso	TX	251	5.8%
Anthony CCD	Doña Ana	NM	201	4.6%
Doña Ana-Hill CCD	Doña Ana	NM	128	2.9%
South Doña Ana CCD	Doña Ana	NM	90	2.1%
Deming South CCD	Luna	NM	77	1.8%
Albuquerque CCD	Bernalillo	NM	30	0.7%
Roswell CCD	Chaves	NM	25	0.6%
All Other Locations	N/A	N/A	306	7.1%
Total			*4,340*	*100.0%*

CCD: County Census Division

Source: U.S. Census Bureau, OnTheMap Application and LEHD Origin-Destination Employment Statistics

In total, the above figures show that there is a greater flow of workers leaving the Border Area to work (about 5,023) compared to workers commuting into the Border Area (3,638) in 2011; more workers reside in the Border Area and commute to Las Cruces.

The following two maps frame the previous tables from a geographic perspective. The first map shows the work destinations for workers who reside in the defined Border Area (Santa Teresa and Sunland Park). The map shows that there are 702 people who both lived and worked in the Border Area. The table shows that the majority of people who lived in the area commuted into El Paso (3,036 people in 2011). The second map highlights the opposite trend, where workers who work in the Border Area lived, in 2011. This second map again shows the 702 people who live and work in the area. The map also reinforces the significant flow of workers in from Texas (El Paso) to sustain Border Area employment.

Implications

In reviewing the research from this chapter, several core findings rise to the surface:

- While often linked by their location at the U.S.-Mexico border, Doña Ana and El Paso Counties exhibit significant differences in total employment growth. The figures indicate that Doña Ana County added private employment at a faster rate from 2001 to 2011 compared to El Paso County.
- Population forecasts for Doña Ana county point to a faster rate of growth, capturing an increasing share of regional population. Forecasts point to an increase of about 56,000 new county wide residents by 2020.
- Doña Ana County's economy is increasingly aligned with El Paso County and Juarez, pointing to the importance of external factors in dictating the future pace of County growth. These external factors include Texas and Chihuahua, as well as the manufacturers that are increasingly dictating the pace of growth at the border.
- Mexico has experienced a surge in foreign investment in the past 12 to 18 months. Drivers for the shift relate to deeper changes in supply chains for the auto industry, as well as shifts in manufacturing activity from Asian markets (China and India) to North American markets, linked with the concept of near-shoring.
- Land use data from the Instituto de Municipal de Investigación y Planeación (IMIP) reinforces a general trajectory of new development on the Mexican side of the border to the south and east, rather than the west or northwest. For Santa Teresa, the main driver of growth is expected to be freight moving north from the interior of Chihuahua,
- The government of Chihuahua is actively promoting investment in San Jerónimo. Plans call for a new rail crossing and a series of improvements to access roads that would provide efficiencies in moving commercial cargo. News reports suggest that Mexican state officials are having discussions with foreign investors in these areas.
- In 2011, there was a greater flow of workers leaving the Border Area to work (about 5,000) compared to workers commuting into the Border Area (3,638) in 2011. More workers reside in the Border Area and commute to Las Cruces.

Figure 29. Border Area Resident Work Destinations, 2011

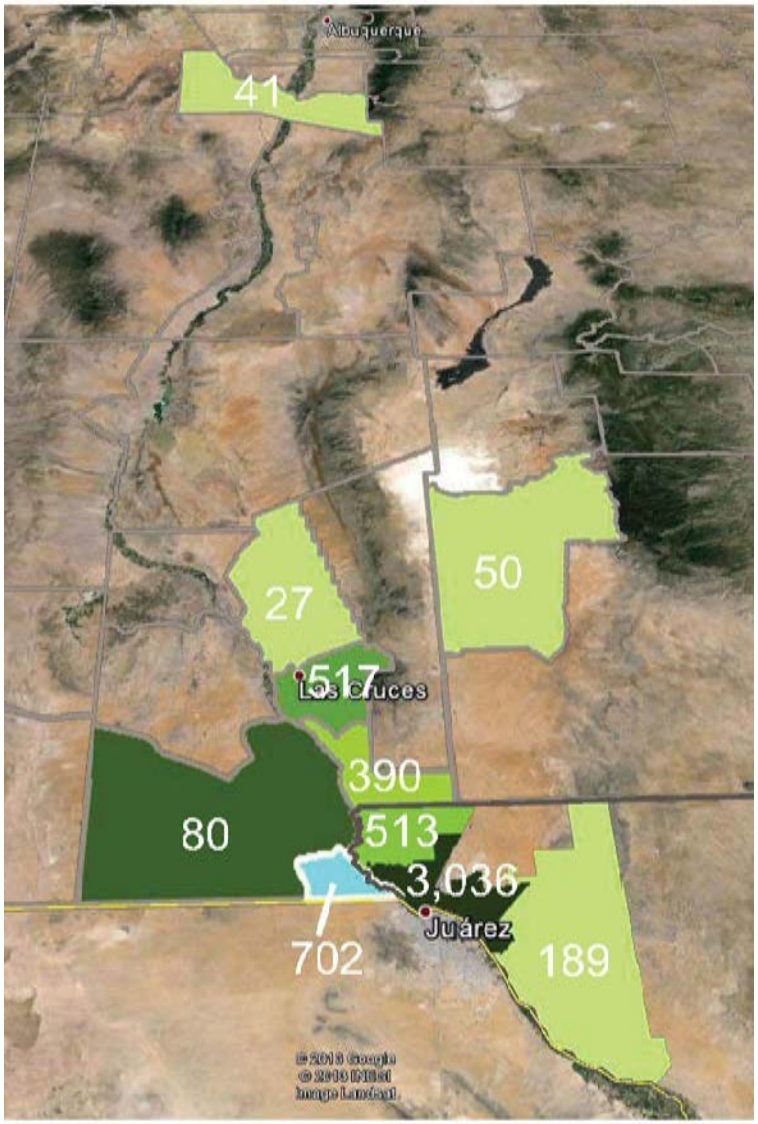
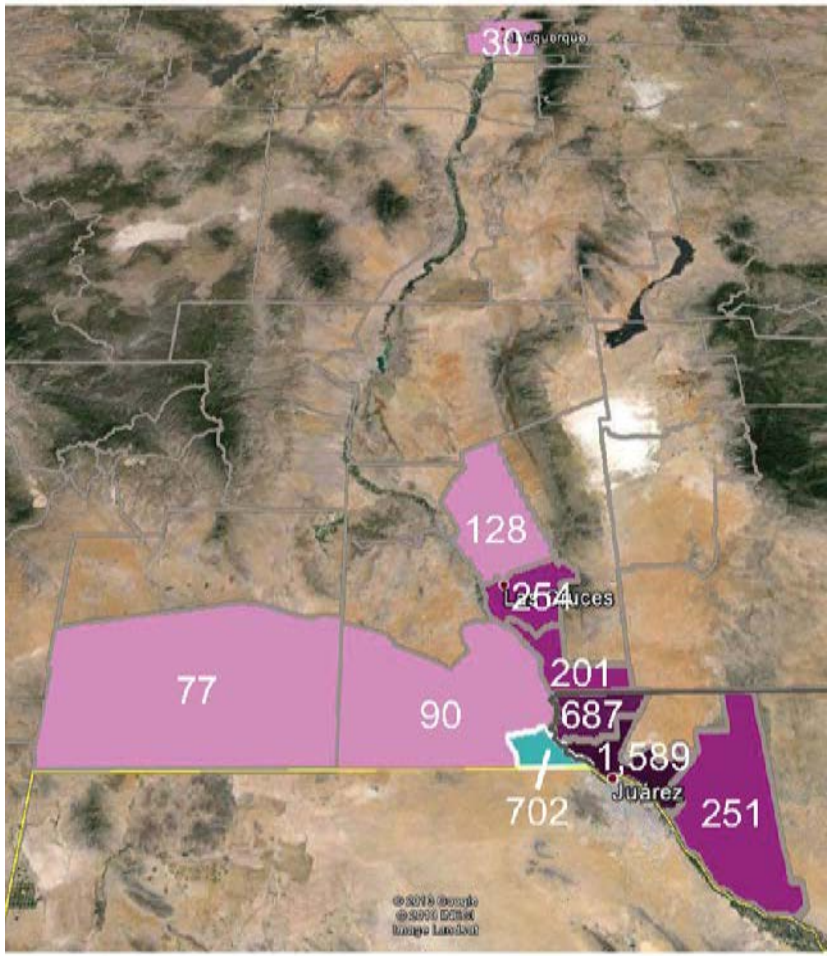


Figure 30. Border Area Worker Home Destinations, 2011



04. Freight Movement, Economic Development, and Real Estate Context

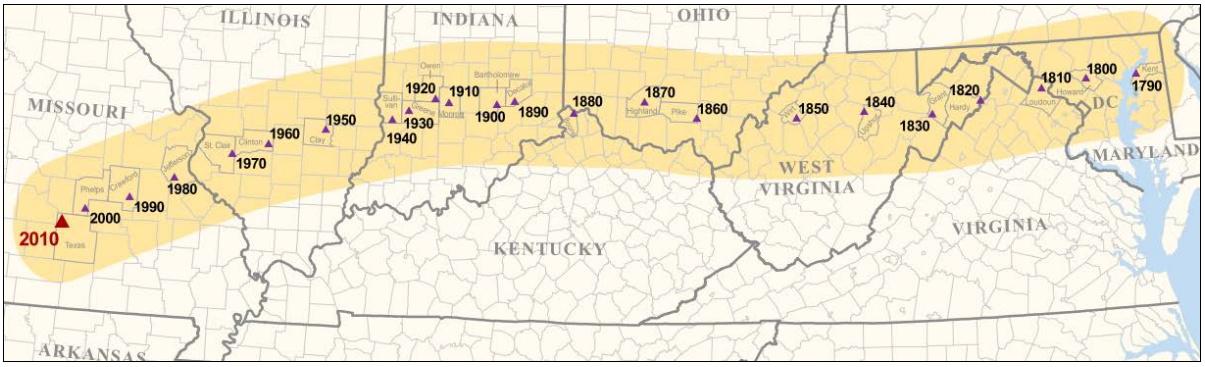
Introduction

Today, as the U.S. continues to recover from the "Great Recession", the North American transportation network, including air, rail, truck, water, and pipeline segments, finds itself at a unique moment in time, which offers significant uncertainty, recognizable risks, and significant opportunity for the Border Area. Our experience has highlighted an array of factors, which are simultaneously global and national in nature that will influence the path forward, including:

- Broader Recovery from the Great Recession
- Recovery in the automotive sector
- Re-shoring / near-shoring
- Regulatory Impacts
- Changes in how things are made and distributed

Recessionary influences also have impacted geographic mobility, with the pace of western movement of U.S. population having decreased to its slowest pace going back to the 1930's, attributable, in part, to the sluggishness of the housing sector and growth in employment. What is also notable about the westward shift of the center of U.S. population is its tendency to run parallel to Interstates 44 and 70 between Springfield and Columbus. I-70 is the shortest and least tolled route between LA and New York, attracting a significant amount of truck traffic as a result. For the Border Area, understanding connectivity to major freight routes is an important consideration.

Figure 31 – Approximate Center of the U.S. Population, by Decade

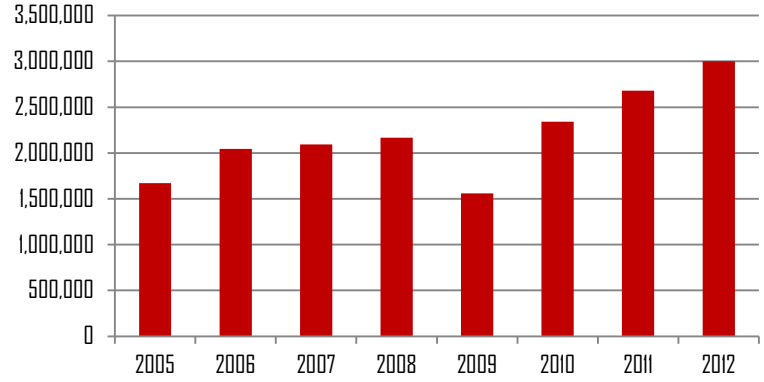


Source: U.S. Census

Reshoring of manufacturing is linked with significant labor cost growth in China, rapid labor turnover in India, higher transportation costs and more unstable supply chains. As shown in Figure 29 below, Mexico has been the primary beneficiary of this trend through 2012. Since 2005, auto production in Mexico has surged, growing from a 10% share of North American production (including the US, Mexico, and Canada) to a 19% share by 2012). Importantly, both US and Canadian auto production decreased in share over the noted period, with Mexican growth in share occurring particularly rapidly since the recession started in 2008.

Reports in 2014 indicate that the trend has not abated, linked with announcements by several auto manufacturers who are focused on expansions in Mexico through 2016.

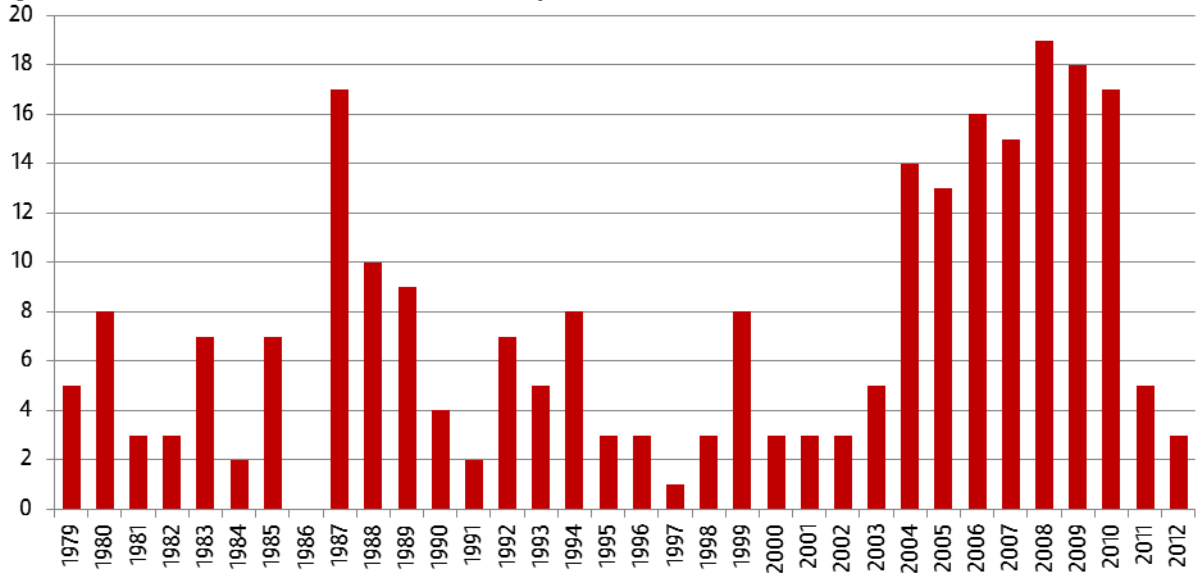
Figure 32. Annual Passenger Car and Commercial Vehicle Production, Mexico



Source: International Organization of Motor Vehicle Manufactures (OCIA)

One consequence of this shift has been a significant pace of manufacturing plant closures in the US, as shown in Figure 30 below. Between 2006 and 2010, a significant number of US automotive assembly plants were closed (120 facilities), as shown below.

Figure 33. US Automotive Plant Closures by Year, 1979 to 2012



Source: Center for Automotive Research

Recovery in automotive is also linked closely to the currently unfolding shift toward intermodal service for movement of parts and modules. An increasing share of automotive components are being moved by intermodal, with lower shares moving by traditional rail box car and semi-trailer. This trend has specific implications for the Border Area, which

could see an increase in rail movement of intermodal, which could reduce truck congestion at existing border crossings.

Figure 34. Total Passenger Car and Commercial Vehicle Production, Market Share, Noted Years

Country	2005	2006	2007	2008	2009	2010	2011	2012	CAGR
Mexico	10%	13%	14%	17%	18%	19%	20%	19%	9.3%
US	73%	71%	70%	67%	65%	64%	64%	66%	-1.6%
Canada	16%	16%	17%	16%	17%	17%	16%	15%	-1.0%
Total	100%	100%	100%	100%	100%	100%	100%	100%	0.0%

Source: OCIA

The analysis also shows that more broadly, the nature of manufacturing has changed fundamentally. Where once heavy manufacturing facilities imported raw materials and turned them into finished goods in a single large facility, today several stages of manufacturing add incremental value to goods, and these stages may take place over large distances and multiple suppliers, as company supply chains become more flexible. New technologies (3D / Additive Printing) and advanced materials (powdered metals / composites, plastics, and adhesives) will continue to influence manufacturing processes. While the auto industry is recovering from extensive economic damage caused by the recession, the underlying industry logistics infrastructure is still adapting to changing industry volumes and assembly techniques. For example, industry reports point to further growth in the use of lighter-weight aluminum and reconfigured power trains, along with plastics and special adhesives in future cars.

The nature of manufacturing and distribution has changed drastically. Where once U.S. goods were manufactured, stored in warehouses, shipped to retailers' shelves, and sold, today goods are manufactured as they are needed; inventory is drastically cut down; and global supply chains provide just-in-time merchandise. For many companies, "inventory" is more likely to be on a truck or plane than in a warehouse. Growth of the internet has also changed distribution, with the emergence of larger order fulfillment centers run by companies such as Amazon and others. This point is magnified by continued growth in internet based shopping. According to the U.S. Census Bureau, by 2012, electronic shopping accounted for more than 10% of retail spending.

E-Commerce has emerged as a new business model in the last decade, linked with continued growth in internet sales and larger format stores such as Walmart and Home Depot. For large internet retailers—including exclusively online companies like Amazon as well as traditional retailers with an online presence like Wal-Mart—there is a new kind of industrial property: the fulfillment center. Fulfillment centers used to be the reserve of catalog businesses, but have been reborn for the 21st Century. Images of Montgomery Ward's employees roller-skating around the massive distribution center have been replaced by robotics, complicated systems of optical scanning, and miles of conveyor belts. A second factor since 2000 is the continual pressure faced by retailers to keep shipping costs as low as possible. From a trucking standpoint, there is greater emphasis on maximizing the volume and weight that an individual truck can carry. As retailers refine their e-commerce

strategies, order fulfillment is also increasingly happening from existing retails store inventory, rather than warehouses.

Impact of 3PL's

Retailers and manufacturers are also reducing costs by consolidating distribution and using Third Party Logistics Providers (3PL), with a focus on much larger buildings, generally greater than 500,000 square feet (SF) in size. These organizations help companies make decisions on factors such as optimal freight modes, carrier loading & scheduling, management, and outsourcing of some business functions, including customer returns and repairs. Other factors include:

- Fulfillment centers are often called pass-through centers because merchandise does not sit on the shelves for long. This is a logical outgrowth of consumers' demand that items ship within 24 hours, but is also a reflection of "just in time" supply chain management.
- As retailers have started linking their online and in-store businesses, allowing customers to order an item online and pick it up in the store.

Wal-Mart often demands that suppliers deliver straight to their stores. However, this comes with intense pressure to deliver goods reliably and cheaply. Wal-Mart's inventory management system allows suppliers to track sales, inventory, and prices, thereby providing more reliable inventory and lower prices. Toyota demands that suppliers to its automotive assembly plants deliver their goods to a staging area nearby, where the parts can be shuttled to the assembly line precisely when they are needed. Toyota reportedly demands deliveries to be made every two hours and for reliability to be better than 99%, which puts significant pressure on its suppliers. Each of the auto assembly plants, as well as other manufacturing facilities, closely track the distance and on-time delivery of their supplier networks.

Because they specialize and have access to many different shipping modes, technology, and warehouses, 3PL's are often a logical option for companies that want to make the most of the logistics process. In recent years, many firms have outsourced some key business functions to their 3PL's. Many logistics providers, for example, are involved with product-return issues. Toshiba has outsourced all its computer repairs to UPS. Although consumers believe they return their PC's to Toshiba, they actually "return" them to UPS employees, trained by Toshiba, who repair the computers and ship them back to the consumer. For the Border Area, understanding the evolving impact of 3PL's will be important. From interviews and a review of literature, it is apparent that 3PL's are continuing to grow and evolve, increasingly adding value along supply chains, evolving from just distribution of goods to sequencing of deliveries, and partial assembly of goods as well.

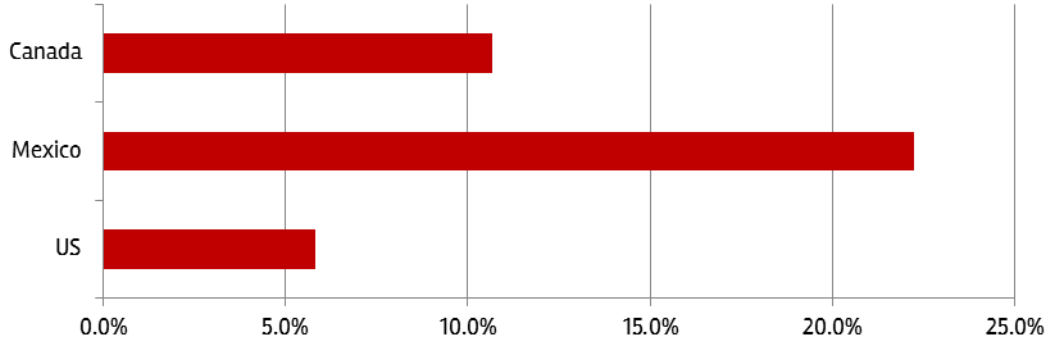
Impact of Containerization

Containerization of freight has dramatically reduced transportation costs. Worldwide, the number of shipping containers (20-foot equivalent units) continued to grow between 2000 and 2010 in spite of the recession. According to the U.S. Army Corps of Engineers, across the continental U.S., the number of shipping containers, otherwise known as twenty-foot equivalent units (or TEU), increased from about 25 million to about 31.5 million, or about 3% annual growth. Looking to the future, companies such as IHS predict that the number of imported TEU's will increase from about 17 million in 2011 to 60 million in 2037.

Containerization of higher value commodities is viewed as one area for specific growth, linked with Asian markets. In 2011, 7% of U.S. grain exports moved by container, according to the U.S. Department of Agriculture, up strongly from 2010. Along with growth in containerization, the size of containers has grown, from the original 20-foot length, to include 40-foot, 45-foot, 48-foot, and 53-foot long containers, the latter of which are most often used for domestic shipping. Identity preserved grains (one driver of containerized demand) are produced with specific export-oriented end-users who are concerned about a confirmed origin and are prepared to pay a premium for container service; soybeans destined for Asian markets are an example.

One outgrowth of containerization is the emergence of larger port facilities across the Western U.S., Canada, and Mexico to handle ever increasing import container shipments. These ports, including LA / Long Beach, Seattle, and Tacoma, have expanded several times to meet demand, while also dealing with regulatory impacts. Since 2009, ports in Mexico and Canada have seen the strongest growth, compared to US West Coast ports, which have been reportedly contending with increased regulation and higher operating costs.

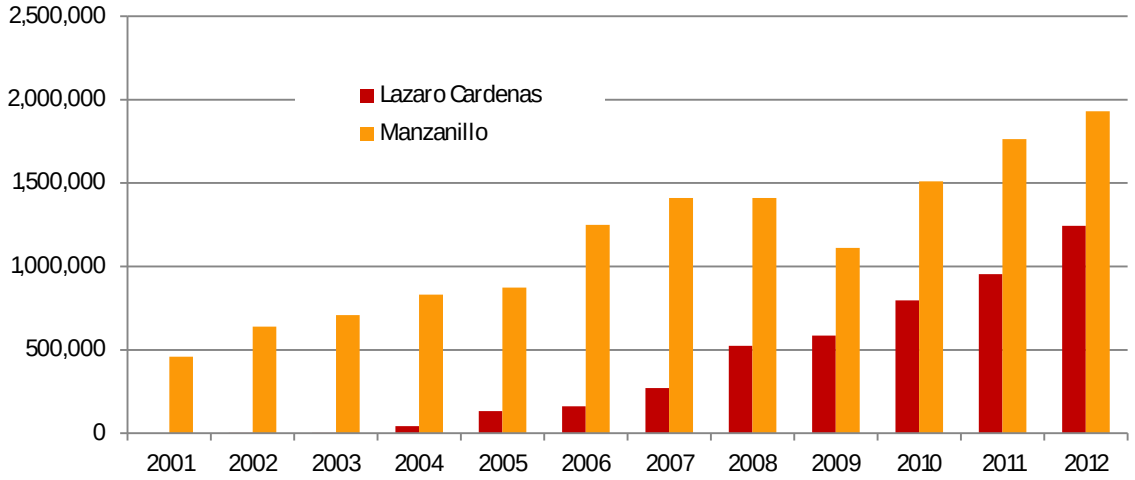
Figure 35 – Annualized Growth, TEU's, Pacific Coast Ports by Country, 2009 to 2012



Source: Collected TEU data by port

The Mexican port of Lazaro Cardenas is expanding its capacity from 160,000 to 2.2 million TEUs, benefiting from a direction connection to Chicago and Kansas City via Kansas City Southern. While TEU growth at Lazaro Cardenas is notable, this port recently was placed under federal supervision by the Mexican Government, owing to concerns about the drug trade. While intermodal growth through Lazaro Cardenas has been significant, reports suggest that a majority of existing traffic through this port is not destined for the US.

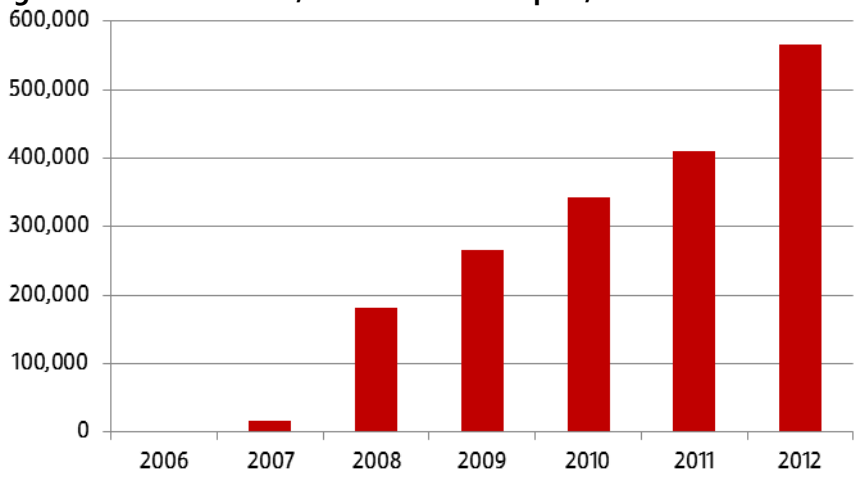
Figure 36 – TEU Growth, Noted Mexican Ports



Source: Collected TEU data by port

The Canadian port of Prince Rupert in British Columbia is viewed in a similar fashion, as it is a shorter distance from North Asian ports. The port enjoys a direct rail connection via CN to Chicago and southward to New Orleans. The port is slated for additional expansion, to reportedly quadruple its capacity to approximately 4 million TEUs, reportedly by 2015.

Figure 37 – TEU Growth, Port of Prince Rupert, Canada



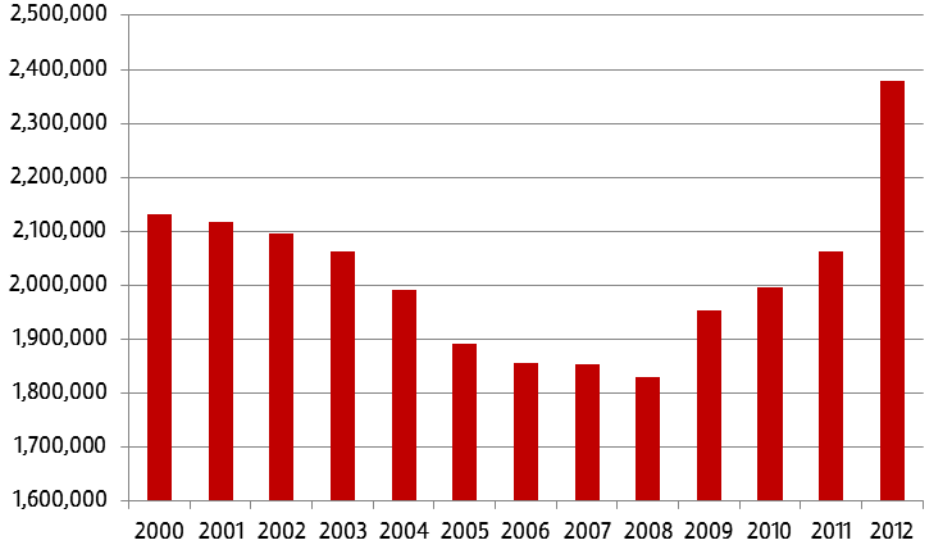
While global supply chains have delivered low costs, pressure and instability has been constant, in part due to natural disasters (flooding in Thailand and Japan in 2011), but also because companies are reacting to increasingly fragmented markets, higher transportation costs, and labor turnover.

Energy Markets

Higher fuel prices will continue to be a concern. While natural gas prices are at 10-year lows today, cost increases for gasoline, jet fuel (kerosene), diesel fuel over the same period have been unsustainable, slowly building momentum for containerization of freight and further growth in intermodal traffic. Since 2007, the average cost of a gallon of jet fuel has reportedly grown at a faster annualized pace (6.1%) than diesel fuel (5.4%). For the private sector, managing month to month price volatility is the primary challenge. For shipping companies, higher diesel fuel prices have added a day to transit times between Asia and the U.S. West Coast, as container ships have reduced speeds to save on fuel costs. For the Midwest, higher fuel prices have specific long-term implications for food production and delivery to destination markets, including removal of waste material.

While higher fuel prices are impacting sectors that rely on gasoline or jet fuel, the same cannot be said for industries that rely on natural gas. Within the past five years, through processes known as hydraulic fracturing (or "fracking"), the U.S. has dramatically increased domestic extraction of natural gas and prices have fallen as a result. New production in shale basins such as the Bakken have resulted in massive increases in natural gas reserves. Fracking has also boosted oil production, with places such as the Bakken going from production of about 36,000 barrels per day in 2008 to more than 400,000 barrels in 2012.

Figure 38 – U.S. Production of Crude Oil (Thousands of Barrels)



Source: Energy Information Administration

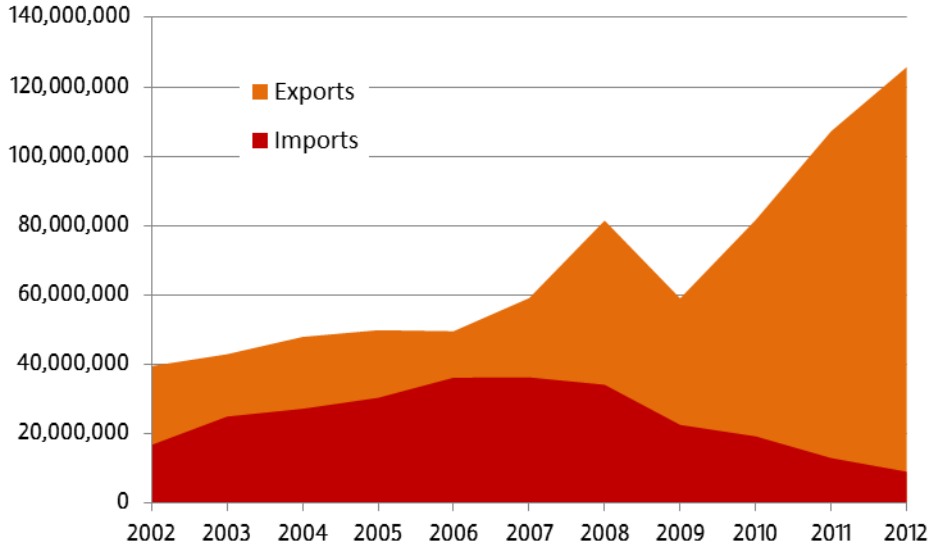
These markets are significantly altering traditional ways that fuels are transported, with railroads seeing significant growth of unit train movement of petrochemicals, even as several pipelines routes are being evaluated, including routes that will directly connect northern oil with Gulf Coast production facilities. Additionally, while the railroad industry has been able to more quickly respond to the growth in the sector than the pipeline industry, over the long-term, there are significant cost advantages to bulk movement by pipeline.

Regulatory Influences

Federal Regulations related to the railroads are also continuing to shift. The industry is currently dealing with implementation of mandates for Positive Train Control (PTC). Equally significant are discussions within the Surface Transportation Board focused on the concept of reciprocal switching for "captive shippers". If implemented, the rule would allow shippers to access other railroads, reducing shipping costs. Air quality regulations will continue to impact transportation sectors. While already twice as efficient as trucks in moving intermodal cargo, EPA air quality requirements will further transform the rail and truck sectors over the next 10 years.

Changing regulations are also impacting the coal sector. New extraction technologies have also increased the supply of natural gas and reduced its cost, which has favorably impacted several industry sectors that rely on natural gas as a feedstock, particularly chemicals. For the coal companies, regulatory changes, combined with a warm winter in 2011/2012 reduced domestic demand for coal by a reported 10% to 15%. Even as domestic consumption has decreased, exports of coal have grown dramatically, as shown. Growth has put pressure on existing export facilities and supply chains, leading to recent, as well as anticipated, infrastructure changes.

Figure 39 – U.S. Coal Imports and Exports, Millions of Short Tons, by Quarter



Source: U.S. Energy Information Administration

Major Infrastructure Projects

The Panama Canal Expansion is scheduled for completion in mid-2015. The project includes a new parallel set of longer locks with a greater draft, and deeper navigational channels at a cost of about $5 billion. The improvements will allow ships significantly larger than the current Panamax standard to pass through the canal, creating potential savings and opening up new markets. According to the U.S. Army Corps of Engineers, these ships currently make up 16% of ship inventory, but now account for about 45% of cargo capacity. For the

Midwest, some experts presume that the expanded canal will gradually benefit agricultural markets, given that a reported 44% of U.S. soybean exports already pass through the Panama Canal, primarily to Asian markets. Port reactions vary:

- Gulf & East Coast ports are contemplating investments to support larger ships, analysis suggests that at present, only a small number of U.S. ports have been dredged to the 50-foot standard required for post-Panamax vessels, including LA/Long Beach, Oakland, and Seattle, as well as the East Coast ports of Norfolk and Baltimore.
- The main channel and container berths at the Port of NY/NJ are being deepened to the 50-foot standard, and the height clearance of the Bayonne Bridge is being increased.
- The Port of New Orleans, including terminals up to Baton Rouge, can only support ships that draw up to 45 feet; the Port of Houston is in a similar situation.

There remains a fair amount of uncertainty where post-Panamax ships will sail as they enter the fleet in larger numbers. A review of industry literature would suggest that owners of these ships are likely to experience considerable pressure to keep them at sea, and to minimize unloading time, suggesting that a smaller number of U.S. ports will see significant increases in activity, which will have ripple effects on land side port facilities, trucking companies, and railroads. For Santa Teresa, the likely impact is that as larger ships use the Ports of LA /Long Beach, UP will find increasing use of the new Santa Teresa yard to manage what will likely be more significant swings in container traffic.

Class I Railroads are reacting to the canal expansion by investing in infrastructure and capacity, either through direct capital outlay or through public private partnerships. Since 1999 BNSF has invested $1.8 billion to increase capacity on its southern TransCon Line, which now provides double-track service from Los Angeles thru New Mexico to Chicago. The last remaining projects (Abo Canyon) are nearing completion. BNSF maintains the largest share of Class 1 miles of rail owned in New Mexico. The BNSF TransCon connects with El Paso along a largely single track route that carries between 4 and 8 trains per day, according to the New Mexico State Rail Plan. Recent news reports suggest that BNSF plans to increase use of this corridor for intermodal cargo from Mexico, with movement of 150,000 containers per year, which would require about 300 trains per year, assuming about 300 containers per train. Other factors include:

- UP is continuing investments in their Sunset Route, which provides direct connections into Dallas, Houston, Memphis, Kansas City, and Chicago. El Paso is a critical node along this high capacity route, which carries a reported 40 to 50 freight trains per day. UP investments are focused on double tracking the entire route, with about 60% completed as of 2013. **The new UP Yard in Santa Teresa is expected to have a significant and positive impact on UP operations along the entire Sunset Route.**
- CSX is developing its $842-million-dollar National Gateway project which will create double-stack container capacity along three rail corridors linking Mid-Atlantic ports to Ohio and Chicago.
- NS recently completed a major upgrade to the Heartland Corridor, which effectively doubled container-train capacity from Norfolk to Chicago. The project involved raising

tunnel clearances on 28 tunnels and removal of 24 overhead obstructions in Virginia, West Virginia, Kentucky and Ohio, at an estimated cost of $191 million, shared between NS and impacted state governments. NS is also involved in the Crescent Corridor project with 13 states focused on 2,500 miles of rail infrastructure. The project, with a reported cost of $2.5 billion, will expand capacity from New Orleans and Memphis, through Birmingham, and Charlotte, to connect with Philadelphia and New York.

Even as Class I Railroads are benefiting from these significant corridor improvements, their local (i.e. metropolitan area) networks and yards continue to be a challenge in terms of operations and capital investment priorities. Railroads are also pushing longer unit trains, typically coal, grain / commodities, refrigerated food, petrochemicals or containers with anywhere from 115 to 140 cars.

For Santa Teresa, these trends have land use implications that link with the reality of trains getting longer, with consequences for older rail yards and lines, resulting in more frequent blocked crossings. For example, Union Pacific recently experimented with an 18,000-foot-long container train from Southern California to Texas. Both BNSF and UP are reportedly building trains that run between 8,000 and 12,000 feet in length for intermodal service, with longer trains on higher-capacity corridors, of which the Sunset Route would qualify.

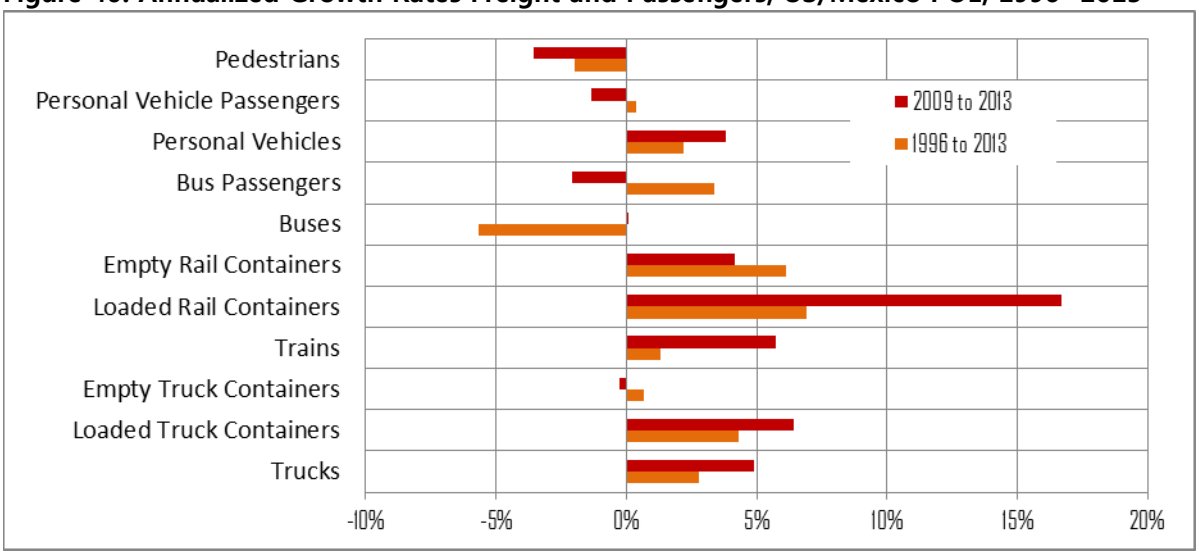
The pace of freight movement by rail through the Border Area is influenced by several infrastructure factors, most of which are distant:

- Operational decisions made by the Port of LA / Long Beach and UP are significant, in terms of how intermodal trains are loaded and blocked, and the capacity of existing rail yards to handle surges in intermodal units.
- Congestion along the UP Sunset Route will be influenced by delays further east, in places such as Dallas/Fort Worth, where Tower 55 has been identified as a major North American rail congestion point.
- In Mexico, growth in rail intermodal is constrained to a certain extent by infrastructure, with several routes having limited tunnel clearances, preventing more efficient double stack service. News reports indicate that, due to broader security concerns, a majority of US destined intermodal traffic has yet to be routed through Mexican ports.
- The Border itself is an ongoing constraint for rail-based, cross-border freight movement. Plans to open a new rail crossing in Brownsville, TX have been impacted by US Customs, with debate over who will fund costs to relocate cargo scanning equipment preventing the bridge from being used, according to news sources.
- The El Paso MPO completed a freight study in 2011 that identified future grade separations and rail capacity improvements; the Santa Teresa Rail Bypass was mentioned, linked with ongoing congestion through Cd. Juarez as well as hours of service constraints that limit the International Crossing to clearing a reported 10 trains per day.

Border Area Transportation Infrastructure Context

The Santa Teresa POE is uniquely positioned, being the only POE in the larger region that does not need to cross over the Rio Grande River. AECOM evaluated broader trends for how freight is moving across the US / Mexico Border, as shown in the following analysis. Shown below are annualized growth rates by type of activity across the border. Notably, growth rates for loaded rail containers and loaded truck containers are strong, with traditional truck semi-trailers growing at a slower rate.

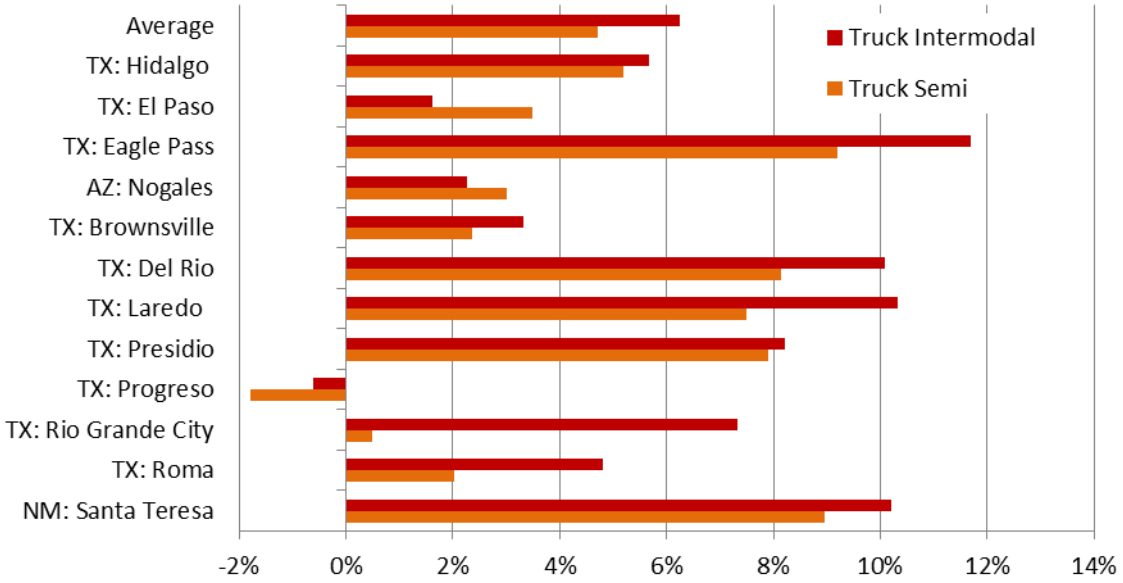
Figure 40. Annualized Growth Rates Freight and Passengers, US/Mexico POE, 1996 -2013*



Note: Excludes California Ports of Entry / Source: USDOT

The following figure below speaks to comparisons for truck intermodal or truck semi-trailer specific higher volume ports of entry along the US Mexican Border, between 2009 and 2013. While POE's such as Presido (TX) and Eagle Pass (TX) have seen the strongest growth rates, Santa Teresa ranks in the top 5 in terms of growth rates since 2009. The majority of POE's are seeing stronger growth in intermodal, compared to traditional semi-trailers. Compared to the other POE's, Santa Teresa, saw movement of about 126,311 trucks (including intermodal) in 2013, ranking it 7th out of 12 higher volume crossings in Texas, New Mexico, and Arizona. The Texas POE's of El Paso and Laredo carry significantly higher truck traffic levels (1.1 million and 3.1 million, respectively).

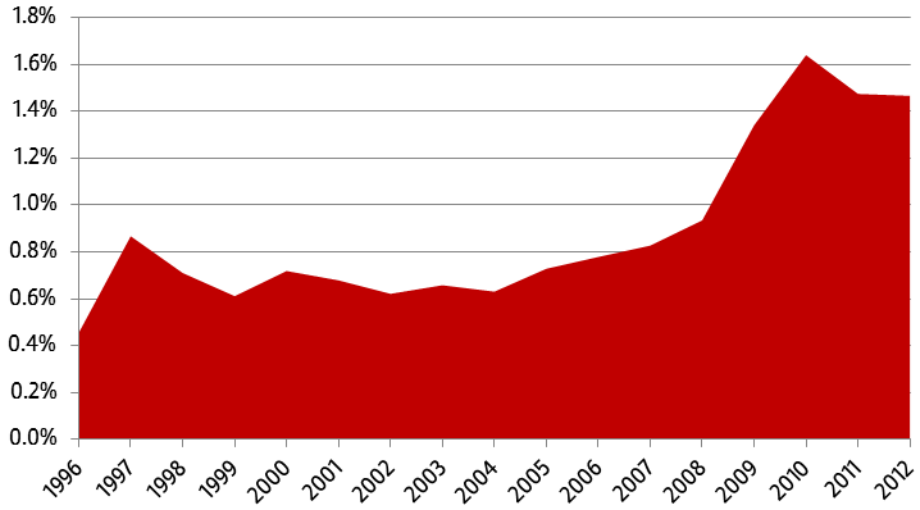
Figure 41. Annualized Growth Rates, US Ports of Entry, Truck Semi / Intermodal, 2009 to 2013*



Note: Excluding California
Source: USDOT

As shown below, Santa Teresa currently represents about 1.5% of all truck based freight movement across US / Mexico POE's, excluding California. Rates of growth have been particularly strong since 2006, with expectations for additional growth tied in with plans by firms such as Foxconn to expand operations.

Figure 42. Santa Teresa Market Share, % of US POE Truck / Container Movement*



Note: Excluding California
Source: USDOT Transportation Statistics

The following table highlights for trucks and loaded and empty truck containers for El Paso and Santa Teresa over the noted period. What is significant is that both POE's have grown, with El Paso at a slower but still significant rate (3.5% for trucks). Growth rates in Santa

Teresa are stronger, particularly on the intermodal side, with a 7.7% growth rate for containers between 2000 and 2013.

Figure 43. Comparison of Truck and Loaded Container Movements, El Paso/Santa Teresa POE's

Year	Trucks		Loaded / Empty Truck Containers	
	El Paso	Santa Teresa	El Paso	Santa Teresa
2000	720,406	31,946	688,224	30,790
2001	660,583	29,820	667,155	28,509
2002	705,199	27,951	714,931	27,087
2003	659,614	28,674	665,422	27,459
2004	719,545	29,185	717,245	27,668
2005	740,654	34,076	734,851	34,054
2006	744,951	36,905	757,795	37,056
2007	782,936	40,267	759,319	40,255
2008	758,856	45,856	752,574	44,953
2009	644,272	57,410	639,896	57,513
2010	710,363	78,879	689,305	76,219
2011	714,699	71,362	630,469	71,222
2012	724,964	80,744	735,018	68,713
2013	738,914	80,944	652,660	77,378
CAGR – 2000 to 2012	0.2%	7.4%	-0.4%	7.3%
CAGR - 2000 to 2012	3.5%	9%	0.5%	7.7%

Source: USDOT Transportation Statistics

Reflecting the apparent growth potential for truck-based freight movement through the region, the following maps highlight elements that are important to the study. The first map evaluates average truck speeds based on GPS data for trucks on I-10 west and east bound. The maps reinforce the realty of significantly lower truck speeds to the east of El Paso compared to the west of El Paso, and point to the reality that a majority of truck-base freight is moving eastward into Texas, rather than westward through New Mexico. The second map speaks more precisely to the Border Area, looking at ownership and maintenance responsibilities for roads around the Santa Teresa POE.

Freight Performance Metrics

AECOM used the US DOT Freight Analysis Framework to evaluate the movement of goods that originate elsewhere around the US and move to the EL Paso MSA, or goods that start in El Paso and are destined for other regions of the US. The Freight Analysis Framework was developed at the Center for Transportation Analysis as a tool to better evaluate changes in the flow of commodities by mode and origin/destination across the US over time.

Figure 44. Border Area Average Truck Speeds, 2012

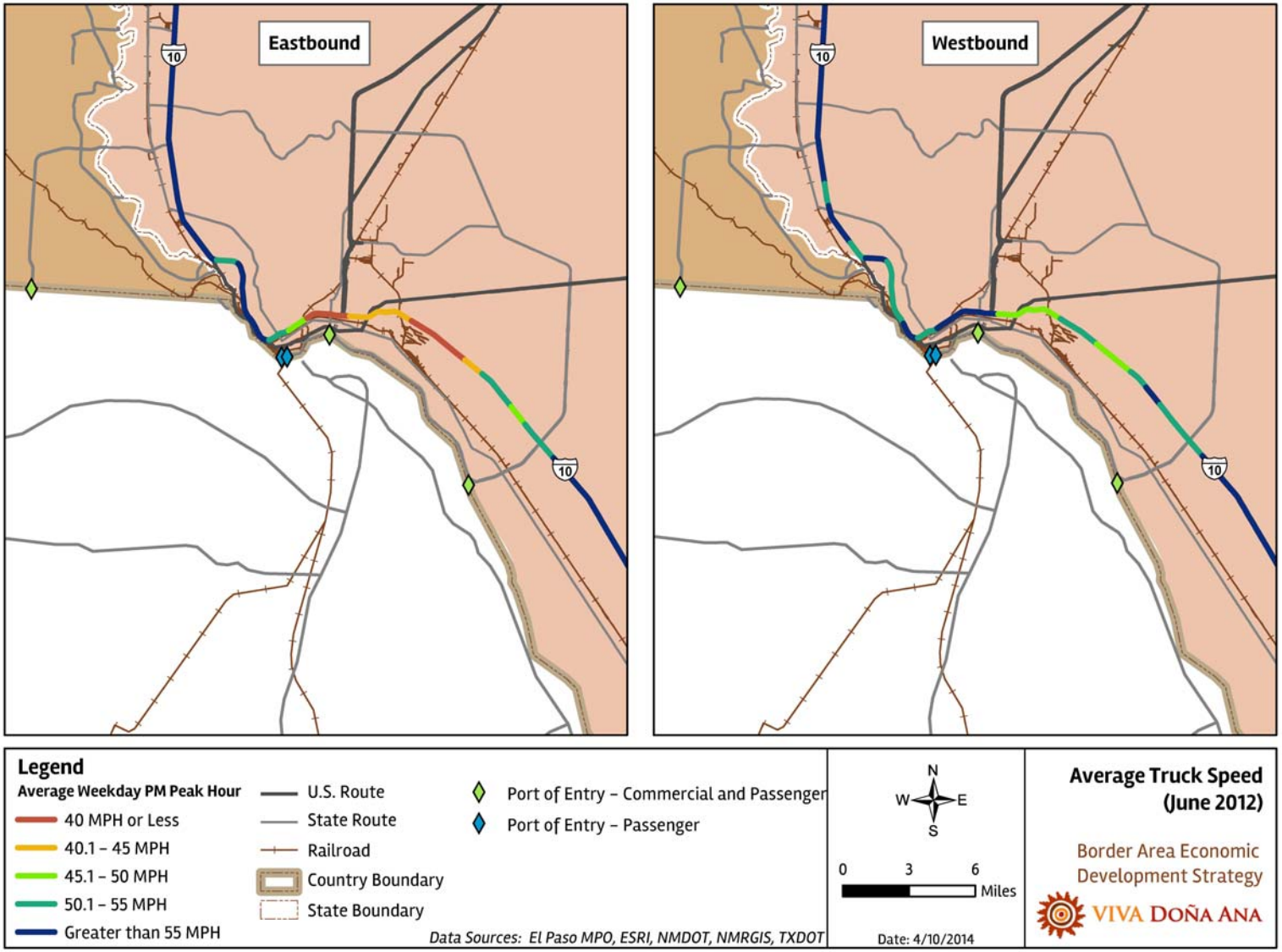
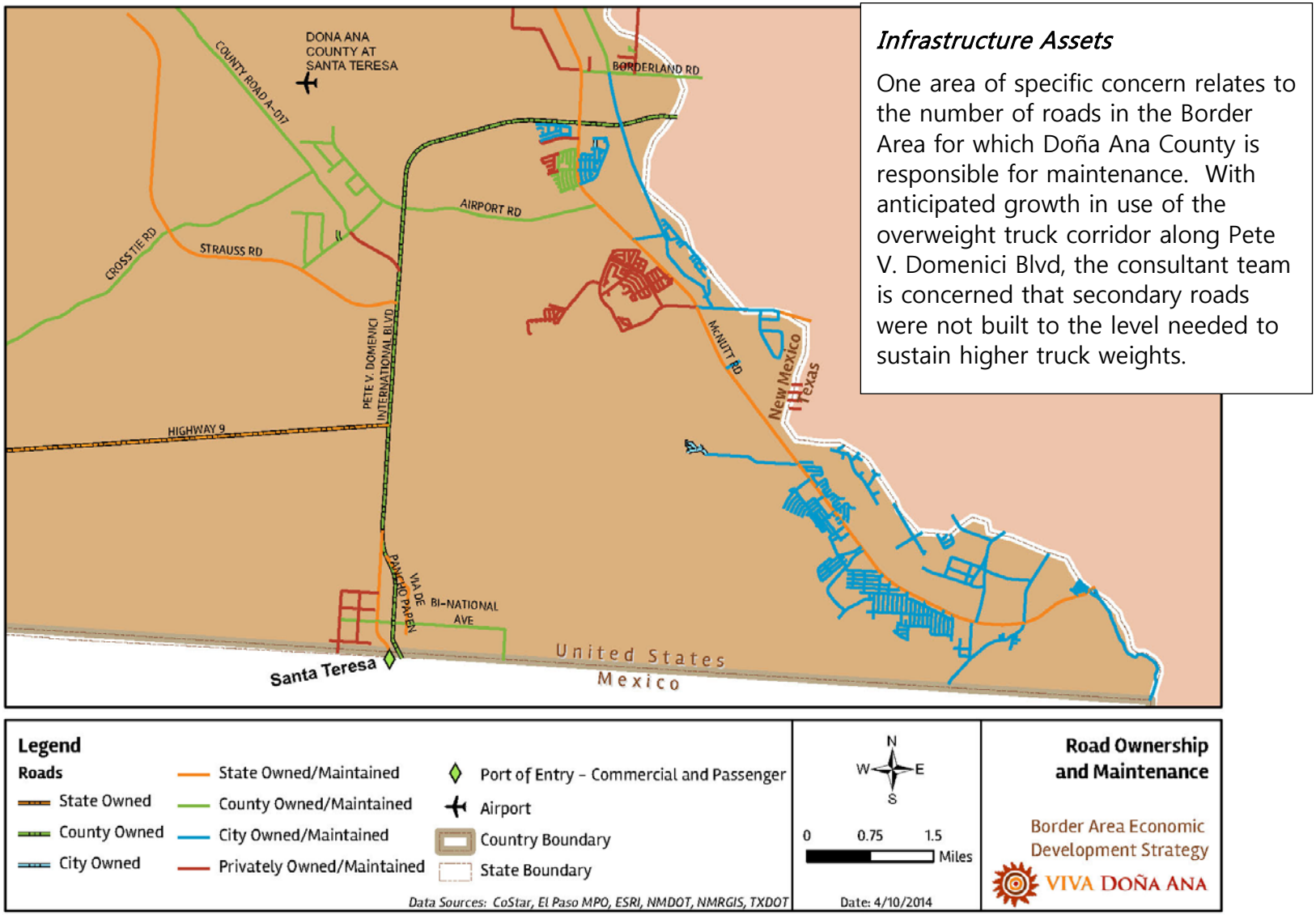


Figure 45. Border Area Road Infrastructure, Ownership and Maintenance, 2013



Infrastructure Assets

One area of specific concern relates to the number of roads in the Border Area for which Doña Ana County is responsible for maintenance. With anticipated growth in use of the overweight truck corridor along Pete V. Domenici Blvd, the consultant team is concerned that secondary roads were not built to the level needed to sustain higher truck weights.

As the analysis is based on the MSA definition, it does not include freight moving through New Mexico. The analysis considers several modes, including:

- Truck: Includes private and for-hire truck as well as private trucks are owned/operated by shippers
- Rail: Any common carrier or private railroad.
- Air (includes truck-air): Includes shipments typically weighing more than 100 pounds that move by air or a combination of truck and air in commercial or private aircraft.
- Multiple Modes and Mail: Includes shipments by multiple modes and by parcel delivery services, U.S. Postal Service, or couriers. This category is not limited to containerized or trailer-on-flatcar shipments, which typically weighing 100 pounds or less are classified with Multiple Modes & Mail.
- Pipeline: Includes flows from offshore wells to land, which are counted as water moves by the U.S. Army Corps of Engineers.
- Other and Unknown: Includes flyaway aircraft, vessels, and vehicles moving under their own power from the manufacturer to a customer and not carrying any freight, unknown, and miscellaneous other modes of transport.

The following analysis highlights a breakdown of the tonnage of freight by mode for 2011 for El Paso (in thousands of tons). The figure below indicates that trucks represent about 56% of the tonnage, with pipelines representing the second largest segment.

Figure 46. Summary of Origin and Destination Freight by Tonnage and Mode, 2011

DMS_MODE	Ktons: Going to El Paso	Ktons: Going From El Paso	Total OD Tonnage	% of Total
Truck	21,775.93	19,071.20	40,847.13	56.6%
Rail	6,644.47	3,549.57	10,194.04	14.1%
Air (include truck-air)	7.2	3.43	10.63	0.0%
Multiple modes & mail	613.02	438.55	1,051.57	1.5%
Pipeline	17,640.28	2,051.66	19,691.94	27.3%
Other and unknown	152.95	156.64	309.59	0.4%
Total	46,833.85	25,271.05	72,104.90	100.0%

Source: Freight Analysis Framework

The following figures evaluate rail and truck shipments based on origin and destination states for El Paso. The analysis looks at the tonnage flowing from or to El Paso, for 2011. For rail freight, Iowa is the top origin, followed by Kansas and Illinois, with agricultural products and intermodal activity being likely drivers. For truck shipments, Texas is the top origin state, followed by California as a distant second. In evaluating all of the tables, the key takeaway is that majority of US markets served by El Paso are northeast and southeast.

Figure 47. Top Origin States for Freight Moved by Rail to El Paso, Tonnage, 2011

Rank	Origin	Segment	Sector	Tonnage
1	Iowa	Rail	Northeast	1,285,817
2	Kansas	Rail	Northeast	752,613
3	Illinois	Rail	Northeast	729,579
4	Texas	Rail	Southeast	704,460
5	Louisiana	Rail	Southeast	433,375
6	Nebraska	Rail	Northeast	429,468
7	North Dakota	Rail	Northeast	323,908
8	Alabama	Rail	Southeast	295,907
9	Oklahoma	Rail	Northeast	293,677
10	Utah	Rail	West	272,969
11	Missouri	Rail	Northeast	191,919
12	Idaho	Rail	West	139,512
13	California	Rail	West	119,626
14	Ohio	Rail	Northeast	101,650
15	Pennsylvania	Rail	Northeast	72,897
16	Arkansas	Rail	Southeast	56,522
17	Minnesota	Rail	Northeast	44,396
18	Washington	Rail	West	44,040
19	Massachusetts	Rail	Northeast	35,611
20	Oregon	Rail	West	35,518

Source: US DOT Freight Analysis Framework

Figure 48. Top Origin States for Freight Moved by Truck to El Paso, Tonnage, 2011

Rank	Origin	Segment	Sector	Tonnage
1	Texas	Truck	Southeast	16,719,838
2	California	Truck	West	542,739
3	Arizona	Truck	West	521,320
4	Kentucky	Truck	Southeast	174,680
5	Michigan	Truck	Northeast	171,075
6	Colorado	Truck	West	159,779
7	Illinois	Truck	Northeast	154,623
8	Indiana	Truck	Northeast	142,566
9	Oklahoma	Truck	Northeast	132,362
10	Pennsylvania	Truck	Northeast	106,170
11	Ohio	Truck	Northeast	104,455
12	North Carolina	Truck	Southeast	81,798
13	Tennessee	Truck	Southeast	79,318
14	Missouri	Truck	Northeast	68,328

Rank	Origin	Segment	Sector	Tonnage
15	New York	Truck	Northeast	59,957
16	Louisiana	Truck	Southeast	59,811
17	Wisconsin	Truck	Northeast	58,921
18	Georgia	Truck	Southeast	52,700
19	South Carolina	Truck	Southeast	51,270
20	Florida	Truck	Southeast	46,602

Source: US DOT Freight Analysis Framework

Figure 49. Top Destination States for Freight by Rail From El Paso, Tonnage, 2011

Rank	Destination	Segment	Sector	Tonnage
1	Illinois	Rail	Northeast	1,982,029
2	Texas	Rail	Southeast	799,822
3	Michigan	Rail	Northeast	227,687
4	California	Rail	West	218,117
5	Arizona	Rail	West	120,252
6	Colorado	Rail	West	25,228
7	Kansas	Rail	Northeast	23,433
8	Maryland	Rail	Northeast	14,891
9	Minnesota	Rail	Northeast	13,556
10	Oregon	Rail	West	9,576
11	Kentucky	Rail	Southeast	7,385
12	North Dakota	Rail	Northeast	4,578
13	Washington	Rail	West	3,286
14	South Dakota	Rail	Northeast	2,648
15	Montana	Rail	West	2,617
16	Alabama	Rail	Southeast	2,115
17	Connecticut	Rail	Northeast	2,042
18	Arkansas	Rail	Southeast	1,964
19	New York	Rail	Northeast	1,855
20	Pennsylvania	Rail	Northeast	1,426

Source: US DOT Freight Analysis Framework

Figure 50. Top 20 Destination States for Freight, Truck From El Paso, Tonnage, 2011

Rank	Origin	Segment	Sector	Tonnage
1	Texas	Truck	southeast	14,061,370
2	California	Truck	west	518,756
3	Michigan	Truck	northeast	479,525
4	Ohio	Truck	northeast	311,511

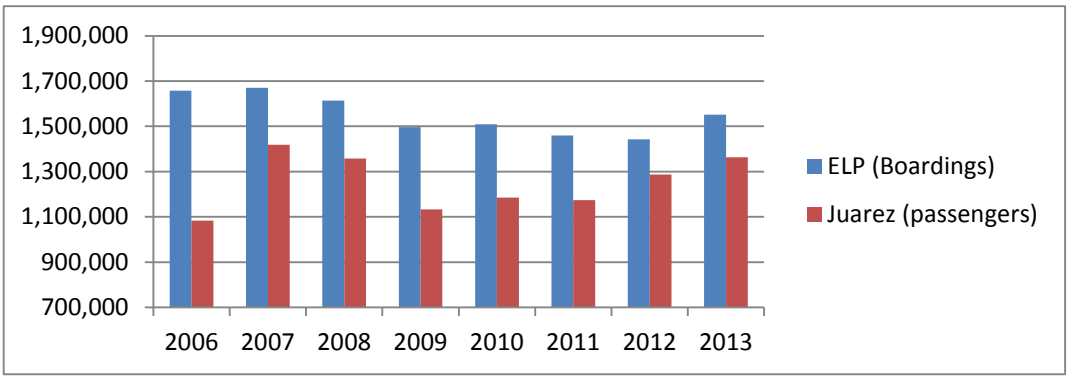
5	New York	Truck	northeast	244,293
6	Arizona	Truck	west	217,043
7	Illinois	Truck	northeast	201,757
8	Missouri	Truck	northeast	174,090
9	Indiana	Truck	northeast	137,194
10	Kentucky	Truck	southeast	124,515
11	Wisconsin	Truck	northeast	111,103
12	Pennsylvania	Truck	northeast	108,868
13	North Carolina	Truck	southeast	106,806
14	Minnesota	Truck	northeast	92,529
15	Tennessee	Truck	southeast	92,190
16	Florida	Truck	southeast	65,610
17	New Jersey	Truck	northeast	61,658
18	Connecticut	Truck	northeast	52,892
19	South Carolina	Truck	southeast	52,132
20	Oregon	Truck	west	50,587

Source: US DOT Freight Analysis Framework

Aviation Context

Trends regarding air travel through the Paso del Norte were evaluated, as shown in the figure below. Of note, both airports have seen an increase in passenger activity since 2010, with Juarez seeing the strongest increase (about 178,300 additional passengers). Trends for El Paso show recovery in air travel, but at a level that remains below 2006 passenger levels.

Figure 51. Commercial Passenger Trends, El Paso / Juarez

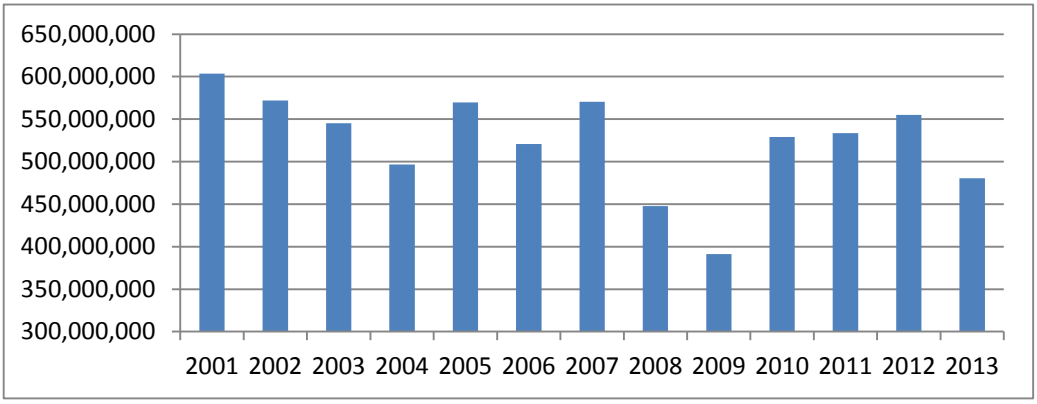


Source: FAA / SCT

The figure below summarizes air cargo activity at ELP (El Paso International) for the noted years. While overall landed weight has increased steadily from 2009 levels, current (2013) landed weight remains below 2001 peak levels. As most cargo travels in commercial planes, rather than dedicated freighters, reduced passenger levels likely correlates with lower cargo

activity. As well, nationally, air cargo has endured several marginal years, in part because higher jet fuel prices have encouraged firms such as Fed ex and UPS to rely on expedited ground service for a share of freight that used to move by air.

Figure 52. Air Cargo Trends, ELP, Landed Weight (Lbs)



Source: FAA

Real Estate Context

As part of the BAEDS, AECOM also reviewed local real estate trends, covering data for industrial, retail, and residential markets. Information is presented to place the Border Area in a broader regional context, and to frame growth opportunities.

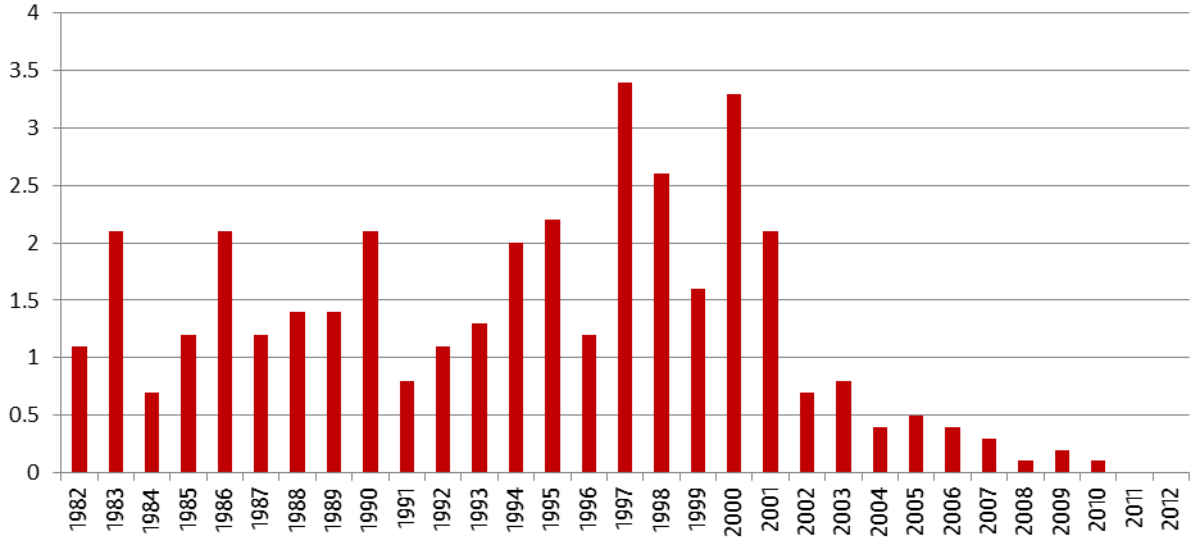
Industrial Real Estate Context

The figures below summarize performance metrics for local industrial markets in El Paso, as well as specific analysis of real estate market conditions around specific Ports of Entry. Beginning with the Industrial market in El Paso, COSTAR reported the following metrics as of the 3rd quarter of 2013:

- Vacancy Rate 11.3%
- Rent Rates: $3.94 per square foot

According to Costar, the El Paso County market has seen a general decrease in space construction over the past 10 years in comparison to historic trends.

Figure 53. Historical Industrial Construction, In Millions of Square Feet, El Paso County



Source: COSTAR

More precise metrics were evaluated for industrial space proximate to each POE. The table reinforces a clear premium in performance for space located close to the border.

Figure 54. Industrial Property Summary, Noted Ports of Entry, Q3 2013

Metric	Santa Teresa POE	Paso Del Norte POE (1-mile buffer)	Bridge of the Americas POE (1-mile buffer)	Ysleta POE (1-mile buffer)
Total Buildings	15	26	43	17
Total RBA (Sq Ft)	2,021,950	701,230	1,154,079	1,021,492
Average RBA (Sq Ft)	134,796	26,970	26,839	60,087
Total Vacant (Sq Ft)	272,439	69,800	201,500	8,360
Total Percent Vacant	13.5%	9.95%	17.46%	0.82%
Average Vacancy Rate	7.1%	6.21%	8.35%	2.71%
Average Year of Construction	1999	1954	1969	1995

Doña Ana County - Selection = Industrial Properties from CoStar Q3 2013 within 2-miles of Doña Ana County airport and within 1-mile of Santa Teresa point of entry.

Source: COSTAR

Figure 55. Industrial Building Locations, Greater El Paso / BAEDS Area

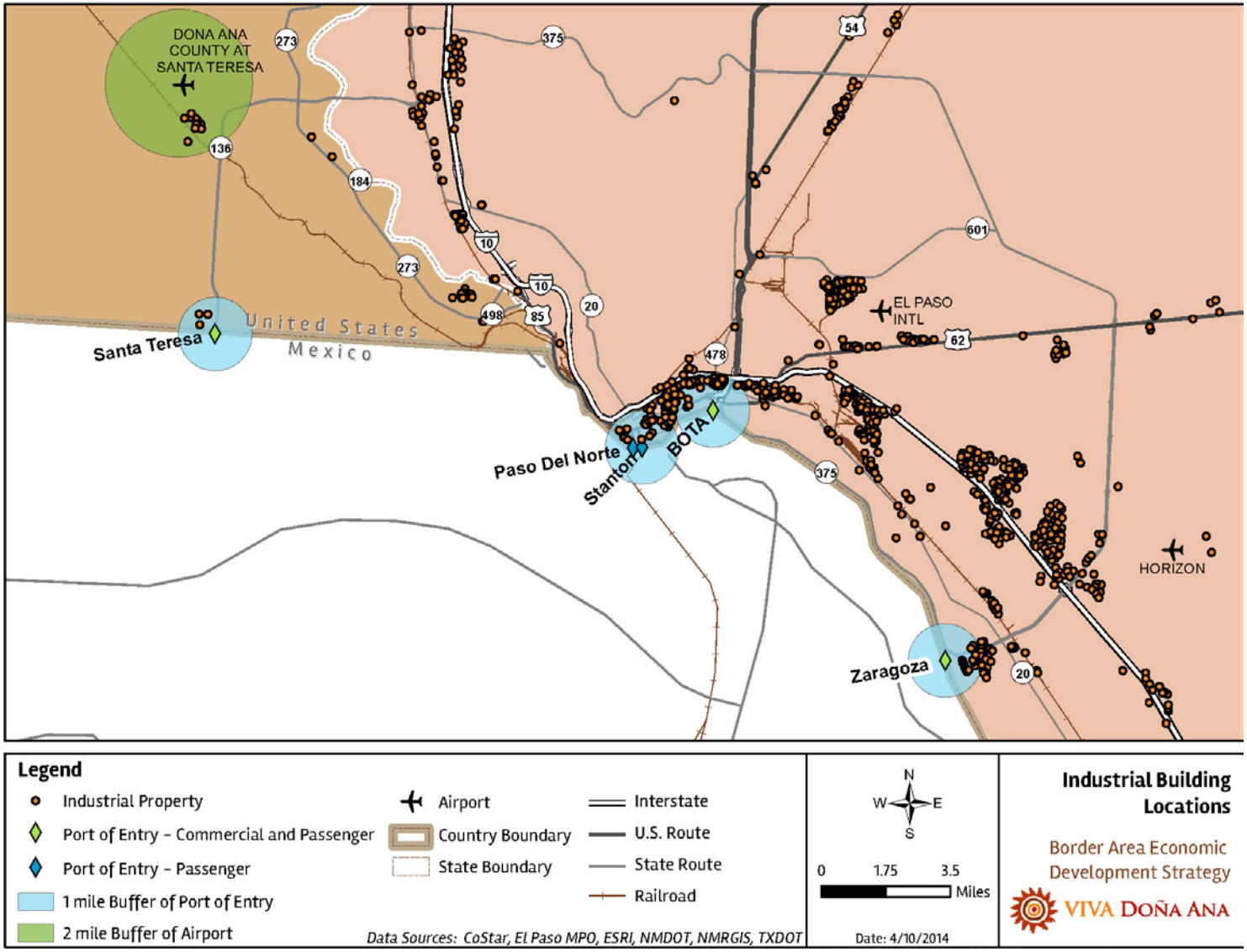


Figure 56. Industrial Building Locations, By Size of Buildings, Greater El Paso / BAEDS Area

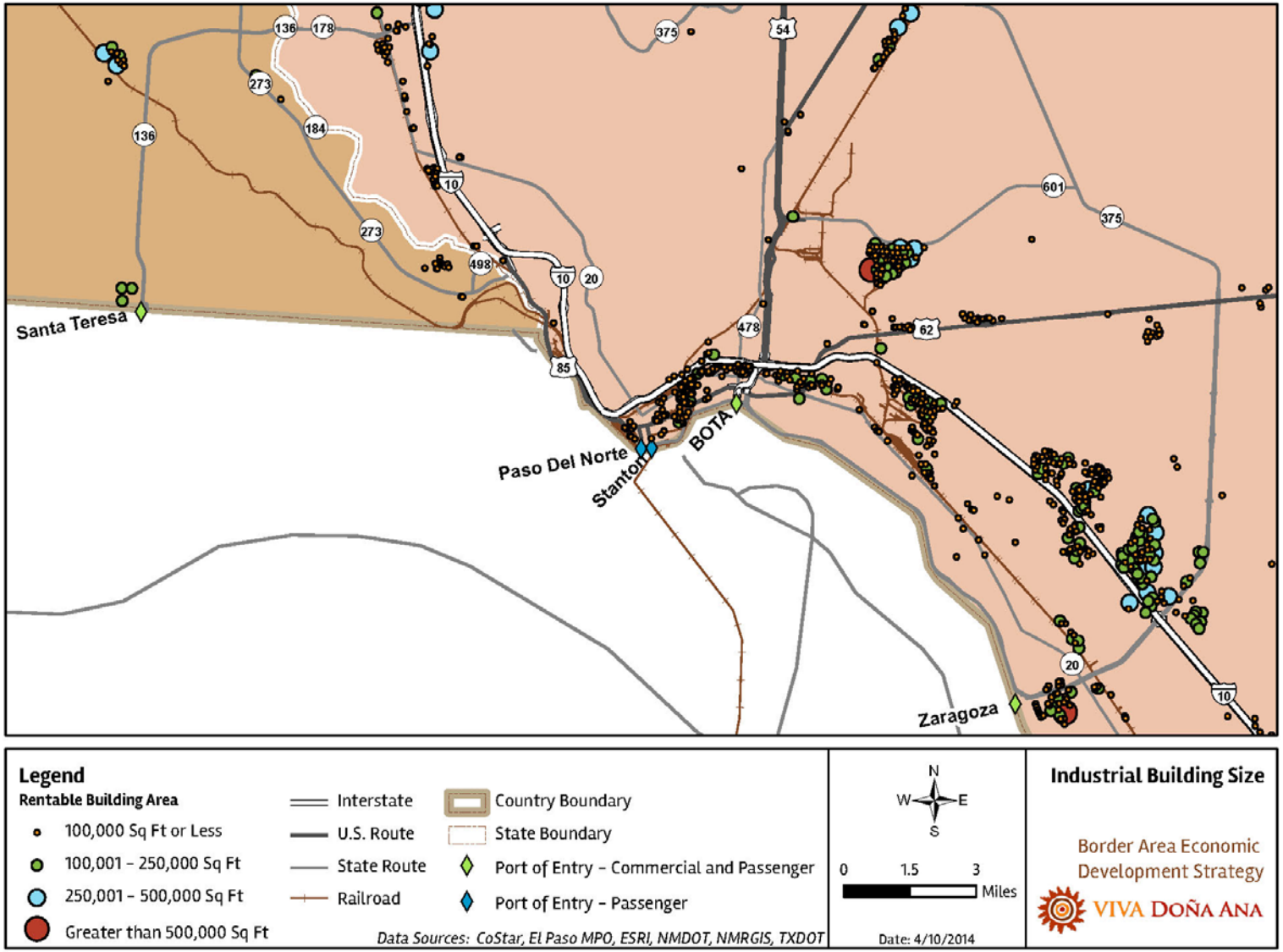
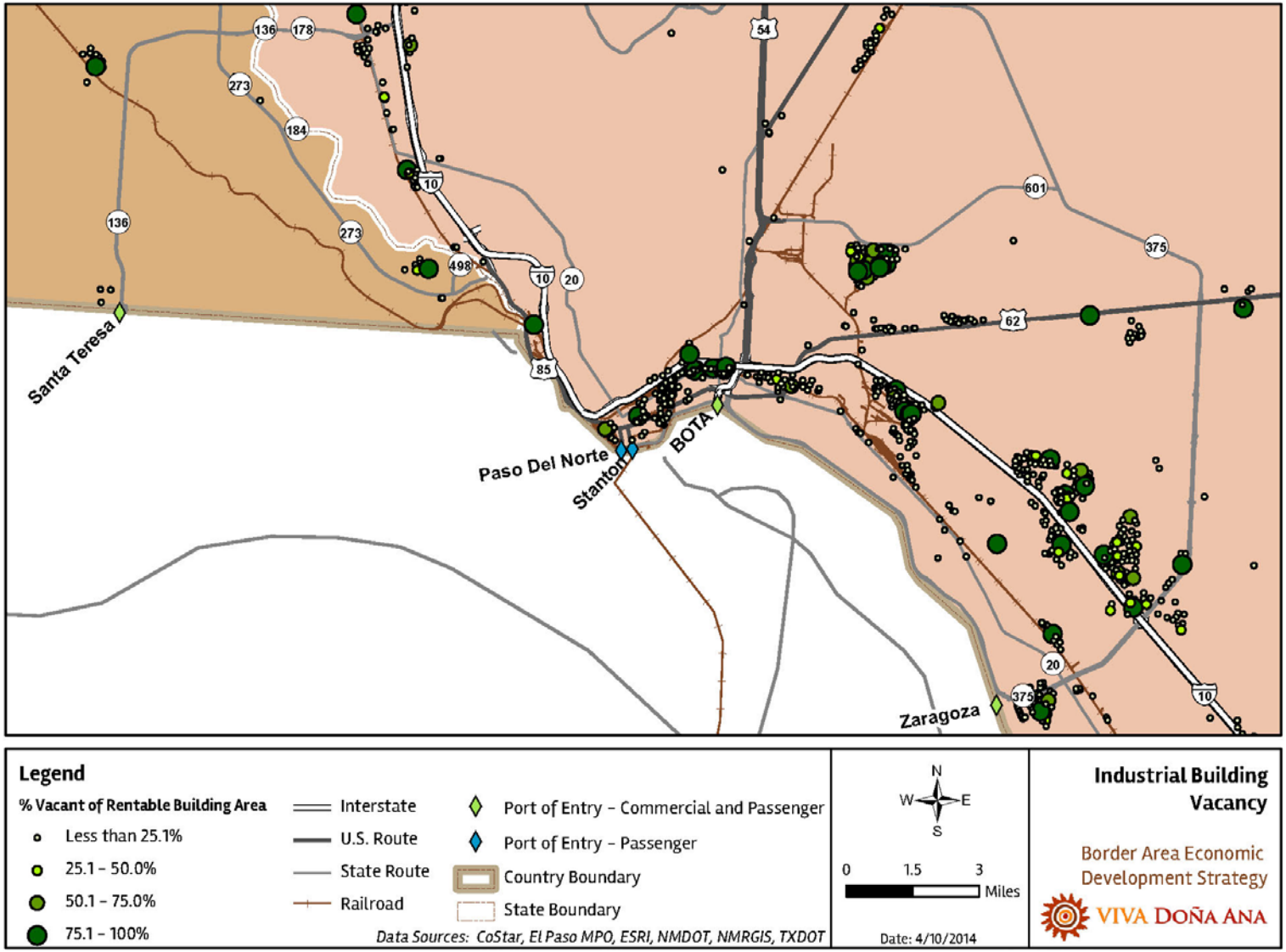


Figure 57. Industrial Building Locations, By Vacancy, Greater El Paso / BAEDS Area



Residential Real Estate Context

The following figure summarizes trends regarding housing units for the Border Area compared to Doña Ana and El Paso Counties. Although the number of housing units grew across all areas, the number of housing units in Doña Ana County and the Border Area grew slightly faster than El Paso County between 2000 and 2011. On an annualized basis, the growth rate in housing units for the Border Area was slightly slower than Doña Ana County, but slightly faster than El Paso County.

Figure 58. Housing Units and Housing Unit Change, 2000 and 2011

Border Area				Doña Ana County				El Paso County			
2000	2011	Change	CAGR	2000	2011	Change	CAGR	2000	2011	Change	CAGR
4,624	5,689	1,065	1.9%	65,210	80,715	15,505	2.0%	224,447	267,068	42,621	1.6%

*Border Area is Santa Teresa CDP and Sunland Park City

Source: U.S. Census Bureau

Reflective of the above figure, the Border Area's share of regional housing units did not change appreciably between 2000 and 2011, though Doña Ana County increased its share of regional housing by 0.7% while El Paso lost 0.7%.

Figure 59. Housing Unit Distribution, 2000 and 2001

Border Area			Doña Ana County			El Paso County		
% of Total		Change	% of Total		Change	% of Total		Change
2000	2011		2000	2011		2000	2011	
1.6%	1.6%	0.0%	22.2%	22.8%	0.7%	76.3%	75.6%	-0.7%

Source: U.S. Census Bureau

*Border Area is Santa Teresa CDP and Sunland Park City.

Figures on the following page highlight additional details regarding residential markets. The Border Area reduced its share of regional vacant housing units between 2000 to 2011 while it also an increased its share of the region's renter occupied housing units. While Doña Ana County increased its share of both housing tenure types and vacant housing units, the largest increase occurred in its share of the region's renter-occupied units. El Paso County's share of the region's owner-occupied and vacant units was nearly unchanged over this period, while its share of renters decreased. Median values for owner-occupied housing units increased more in Doña Ana and El Paso Counties than in the Border Area. Average household size did increase in Santa Teresa. In Sunland Park, household size decreased. These figures also indicate that median rent in the region is highest at $713 in Santa Teresa, with Doña Ana County and El Paso County above $600. Despite Sunland Park's relatively low levels of rent, it registered the greatest increase in rent over the period. Rents in El Paso and Doña Ana increased more than 3%.

Retail and Office Real Estate Context

The following figures summarize reported office and retail market statistics for the Border Area relative to El Paso County, as reported by Costar for the fall of 2013. The data reinforces the currently small share of retail and office space in the Border Area, with limited inventory (188,000 SF retail and 362,000 SF Office) and modest vacancy, particularly on the Retail side, where a reported 1% vacancy level would point to apparent demand.

From a retail standpoint, in the context of significant population growth in the Border Area (with over 1000 housing units added from 2000 to 2011), growth in retail space is a logical expectation, presuming that infrastructure is in place to allow growth to occur. Recent announcements regarding the U.S. Department of Homeland Security decision to allow travel 55 miles into New Mexico for personal purposes without having first to stop at the border and fill out a paper I-94 visa application is expected to be significant.

Figure 60. Retail and Office Market Comparisons, El Paso County and Border Area

Market	Office			Retail		
	Total Inventory (SF)	Total Vacancy (SF)	Average Rent ($)	Total Inventory (SF)	Total Vacancy (SF)	Average Rent ($)
El Paso County	21,443,115	1,683,685	$16.03	45,409,522	2,393,917	$12.24
Border Area*	362,615	26,279	$11.24	188,892	1,978	$12.00

*Q1 2013 Retail Average Rent is latest available.

Total Inventory is RBA; Office Average Rent is FS; Retail Average Rent is NNN

Source: CoStar December 2013

Figure 61. Border Area Historic Vacancy Rates

Year	Office	Retail
2009	5.3%	0.0%
2010	2.3%	0.0%
2011	0.6%	1.7%
2012	2.2%	1.0%
2013*	7.2%	1.0%

* Up to quarter to date.

Source: CoStar December 2013.

Figure 62. Tenure and Vacancy of Housing Units, 2000 and 2011

	Total		Border Area					Doña Ana County					El Paso County				
			2000		2011			2000		2011			2000		2011		
	2000	2011	#	% of Total	#	% of Total	Change	#	% of Total	#	% of Total	Change	#	% of Total	#	% of Total	Change
Owner Occupied	176,965	208,703	3,133	1.8%	3,447	1.7%	314	40,208	22.7%	48,057	23.0%	7,849	133,624	75.5%	157,199	75.3%	23,575
Renter Occupied	96,920	116,704	1,174	1.2%	1,907	1.6%	733	19,348	20.0%	24,691	21.2%	5,343	76,398	78.8%	90,106	77.2%	13,708
Vacant	20,396	28,065	317	1.6%	335	1.2%	18	5,654	27.7%	7,967	28.4%	2,313	14,425	70.7%	19,763	70.4%	5,338

Source: U.S. Census Bureau

Figure 63. Characteristics of Owner-Occupied Housing Units

	Santa Teresa			Sunland Park			Doña Ana			El Paso		
	2000	2011	CAGR	2000	2011	CAGR	2000	2011	CAGR	2000	2011	CAGR
Average HH Size	2.83	3.13	0.9%	4.30	3.69	-1.4%	2.99	2.82	-0.5%	3.34	3.27	-0.2%
Median Value	$114,400	$158,100	3.0%	$58,700	$82,100	3.1%	$90,900	$141,900	4.1%	$69,600	$108,800	4.1%
Median Monthly Cost	$934	$1,068	1.2%	$573	$887	4.1%	$833	$1,127	2.8%	$798	$1,104	3.0%
Monthly Cost/Person	$330	$341	0.3%	$133	$240	5.5%	$279	$400	3.3%	$239	$338	3.2%

Source: U.S. Census Bureau

Figure 64. Characteristics of Renter-Occupied Units

	Santa Teresa				Sunland Park				Doña Ana				El Paso			
	2000	2011	Change	CAGR	2000	2011	Change	CAGR	2000	2011	Change	CAGR	2000	2011	Change	CAGR
Average HH Size	2.33	2.83	0.5	1.8%	3.25	3.62	0.4	1.0%	2.56	2.63	0.1	0.2%	2.89	2.88	-0.01	0.0%
Median Rent	$754	$713	$(41)	-0.5%	$334	$518	$184	4.1%	$445	$657	$212	3.6%	$468	$660	$192	3.2%
Monthly Cost/Person	$324	$252	$(72)	-2.2%	$103	$143	$40	3.1%	$174	$250	$76	3.4%	$162	$229	$67	3.2%

Source: U.S. Census Bureau

The figure below evaluates changes in retail sales growth for El Paso and Doña Ana Counties. The figure shows that annual growth rates in retail sales have been higher in Doña Ana compared to El Paso for a majority of the last 20 years. Also reinforced are the apparent slowdown in retail sales growth since 2011, along with the depth of decreases seen in retail sales for both counties from 2008 and 2009 during the Great Recession.

The analysis also suggests that recent policy changes will have positive implications for retail in the Border Area. In 2013, New Mexico became competitive with the state of Arizona when the U.S. Department of Homeland Security extended the travel zone for Mexican shoppers from 25 to 55 miles north of the border. In Arizona, a similar travel extension was granted in 1999, allowing Mexican citizens access to retail shopping in Tucson. In New Mexico, the new rule allows Mexican nationals with secure visas to travel uninterrupted to urban centers in southern New Mexico that host greater retail activity than that found immediately at the border. Implementation of the rule is expected to benefit the New Mexico cities of Las Cruces, Deming and Lordsburg and their home counties of Doña Ana, Luna and Hidalgo. The travel extension is being promoted in Mexico through a $60,000 marketing campaign funded by the New Mexico Department of Tourism.

While it is likely to take several years to identify the economic impact of the new travel rule, other U.S. border states have documented significant benefits from Mexican retail trade. According to the U.S. General Accounting Office, retailers in Texas benefit annually from an estimated $15 billion in sales to Mexican shoppers. In McAllen, Texas, as one example, 35%, or about $700 million worth, of retail sales are attributed to Mexican nationals. Residents from Tijuana make 1.5 million trips per month to the San Diego area to shop. In El Paso, shoppers from Cd. Juárez account for more than 20% of retail sales.[12] A study conducted by New Mexico State University in Las Cruces estimates the new rule could result in $28 to $56 million annually in new spending by Mexican nationals and the addition of 170-340 local jobs. The NMSU study notes the potential for increases in wholesale and retail activity and a rise in spending on hotels and restaurants.[13]

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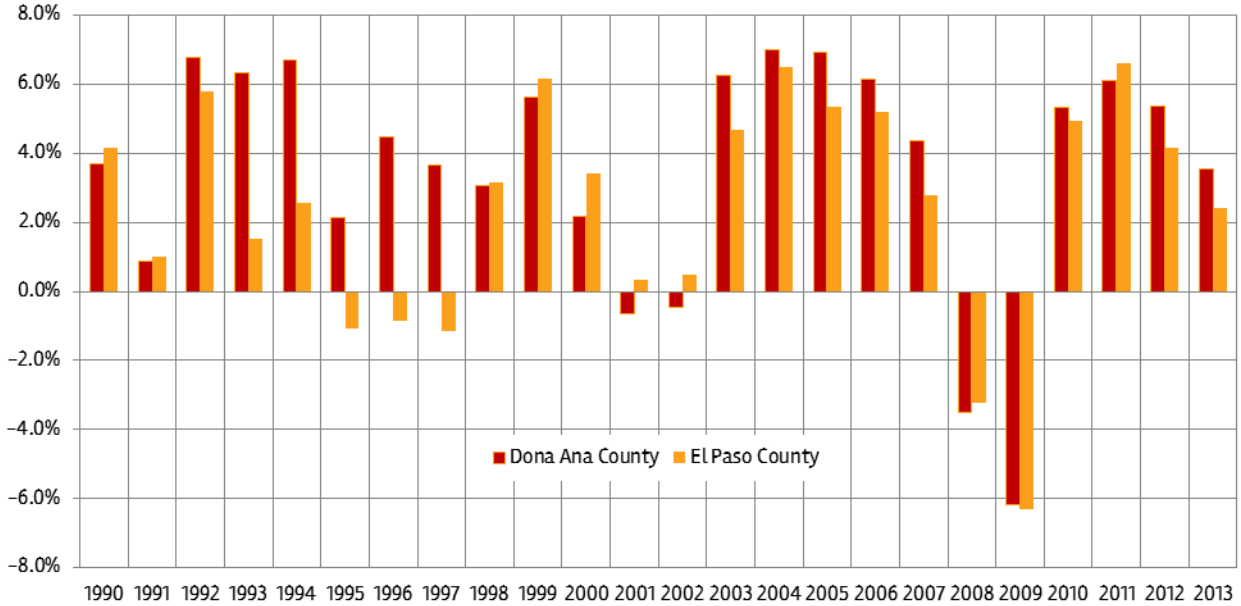
[12]Cañas, Jesús *et al.* "The Impact of the Maquiladora Industry on U.S. Border Cities," Federal Reserve Bank of Dallas, Working Paper 1107. May 17, 2011.

[13] Robinson-Avila, Kevin. "Border zone extension should aid economy," a press release of the Arrowhead Center, New Mexico State University. July 16, 2013.

Figure 65. Doña Ana County & El Paso County Annual Growth in Retail Sales



Source: Woods & Poole

Estimated Impacts on Doña Ana County Gross Receipt Collections

While no one can predict with certainty the impact of the new travel rule, a broad estimate of the change in Doña Ana County gross receipts collections may be calculated based on the change that occurred in Arizona. A study conducted by the University of Arizona on the impact of the rule change found an increase of 12-15% in retail sales in Pima County, the host county for the city of Tucson, two years after introduction of the rule.[14] Using the Arizona experience as a guide, Doña Ana County could witness increases in retail and service sales by a similar percent boosting the county's share of gross receipts tax reimbursements from the state.

Experience in San Diego with retail sales linked to Mexican shopping in the US does provide insight. For example, in 2012, roughly 42.7 million people crossed the border between San Diego County and Mexico. The following figures frame impacts associated with retail spending by visiting Mexicans. The analysis begins with an estimate of between $3.6 and $5.1 billion in potential retail sales that are generated by visiting people, a sales level that could support about 17 million square feet of retail space. Following figures break out different ways that these visiting retail dollars are likely spent, with a preponderance flowing toward food purchases.

[14] Charney, Alberta H. and Pavlakovich, Vera K. "The Economic Impacts of Mexican Visits to Arizona: 2001," prepared by the Economic and Business Research Program, Karl Eller College of Business and Public Administration, University of Arizona, July 2002.

Figure 66. Daily Expenditures in the San Diego Region by Mexico Residents, 2012

Amount	%
$0	4.0%
$1-$49	25.5%
$50-$99	18.5%
$100-149	17.5%
$150-$199	6.0%
$200-$299	11.0%
$300-$399	6.5%
$400-499	2.5%
$500-$999	3.5%
$1000+	2.5%
N/A	2.5%
Total	100.0%

Source: Crossborder Group, AECOM December 2013

Figure 67. Number of Shopping Trips per Month to San Diego by Mexico Residents, 2012

Type	%
Trips	
0	4.0%
1-2	39.4%
3-4	35.7%
5-6	9.8%
7-8	3.4%
9-10	3.2%
10+	4.2%
N/A	0.3%
Total	100.0%

Figure 68. Types of Products Purchased in San Diego by Mexico Residents, 2012

Type	%
Food	43%
Electronics	13%
Beauty Products	13%
Clothing/Shoes	9%
Appliances	6%
Auto Parts	4%
Other	12.7%
Total	100.0%

Source: Crossborder Group, AECOM December 2013

Implications

The impact of the overweight truck route in the Border Area needs to be understood, particularly the impact on smaller secondary roads that serve existing industrial parks and distribution centers. Border crossing data indicates that the number of trucks / containers crossing the border has increased dramatically since 2007, with an average of over 8,000 trucks crossing per year. For comparison, the average before 2007 was only 1,900 trucks per year. With reports indicating that 20% to 40% of trucks are using the overweight permit, emerging market opportunities will create near-term needs to repair, replace, or upgrade existing secondary roads, the majority of which are county owned / maintained. This reality is a catalyst behind for Doña Ana County to consider and potentially redefine its role in the Border Area.

With increased pressure on existing infrastructure, the analysis also reinforces the broader sustainability (i.e. environmental impact) associated with rapid growth in freight movement. The challenge is that as freight tends to concentrate (achieving considerable economies of scale along the way) in metropolitan areas, several "negative externalities" tend to also emerge. These factors all generally relate to:

- The impact of freight movement in terms of air emissions / air quality, including airborne particulates associated with diesel emissions (PM 2.5 or PM 10)
- Congestion resulting from "run-through" freight movements, i.e. trucks that are just passing through on their way to end markets.
- Congestion resulting from "last-mile" truck deliveries in urbanized areas
- Broader social justice and equity concerns associated with movement of trucks through generally lower income residential areas.

For the Border Area, there is the additional expectation for growth in residential and commercial development forwarded in the original Verde Realty Master Plan for the Border Area. The 2009 plan identified more than 5,000 acres for residential development, with a similar amount of land allocated to industrial development. While this plan identified several road projects that would enhance connectivity toward I-10 and El Paso, funding for these projects is not certain, and would require cooperation with TxDOT and NMDOT.

On a broader level, there is concern about the need to ensure that planned development along the border properly coordinates the residential and industrial components. While industrial areas do require proximate access to services and workforce housing, truck impacts do need to be managed deliberately. Last but not least, for the Border Area, the likely impact of the 55-mile rule change needs to be understood, as it may drive an increase in retail activity to the New Mexico side of the border.

Beyond these concerns, our process identified several broader factors that will influence final recommendations:

- Interviews reinforced that multiple jurisdictions and organizations, if not coordinated, may result in fragmented view of economic development across the greater El Paso /

Doña Ana region. A structure for coordination, whether formal or informal, can strengthen economic development effectiveness.

- County officials officially renamed Doña Ana County Airport at Santa Teresa. A new customs building is under construction as well. These improvements, combined with rail and truck distribution, have potential to create a true multi-model trade zone.
- Given the array of jurisdictional boundaries, it is apparent that officials in Doña Ana County and the El Paso MPO need to improve monitoring of truck movements through the Region, with emphasis on likely growth in truck flows from the Santa Teresa POE toward I-10, and plan infrastructure improvements to facilitate increased trade.
- In July of 2014, the Doña Ana County Board of Commissioners indicated that all of the federal approvals necessary for implementation of the Alternative Site Framework for Foreign Trade Zone 197 have been secured. The designation is anticipated to support economic development across Doña Ana County, particularly in distribution.
- The El Paso Region is an important trucking gateway into the US. The analysis shows that a majority of truck based freight is moving east into Texas. It is likely that the new UP intermodal yard will eventually trigger shifts in where trucks move as well.
- For Santa Teresa, the primary drivers of growth are expected to be Maquila operations in Chihuahua, combined with anticipated growth of Foxconn, and implementation of the industrial campus south of Santa Teresa, as well as planned transportation infrastructure to bypass Juarez congestion.
- For manufacturers in Juarez, Santa Teresa is a less convenient option, with higher fuel costs being a primary driver. In this context, recent conversations regarding tax reform in Mexico could slow the pace of growth in the Border Area.
- US registered trucks can enter Mexico, pick up loads, and then re-enter the US and head directly to their destinations. For trucking companies in general, they face the reality of limited back-haul opportunities, which speaks to the broader challenge of imbalanced trade flows between north and south.
- The study advances the argument that it is in the best interest of the Region to pursue policies that encourage a larger share of freight to exit the region by rail (intermodal), rather than truck. Other cities have embraced a more regional view of freight management, including the use of entities such as port authorities and freight districts to help fund and operate intermodal connections that individual private sector companies may be unwilling or unable to make.
- While the Class 1 railroads (UP and BNSF) are interested in system growth, they remain largely focused on shorter-term performance factors associated with their freight corridors and yards. Based on experience, the Class 1's will be less interested in paying for enhanced connections (rail bypass from the Santa Teresa POE) if there is concern that benefits and costs will not be equally shared.

- Interviews conveyed that a primary constraint to cross border movement of freight is US Customs is US Customs' capacity limitations. Beyond this, companies involved in the movement of freight highlight the reality of overlapping / duplicated services, with both the border patrol and state DOT's doing vehicle inspections. Greater inspection efficiencies will lead to faster processing and lower costs that will attract trade.
- Interviews also spoke to concerns about water availability in the Border Area.
- The availability of skilled labor and training may challenge growth in manufacturing in Santa Teresa. Several states are experimenting with apprentice programs, as well as efforts to have people graduate high school with an associate's degree in a technical profession as well. Lastly, there are efforts underway in many cities to be more deliberate in support of programs to encourage entrepreneurship, in part by being more deliberate in identifying the varied pathways to create a new business.
- There continues to be perceptions of security for freight moving through Mexico, balanced by a sense that rail / intermodal moves are generally more secure, and can clear the border more efficiently. The primary constraint for north south movement by rail is that a number of lines have height clearances that limit movement of double stack containers. While the analysis highlights considerable intermodal growth rates for West Coast Mexican ports, reports indicate that a majority of in-bound containers are destined for the domestic Mexican market.
- With job growth, there will be demand for workforce housing. While a larger share of workers commute to the Border Area jobs from El Paso and elsewhere in Doña Ana County, anticipated job growth in the Border Area over time presents an opportunity to support more workforce housing closer to the Border Area job centers, thereby reducing commutes and associated travel costs for workers and regional air quality impacts.
- Given that lower income communities exist outside the immediate Border Area, but within commuting distance, an opportunity exists to target and train workers from these communities for employment. While some of this will happen without intervention, existing job training and recruitment programs can help facilitate this process. If a critical mass of workers lives in these areas, alternative forms of public (bus), private (employer shuttles, etc.) can be provided to affordably link workers to the opportunities.
- Increased retail trade and development is anticipated as employment and residential growth occurs. Residential growth as part of the Borderplex campus across the border in Mexico will provide an additional source of demand.
- Given the size of the Border Area, land development and infrastructure should be phased efficiently. Given that a few property owners with financial capacity have major land holdings, this will facilitate a rationale phasing and financing process. The mixture of land uses will also help spread the financing capacity for infrastructure that benefits all land uses. Still, public/private financing vehicles may be necessary. Preparation of a Public Facilities Financing Plan to implement the land use plan is an important next step.

05. Action Plan

Project Drivers

Final project recommendations are based in part on an assessment of strengths, weaknesses, opportunities, and threats (SWOT) associated with the Border Area. The methodology used to collect information for this SWOT is based on interviews with border policy-makers, elected officials, residents, trade organizations and members of the private sector. Other sources of information include regional planning documents. In the context of a development plan, this SWOT analysis is qualitative in its origins.

Strengths

Unique attributes of Santa Teresa POE

Santa Teresa's designation as an oversized-load port and the cattle crossing at Santa Teresa give Doña Ana County's POEs a unique set of attributes that are not found elsewhere within the region. Only two other locations along the U.S.-Mexico border (Nogales and San Luis, Arizona) share these attributes.

Recent improvements to port infrastructure

Traffic volumes at the Santa Teresa POE increased significantly in 2009 after completion of the Foxconn manufacturing facility in San Jerónimo across from Santa Teresa. To address the larger traffic volumes, the U.S. General Services Administration invested $10 million to expand the port's capacity to move passenger and commercial vehicles and added shaded areas, lighting and landscaping. Completed in 2013, the project resulted in the addition of two passenger vehicle lanes (from two to four) and added one commercial inspection lane (from two to three). Significantly, the project was funded with one-time funding from the American Recovery and Reinvest Act.

Union Pacific rail project

The UP yard now open in Santa Teresa is a clear strength, particularly the anticipated intermodal capability. It will align with evolving regional changes in supply chains, which are increasingly favoring movement by freight via intermodal shipping containers, as well as the identified heavy truck route. It is important to state that the new yard is being built first and foremost to help UP manage their traffic from LA to Chicago and Texas. Particularly with changes under way at the Ports of LA & Long Beach (impact of a smaller number of much larger container ships calling), it is expected that the yard will help UP manage the flow of east-west container traffic, even as cross border intermodal increases.

55-Mile extension

The recent change in ruling by the U.S. Department of Homeland Security allows Mexican shoppers access to southern New Mexico's major commercial and shopping centers in Las Cruces and Deming. An anticipated increase in revenues from the Border Area retail and service providers, once realized, will benefit New Mexico as a whole and Doña Ana County in particular.

Land and taxes

The amount of available land in Doña Ana County's Border Area is vast and largely underdeveloped. Large tracks of undeveloped land and lack of encroachment allow room to grow. The regions relatively low cost of living remains attractive. New Mexico also boasts an advantage with its neighboring El Paso County in property tax levies, which are current set at rates more than 35% higher than similar property taxes adopted for Doña Ana County.

Local culture and political support –

A skill critical to developing the border region is an understanding of the culture and political environment. This is an arena in which border residents and government staff excel. New Mexico's Congressional delegation employs staff members in their Las Cruces offices who specialize in understanding and monitoring border issues. These individuals allow for ease of communication and foster reliable feedback and effectiveness in working through problems. New Mexico also benefits today from the vision and accomplishments of past congressional delegations. Former senators, including Pete Domenici and Jeff Bingaman, identified funding that supported the original investment in Santa Teresa and fostered support for cross-border commercial trade. Negotiating the political culture of any region is daunting; skillful negotiation of the politics and culture of two different nations ranks as a larger accomplishment. Also, under this heading, the current and past governors of New Mexico and Chihuahua (state) have given active support to border economic development.

Weaknesses

Water supplies

Scarce supplies of potable water and lack of water utility capacity pose significant weaknesses for future development in Doña Ana County's border region. The existence of potable groundwater in Santa Teresa has permitted the Verde Group and its new owners to continue with plans for development of the area. Beyond the currently approved developments, however, further development cannot be initiated until additional water is identified. Managing the water situation in the Border Area remains a significant responsibility and challenge for New Mexico governmental entities if development is to continue.

Regionally, the growing municipality of Ciudad Juárez developed well fields west of the Juárez Mountains and south of Santa Teresa. While the well field was developed to stave off immediate concerns about Juárez' future water supply, the increased pumping may be drawing down water supplies in the trans-boundary aquifer system that serves Santa Teresa.

Multiple governmental jurisdictions

Multiple layers of government -- three counties, three states and two sovereign nations -- pose significant bureaucratic burdens for long-term planning in the Border Area. Roads, school districts and residential neighborhoods overlay these jurisdictions. Our experience

shows that multiple layers of government with fragmented authority will impact large-scale planning and development, and may constrain the region's future rate of growth.

Utility infrastructure

Local business interests have cited a need to upgrade electrical service in the Sunland Park and Santa Teresa areas. Without service upgrades, they say, commercial development that requires reliable supplies of "clean" electrical output cannot proceed.

Funding mechanisms to support future infrastructure development

Doña Ana County appears to lack an existing funding mechanism to support development and the maintenance of costly industrial infrastructure. Many county roads near the Santa Teresa port, for example, were designed for local passenger traffic and are not adequate for commercial trucking.

Vocational and apprenticeship programs

Businesses new to Doña Ana County have uniformly expressed a need for a better-trained local workforce. Employers cite their experiences in attempting to find New Mexicans to fill technical positions, often reluctantly left with hiring more experienced candidates from nearby El Paso, Texas. Opportunities exist for increasing the share of New Mexicans hired for these positions. Among successful efforts, a pilot program at Gadsden High School is working to support local businesses by providing student internships. The New Mexico Department of Workforce Solutions also serves to address "market-driven" education and training programs for New Mexico residents.

Ciudad Juárez crime levels

Perceptions of serious crime in Juarez have been compounded by media attention related to the unsolved murders of dozens of young women paint an ugly profile for commercial investment in the region. This situation falls outside the control of the County or its staff. It is, however, an issue that may impact future of development of at Doña Ana County's southern border. While there is a sense that the situation has improved in Juarez (fewer murders announced in the news), better record keeping would be needed to help sustain confidence in the region.

Opportunities

Doña Ana County is positioned to benefit from a number of opportunities to advance border economic development. Many of these opportunities are controlled by organizations and decision-makers external to the County. Some opportunities, if pursued, could result in substantial benefit to the development of trade and commerce in the County. The following discussion identifies opportunities relevant to border economic development:

Macroeconomic issues

Implementation of NAFTA during the 1990's brought about new operating rules for the Maquiladora industry in Mexico. This, in turn, altered investment and economic development opportunities at the U.S.-Mexico border. Today, new macroeconomic trends

are in place. Increases in the cost of labor in China have renewed investment at the global level in North American manufacturing. Ciudad Juárez has benefited from this trend with the opening of new manufacturing operations at industrial sites to the south of the city.

City of El Paso Growth

The City of El Paso is growing in the direction of New Mexico. New housing developments have sprung up along the Pete Domenici Highway en-route to the Santa Teresa port along the Texas segment of the road. This growth is likely to continue and spill over into New Mexico.

Anapra port-of-entry

A number of efforts have been initiated to foster development of a new, non-commercial border crossing in the City of Sunland Park at Anapra. The level of support for the new crossing has risen in recent years with the Mexican government listing the proposed new port as its No. 1 priority. Support for opening this port on the U.S. side remains mixed. To sustain momentum for this project, a commitment from Doña Ana County may be required.

Poised for growth

The port at Santa Teresa appears poised for significant growth. However, growth cannot be fully accommodated by current infrastructure and roadways. The County has an opportunity to serve proactively in helping plan and implement improvements in regional infrastructure and transportation flow at this port.

Extended hours at Santa Teresa

One critical element to growth in the commercial sector at New Mexico's border is POE operating hours. New Mexico has been working for a considerable time to get the hours of commercial operation extended at the Santa Teresa POE. In order to make the port attractive to northbound commercial customers, the hours for commercial operation need to be extended to cover traffic later in the day. It has been determined that manufacturers and trucking companies will not adjust their route and enter the Santa Teresa POE without feeling comfortable that the port will remain open if their shipments arrive late.

Doña Ana County Airport

The airport at Santa Teresa, renamed recently the Doña Ana County International Jet Port, is anticipated to become a growing freight-transfer airport for the region. Improvements to the Airport's runways and other infrastructure are proposed. If implemented, these upgrades would greatly enhance the commercial marketability of the area. Doña Ana County, which operates the facility, has the opportunity to help determine the direction of the airport's future.

Fast implementation

CBP created the Free and Secure Trade (FAST) Program to support the movement of pre-approved eligible goods across the border quickly while at the same time verifying trade compliance. The FAST process involves pre-approving importers, carriers and registered drivers prior to their entering a port area. Shipments are pre-cleared for approved

companies transporting cargos in approved carriers using registered drivers. The expedited process is intended to reduce costs of commerce for all border stakeholders. El Paso was the first place that FAST was introduced on the U.S.-Mexican border. Santa Teresa boasts FAST technology, but has not fully captured the advantages of an active FAST lane. Full use of the FAST lane at Santa Teresa holds great promise for improving security and efficiency in truck crossings, increasing commercial trade opportunities in southern New Mexico.

Port-of-entry technology improvements and pilot projects

Advances have been made in security technologies and other technologies appropriate to the movement of goods and people across the U.S.-Mexico border. These technologies have proved useful in improving border commerce and trade. The Santa Teresa POE is also the location for pilot project that would allow a reduction in number of cross-border truck traffic by allowing for onsite inspection and releasing of cargo from the Mexican side of border at a location west of the existing port. Implementation of this project currently is stalled due to issues of Mexican sovereignty, but should be vigorously encouraged. If implemented, the pilot could demonstrate the potential for major improvements in efficiencies in moving goods northbound out of Mexico. The special project designation at Santa Teresa would place the port in an enviable position throughout the U.S.-Mexico border region.

Congestion and wait times at El Paso's ports

Long wait times for northbound traffic at commercial ports in Ciudad Juárez are cited as encouraging use of the Santa Teresa POE. However, interviews with trucking and logistics companies in El Paso argue against this idea, citing a preference for saving fuel costs by choosing to idle trucks at downtown bridges rather than driving 20 to 30 additional kilometers. A closer examination of the impact of congestion and wait times at El Paso's POE is recommended and might identify benefits to Doña Ana County outside of those cited.

Threats

Mexican tax reform

On Jan. 1, 2014, the Pacto de México, a binding agreement adopted by representatives of the country's political parties, went into effect. The Pacto, as defined in its vision statement, is designed to promote greater democratic representation among Mexico's citizens. Key to the agreement is reform of the nation's tax system. As proposed, the agreement will raise the income tax rate on Mexico's wealthy and middle classes and is projected to increase the overall tax rate on domestic manufacturing. It also impacts border commerce by eliminating a long-standing preferential value-added tax on regional transactions. Manufacturing and trade organizations in the U.S. and Mexico have warned the new law may dampen the current upward trend in foreign investment in Mexico and could reverse growth in Mexico's manufacturing employment. Nevertheless, the Pacto appears to have won support among a broad base of Mexican citizens and political leaders.

Competition

The states of Arizona, California and Texas are significantly ahead of New Mexico in border development. Arizona has initiated a number of efforts to better position itself for border development with the opening of a new port in San Luis and improvements at its busy port operations in Nogales. The state recently re-introduced the CANAMEX corridor project for development of an interstate system between Canada and Mexico and is engaged in studying new options for port funding. Texas is seeking public-private partnerships to improve trade corridors and expand port infrastructure. Meanwhile, New Mexico appears deaf to certain opportunities for border development. The recent signing by President Obama of legislation encouraging use of public-private funding options for border development is an example of an opportunity that appears lost on state planners.

Decisions made at a distance

Many government policy decisions are made at a distance by officials in Washington, DC, and Mexico City. In the United States, the activities of federal agencies have been significantly altered since the events of September 11, 2001. Consolidation of border enforcement agencies within a single Department of Homeland Security (DHS) has changed the missions and organizational cultures of these former organizations. The changes have, at times, resulted in organizational confusion and have generated obstacles to local residents and government officials to intervene in support of development at the U.S.-Mexico border.

Local politics

A potential exists for local political issues to derail efforts at improving commercial development at the county's border. The County is urged to monitor its positions and decision-making authority if its goals and objectives for positive development at its border with Mexico are to be realized.

9/11, national security, and federal agencies

As stated earlier, the missions of many federal agencies were reoriented in the aftermath of September 11. The U.S. Customs Service was moved from the Treasury Department to the new DHS, among other changes, and regulatory staff there refocused from commerce issues to homeland security. The homeland security theme underlying the reorganization of federal agencies dramatically impacted agencies operating on the border. A predictable result of these changes has been confusion in decision-making and organizational leadership. This problem is easily documented today. Training was cancelled recently for CBP inspectors who wished to obtain credentials for clearing agricultural products. Agriculture inspectors – as they are called – are now in short supply. Truckloads of fresh produce cannot sit long at POE's without going to rot. The lack of attention to this issue has been the subject of news articles and the focus of border trade organizations. Fractured decision-making and leadership is likely to continue in the near term.

Regional politics

Regional political relationships in southern New Mexico and West Texas frequently complicate efforts to undertake improvements at the border. For a number of years, the city of Sunland Park and the county of Doña Ana engaged in legal bickering and pursued policies detrimental to each other. The hostilities confounded efforts at the Santa Teresa port-of-entry including the development of a hazardous materials response facility and at least one water project. Today, the relationship between these local governments has improved vastly. The states of New Mexico and Texas are both represented on the board of the El Paso Metropolitan Planning Organization. Until recently, relations between New Mexico and west Texas have been cooperative. However, problems arise at times between the two states, resulting in a retrenching of support for regional projects.

Mexican politics

Mexican governmental agencies can be profoundly impacted by changes in the political party in power. This Mexican phenomenon has manifested itself in many ways. Border improvement efforts require the cooperation of Mexican counterparts. If political parties change after an election, individual and top staff members of Mexican agencies may change without notice and without consideration of whether a border project has reached completion. Projects also can be abandoned by the new political party or through a decision by their appointed leaders. This Mexican political tradition is unlikely to change soon.

The federal budget deficit

Many of the improvements required at international ports-of-entry are the fiscal responsibility of the U.S. federal government. In the context of national security, U.S. borders and ports-of-entry seem to merit a high priority. The New Mexico Congressional delegation has worked successfully in obtaining appropriations that have initiated New Mexico border infrastructure and security improvements. Today, however, the federal budget is constrained by a rising deficit. During the next few years, these budgetary realities are likely to limit the ability of the federal government to provide funding for border needs.

Illegal immigration

Recently, Congress and the American public and have raised the issue of illegal immigration at the U.S.-Mexico border to the level of a high-profile political issue. The volume of illegal immigrant crossings points to insufficient security along the border. It is premature to speculate on the impact this situation will have on the ability to develop border ports-of-entry. However, perception has proven itself to be worse than reality, and a negative security image could create significant problems for the attainment of development goals.

SWOT Matrix

The matrix below summaries the SWOT Analysis. The information has been simplified and placed in a four-way table, or matrix. Information in the Matrix can be compared side-by-side, up-and-down or crossways in either direction. As an example, the table demonstrates that knowledge of the border culture and politics are important strengths, while utility infrastructure represents a weakness.

	FAVORABLE	UNFAVORABLE
	STRENGTHS	**WEAKNESSES**
INTERNAL	1. Attributes of the Santa Teresa POE 2. Recent improvements to port infrastructure 3. Union Pacific rail project 4. 55-mile extension 6. Land and taxes 8. Local culture and political support	1. Water Supplies 2. Multiple governmental jurisdictions 3. Funding mechanisms to support planning, oversight and future development 4. Vocation and apprenticeship programs
	OPPORTUNITIES	**THREATS**
EXTERNAL	1. Macroeconomic issues 2. City of El Paso growth 3. Anapra (Sunland Park) POE 4. Extended hours at Santa Teresa 5. Doña Ana County airport 6. POE technology improvements and pilot projects 7. Congestion and wait times in El Paso	1. Mexican tax reform 2. Competition 3. Decisions made at a distance 4. Local politics 5. 9/11, national security and federal agencies 6. Regional politics 7. Mexican politics 8. The federal budget deficit 9. Illegal immigration 10. Juárez crime levels

Perspectives

The San Diego/Tijuana border zone is another major US / Mexico border industrial zone that provides context regarding future trajectories for the Border Area. The US side, which has industrial, commercial, and residential development, is governed by the City of San Diego and the communities of San Ysidro and Otay Mesa, and the County of San Diego in the plan area of East Otay Mesa. The combined area includes three border crossings, a general aviation airport, a planned cross-border airport terminal, and sensitive habitat. The San Diego region also lacks local water resources. After 40 years of planning development. The San Diego/Tijuana border zone lacks freight rail facilities. Several lessons have been learned in that may be applicable to the Doña Ana Border Area:

1. While industrial, warehouse/distribution, and logistics space has been developed in association with cross-border trade, demand over the last 40 years has not been sufficient to absorb the thousands of acres of industrially zoned land adjacent to the border within the City of San Diego and San Diego County. More development has occurred south of the border.
2. Local jurisdictions are primarily responsible for financing and developing local street and public facility infrastructure, primarily through impact fees, connection chargers, and private investment (some with reimbursement agreements). However, industrial sites on the US side of the border have had difficulty raising sufficient funds to finance necessary local infrastructure with impact fees alone. As a result, planned residential and commercial development has been introduced to provide more housing opportunities to improve the job/housing balance, and to help finance transportation infrastructure costs by spreading the cost of infrastructure among more and higher valued land uses.
3. Regional, state, and federal funding sources, and tolls, have been important for financing and building improvements to the major freeway, tollway, and customs inspections facilitates to improve goods movement flow.
4. The State of California has passed legislation that allows for the creation of Border Zone Infrastructure Financing Districts, a form of tax increment financing district, that the City of San Diego has investigated for facilities financing, but has not yet utilized.
5. Community Plans have been prepared and adopted to coordinate the various land uses within each jurisdiction (City of San Diego and unincorporated County of San Diego) to diversify land uses and avoid conflicts between residential, commercial, and industrial activities, plan for public facilities and infrastructure, and protect sensitive habitat and land forms.
6. Long lines on both sides of the border crossings have created delays and an economic burden, particularly for maquiladora-related companies, and infrastructure improvements and operational measures are being taken to improve and facilitate goods movement through the border zone.

With multiple jurisdictions involved in the financing and development of infrastructure, and with land use authority resting with local agencies, there was a clear need for enhanced border area coordination across the San Diego/Tijuana border zone. A mechanism was established for coordinating land use, transportation, infrastructure, and environmental planning. The San Diego Association of Government (SANDAG), the region's Council of Governments (COG) and Metropolitan Planning Organization (MPO), organizes coordination through its Committee on Binational Regional Opportunities (COBRO), established in 1996. COBRO is comprised of representatives from the bi-national region, including:

- Universities,
- Economic development corporations and Chambers of commerce,
- Environmental organizations,
- The City of San Diego,
- County of San Diego,
- other border area cities,
- State and Federal agencies,
- The Mexican Consulate,
- The City of Tijuana,
- The State of Baja California Norte,

This group meets regularly to coordinate and address planning, infrastructure, operational, and implementation issues, and reports as a working group to SANDAG's Borders Committee which advises the SANDAG Board of Directors.

At a mega-regional level, the California border counties and Baja Norte region of 6.6 million people is jointly promoted to global investors as the CaliBaja economic region by the economic development corporations on both sides of the border, including San Diego and Imperial Counties and the State of Baja California. The $202.4 billion economic region is promoted globally as a high-technology hub for research, development, and manufacturing; a global cluster in renewable energy, agribusiness, and trade and logistics; and a sophisticated manufacturing base with land and a multi-lingual trained workforce. .

Guiding Principles

Our work has identified several guiding principles that will guide final recommendations.

Role of Doña Ana County

Doña Ana County Government needs to define its role in the Border Area going forward. At the broadest level, The County faces a decision to either step forward, or step back. As well, our analysis shows that it also needs to be seen as a partner, rather than as the sole authority or leader of last resort. It is already clear that:

- The County currently owns or maintains a significant percentage of Border Area roads, many of which are older, and will need to be replaced or upgraded as the percentage of overweight trucks grows.
- The County currently provides public safety services in unincorporated areas proximate to the border.
- Like many local units of government, The County faces a number of financial constraints which limit its ability to quickly absorb additional infrastructure costs without offsetting revenues.
- While CRUAA manages water and wastewater infrastructure and serves as the planning and zoning authority for the Border Area, they rely on The County to provide necessary planning staff capacity.
- There is a pressing need for enhanced coordination across borders with Mexico and Texas, to ensure that investments made in the Border Area connect and are coordinated into the larger Paso del Norte; The County needs to play a significant role in these conversations.

Organizational Capacity

The BAEDS confirms that additional local organizational capacity and financial resources are needed. Several operating structures are options for the Border Area in response:

- A Border Development Authority
- A Freight District or Port Authority
- A Joint Powers Authority
- Border Zone Development Corporation
- Business Improvement District/Community Development Corporation
- Expanded local municipal capacity

Each option varies in terms of governance structure, access to financial resources (the ability to issue debt for example), ability to enter into contracts, acquire land, and own assets.

Freight Planning 101

The added consideration for the Border Area is the impact of freight. As such, the BAEDS recommends that land use decisions be deliberately aligned with freight planning decisions. This argument builds from Federal Highway Administration (FHWA) guidance regarding challenges associated with how freight currently interacts with land use. Challenges begin with the reality that existing data that serves as the basis for existing freight planning tools such as the USDOT Freight Analysis Framework is based on the 2007 US Census Commodity Flow Survey. Therefore, it does not capture the effects of the recession, nor does it capture the industry effects that have become increasing important over the few years – e.g., oil and natural gas production increases, petrochemical manufacturing, auto manufacturing re-

shoring, agricultural production, and domestic and international coal demand. These are areas of growing interest to FHWA's Freight Operations Office and it wants to capture the effects going forward in subsequent FAF iterations. Other factors include:

- Land use policies are not coordinated across jurisdictions, which can lead to encroachment by non-compatible land uses;
- Growing freight volumes and congestion create conflicts, particularly in residential areas, if not planned and coordinated;
- The challenge that "freight doesn't vote" argues for a more cohesive strategy for regional engagement with the movers of freight and the local jurisdictions they impact;
- Economic development and transportation planning are often disconnected;
- Connection between freight, land use, sustainability and public health is increasingly important, both for "last mile" deliveries to end users as well as for "thru traffic", which is only passing through. In both cases, impacts of diesel emissions and congestion are concerns, particularly for at-risk populations.
- There is growing awareness that high velocity intermodal yards generate unique traffic impacts, which need specific monitoring.

In response to these challenges, regional authorities and special districts have been established to better manage and benefit from freight movement. State to state examples range from the Port Authority of New York New Jersey to the Kansas City Transportation District and the Illinois-Missouri-Iowa Mid America Port District. Newer developments include the Northwest Infrastructure Exchange involving the states of California, Oregon and Washington, as well as the province of British Columbia. The Port Metro Vancouver – Vancouver Fraser Port Authority and the Louisville and Southern Indiana Bridges Authority are additional examples of multi-site, multi-state special transportation districts.

Work Toward a Regional Economic Development Structure

The Paso del Norte is affected by a unique degree of political fragmentation, linked with jurisdictional boundaries and organizations (effectively silos) in two countries and three states (two in the U.S. and one in Mexico), which constrain the economic performance of a region with 2.4 million residents. Fragmentation is most evident in economic development, with the Border Industrial Association, the Mesilla Valley Economic Development Alliance, the New Mexico Border Authority, the Borderplex Alliance, the El Paso City Development Department, and Economic Development of Ciudad Juarez all actively trying to "sell" a region the size of Metropolitan Denver. In addition, Doña Ana County and El Paso County are each associated with state-centric workforce investment boards, which have different boundaries than the region's economic development entities. The impact of these organizational impediments on economic development cannot be understated. The entire region needs to work toward a more integrated organizational model for economic development.

Implement a Manufacturing Business Retention and Expansion Plan

Nationally, about 75% of new jobs are created by existing local companies, rather than through industry attraction. Business Retention and Expansion plans focus on engagement and annual retention visits to local companies. The structure is helpful in better understanding local supplier networks, confirming workforce needs, and providing early warning of challenges.

Rethink Economic Development Incentives

A 2014 study by the Florida Legislature, Office of Policy Analysis and Government Accountability reinforced the need to be deliberate and pragmatic with incentive awards for economic development. Their study showed that the majority of companies (about 75%) who received incentives in Florida indicated that incentives were, "one among many factors, as opposed to being the key decision factor" in their decision to expand in Florida. The main point is that while incentives can be necessary tools for economic development, they should not be automatically prescribed but rather applied for a specific target purpose.

Local economic development officials should work toward an incentive structure that ties higher incentives to value added manufacturing that pay higher wages, and more limited incentives to pure distribution and warehousing which already have a strong business reason for locating here without subsidies. Distinctions will need to be made between traditional distribution, and space occupied by Third Party Logistics Providers (3PL), particularly if their operations are involved in assembly, as well as distribution.

Workforce Development and Entrepreneurship

In July, 2014 the new Workforce Innovation and Opportunity Act was signed into law. The act is intended to streamline the workforce system, and more directly align workforce development programs with economic development and education initiatives. As the act is very new, precise details and local implications remain unclear. As the Act is only 2 months old, precise local impacts of this legislation are not yet clear. At the same time, nationally, variations on the following programs have unfolded:

- Work toward deliberate connections between high schools and private sector employers, creating conduits of students who are career-ready leaving high school, in sectors where employers actually need workers.
- Expand programs that provide high school students with access to alternative career pathways, including expanded vocational training, apprenticeships, and access to associate degree programs at the high school level.
- Seek out programs that place vocational training on the shop floor of existing and potential local manufacturers.
- Evaluate partnerships between existing workforce investment boards in Texas, New Mexico, and with intermediaries in Mexico.

- Catalog all the regional entities that are involved in entrepreneurship with the simple goal of clarifying the varied paths to market entry for people who have good ideas.
- Evaluate local permitting, zoning, and licensing processes to ensure that current regulations are not unnecessarily inhibiting the process of starting a business.
- Research the technical feasibility of a regional manufacturing incubator, supported by local educational institutions. Modest efforts could focus on the formation of a MakerSpace (makerspace.com). These locations are intended as learning environments, where people can access advanced equipment to make things (3D printers for example) and develop new products or services.

Recommendations: Short-Term Strategies

The following specific recommendations have been identified:

- Doña Ana County needs to identify a point person to manage border area affairs.
- Doña Ana County needs to implement an asset management program for roadways that it owns and/or maintains. The effort may need to incorporate life cycle costs as well as current pavement conditions and traffic volumes.
- Doña Ana County needs to play an active role in the future of the Sunland Park POE, including consideration of an active partnership with the Town of Sunland Park.
- Doña Ana & El Paso Counties, the New Mexico and Texas DOT's and the El Paso MPO need to establish annual monitoring regimes for truck counts on key arterials across the Border Area, as well as the number of annual lifts at UP Santa Teresa. There is also a broader need to re-evaluate existing truck routes and identify improvements, including turning lanes, signal timing, etc. This point is essential, given anticipated residential growth in the Border Area.
- The El Paso MPO, with support from NMDOT, TXDOT, and Doña Ana County should initiate a regional freight movement study to document recent shifts in what commodities and manufactured goods are moving, and where they are going. Outputs will frame support and priorities for candidate infrastructure projects, noted below. The study will need to evaluate truck impacts, as well as how industrial development patterns on both sides of the border align with transportation infrastructure.
- Detailed field surveys of existing housing stock need to be undertaken to identify housing inventories and levels of affordability. Current plans for a Doña Ana County-led Affordable Housing Plan align with this goal, in cooperation with the Mesilla Valley Public Housing Authority; the study is expected to be completed by June of 2015. Resulting information (housing unit size, condition, amenities, and valuation) should be incorporated in a regional GIS framework.
- The Region needs to undertake a detailed economic analysis of the Paso del Norte using input-output data, to clarify how linkages between industry sectors across Doña Ana County, El Paso County, and Ciudad Juarez have changed over the past 10 years, and

how they may change with investments associated with the Santa Teresa POE, and UP investments. While local companies have learned how to work within constraints created by local borders, resulting sector linkages across borders are not readily apparent in a political context, and need to be better defined.

- Border Area economic development organizations need to ensure that companies in Doña Ana County are benefitting from July 2014 approval of the Alternative Site Framework for Foreign Trade Zone 197.
- NMDOT is currently undertaking a border master plan to collect data, identify planning issues on both sides of the border, and engage with stakeholders to build consensus around priorities. Outcomes from this study will influence mid-term priorities.

Recommendations: Mid-Term Strategies

- One Initiative of Viva Doña Ana is to create a GIS web portal through a partnership with New Mexico State University (NMSU). Once implemented, this program should aspire to be regional in scope, moving beyond the existing GIS clearing house associated with the Paso del Norte. More robust traffic data should be incorporated, along with expanded land use and property record information.
- As local economic recovery strengthens, conversations regarding public transit will need to continue. Partnerships with the private sector (including IDI / Gazely) will be required to sustain support of future bus connections in the Border Area. As well connectivity with existing regional transit systems will need to be confirmed through conversations with SunMetro, including the new El Paso Bus Rapid Transit Mesa Corridor line.

Recommendations: Planning

Border Area Planning recommendations build from three central tenants.

1. The UP Santa Teresa yard is now open and residential development is beginning to accelerate, even as existing local roads do not appear adequate.
2. The Border Area is a unique place because of the existing covenants, conditions, and restrictions (CCR's) that are in place for private industrial development.
3. Outcomes from Viva Doña Ana will include a new countywide comprehensive plan and unified development code (UDC).

Recommendations presume a continued joint effort between CRRUA and Doña Ana County Planning to evaluate the impact of the new county-wide comprehensive plan and unified development code on the Border Area. One goal will be to confirm if existing CC&R's are consistent with new UDC guidelines. With the amount of time that has passed since the original Verde Master Plan was announced, the two organizations should re-examine the plan and amendments to ensure that the Border Area can support a sustainable balance of residential and industrial uses in relation to transportation system improvements that can sustain growth.

The Border Area also contends with unique freight impacts, and that countywide standards may not be appropriate. Considerations include:

- As freight rail corridors are valuable, best practices include minimum setbacks to prevent encroachment, and to mitigate vibration and noise associated with freight trains.
- Identification of specific at-grade railroad crossings that eventually need to be grade-separated.
- Protect industrial areas from encroaching commercial and residential uses, while ensuring that industrial areas have access to supporting services.
- Link industrial building types to their anticipated trucking requirements.
- Consider introducing workforce housing in locations proximate to employers but not in conflict with trucking corridors.

Potential Priority Infrastructure Projects

Enhanced freight monitoring efforts and data analysis will allow regional officials to make informed decisions regarding infrastructure projects that will enhance how traffic flows through the Region. For example, county officials have already identified the need for a crosswind runway at Doña Ana International Jetport as well as reconstruction of 1.3 miles of Airport Road from Pete V. Domenici Hwy. as part of current capital improvement plans. Other proposed projects could include:

- NMDOT, TXDOT and the El Paso MPO need to re-evaluate Pete V. Domenici Hwy. & and Artcraft Rd., working toward a grade-separated limited-access route between the Santa Teresa POE and I-10. Dedicated truck lanes or a toll road should be considered.
- The UP Santa Teresa yard has increased truck movements along Airport Road from Pete V. Domenici Hwy. to McNutt, and eventually to I-10. Of concern is the location of Santa Teresa High School along Airport Rd., a two-lane facility at present. Presuming that Airport Rd. continues to be an option for trucks making connections eastward, widening of this road near the school needs to be studied.
- NMDOT, TXDOT and the El Paso MPO should study the need for a truck focused interstate way-finding system, which provides specific guidance to thru-trucks regarding congestion on local interstates.
- NMDOT, TXDOT and the El Paso MPO should evaluate improvement of Highway 9 connecting to McNutt for commercial traffic.
- NMDOT and the El Paso MPO needs to continue to evaluate the West Mesa Corridor connection from the border area northward to I-10 near Las Cruces, aligned with updated traffic and freight demand studies that factor in the new UP yard.
- NMDOT and the El Paso MPO need to evaluate corridors to connect the Santa Teresa Area with NM State Route 404, to support east and northeast bound truck movements.

- The New Mexico Border Authority is evaluating a rail connection between the Santa Teresa POE and existing UP and BNSF mainlines. Experience suggests that an entirely railroad-funded solution is unlikely on the US side, as Class 1 railroads remain hesitant about mismatches between benefits and costs, and are concerned about the introduction of additional traffic on already congested mainlines. For this reason, the Border Authority and / or NMDOT will need to consider financial and operational roles in the project. Nationally, DOT's are partnering with railroads to enhance rail capacity.
- There is growing national interest in compressed or liquid natural gas (CNG/LNG) as a truck fuel, linked with lower fuel costs and reduced emissions. Although diesel fuel in Mexico is less expensive, consideration should be given to a regional natural gas fueling strategy for municipal fleets and trucking companies, as a response to air quality concerns.
- With news reports indicating that BNSF will expand intermodal service between Mexico and Chicago, Officials from NMDOT, Doña Ana County and the City of Las Cruces should begin to plan for growth in traffic along the BNSF main line that runs parallel with NM 478 toward Las Cruces with eventual need for grade-separated routes.
- Infrastructure funding remains a topic of national debate. While Public Private Partnerships (3P) are popular, these structures are ultimately tied to revenue streams that can support investor interest and rate-of-return thresholds. At minimum, the Region should consider enabling legislation for "impact fees" on trucks that cross the border; resulting revenues could be allocated for Border Area improvements. Projects such as the Sunland Park POE should be pursued, in part because POE projects are tied to crossing fees.

Funding considerations include:

- Officials should evaluate the applicability and need for impact fees, assessments or special tax districts on all development and properties that utilize and benefit from the infrastructure, spreading the cost of infrastructure among more and higher value land uses, reducing the cost burden on industrial uses alone.
- Tax Increment Financing (TIF) can be used to fund infrastructure improvements, to the extent that specific projects do not otherwise benefit from property tax abatement. Experience in other border areas also suggests that industrial values alone may not be sufficient to drive sufficient tax increment to pay for necessary improvements.
- Given the sustainability implications associated with rapid growth in freight volumes, El Paso and Doña Ana Counties would be an ideal candidate for future rounds of Tiger Grant funding.
- Future rounds of HUD funding appear to be shifting toward investments that enhance regional resiliency; future announcements by HUD will confirm the amount of grant funding that will be available.
- Experience in Detroit and Windsor, Ontario associated with the planned construction of the New International Trade Crossing provides a case study for the plausible role of the

Mexican Government to fund improvements on the US side of the border that have obvious benefits to citizens in Juarez. The new bridge between Canada and the US is being funded largely by the Canadian government using a 3P structure, in response to traffic problems on the Canadian side of the border.

Market Opportunities

Renewable Energy

Dramatic decreases in the cost of solar panels have led to dramatic growth in the solar industry. Solar photovoltaic (PV) installations have exploded in recent years. The third quarter of 2013 was the second largest on record for the U.S. solar industry in terms of added capacity. The US share of worldwide solar capacity has also grown to nearly 12%.

The Solar Foundation (TSF) conducted a national survey of solar employers representing nearly 15,000 establishments. Although there are about 2,000 fewer establishments than last year, employment has increased. As of September 2012, there were over 119,000 solar workers in the United States, up 27% since TSF first tracked solar jobs in 2010. Solar employment is expected to grow by 17.2% over the next year to nearly 140,000 jobs. The top three states by number of solar jobs are California (43,700), Arizona (9,800), and New Jersey (5,700). Together, these 3 states comprise half of U.S. solar jobs.

Solar researchers predict that solar is on the cusp of grid parity. The Institute for Local Self Reliance (ISLR) defines solar grid parity as the point when the cost of solar electricity without subsidies is less than or equal to the residential retail electricity rate. In order to compare solar with retail electricity costs, analysts calculate the Levelized Cost of Electricity (LCOE): the cost of solar averaged over a number of years of production.

The LCOE is highly sensitive to installation costs, operations and maintenance, system performance (location and orientation), and financing. LCOE estimates vary widely even under reasonable assumptions, so analysts often report installed costs instead. Electricity costs are also variable across the country, so some places will reach grid parity faster than others (Dynamic Grid Parity). ISLR estimated the LCOE for US metropolitan areas assuming $4.00/Watt installed, cost of solar decreasing 7% per year, and grid electricity increasing 2% per year. Reductions in PV Costs and rising costs for conventional energy create a favorable market for solar in New Mexico.

In the U.S., the average price of a solar panel has declined by 60 percent since the beginning of 2011. The average cost of a completed PV system has decreased 16 percent over the past year to $3.00/W. Analysts at Deutsche Bank estimate that at $3.00/W, the LCOE is currently at $.11-$.16/kWh in 10 states that have already reached grid parity.

Urban Agriculture & Anaerobic Digestion

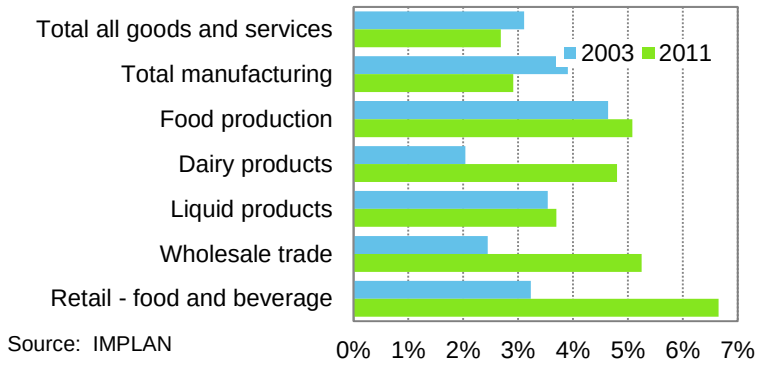
Growing food within cities has seen resurgence nationally, due to specific advantages:

- Proximity to markets. Both food and food waste are located near population centers.

- Up to 40% of food in the U.S. is wasted; this can be used to create renewable energy through anaerobic digestion (UA). Food waste is the number one material disposed in US landfills.
- Growing demand for local food. Benefits of local food include fresher food and support for the local economy.
- Adaptive re-use of available land. Sites for UA include defunct industrial buildings or vacant sites.
- The World Bank concluded that the largest driver in food price increases is the price of oil. Oil is used to run farm equipment, for food transportation, and in fertilizers. UA reduces the total "food miles" produce travels from farm to table, which reduces the amount of oil products used for transportation.

Building on information presented by the World Bank, analysis of US Transportation costs as a percentage of total production costs excluding wages (shown below), indicated that for retail food and beverage sectors, transportation costs have grown dramatically. By comparison, in manufacturing, transportation costs are lower today than in 2003.

Figure 69. Changing Costs of Transportation for Food Manufacturing



Source: IMPLAN

UA is a way to integrate the technology of anaerobic digestion (AD) into the urban setting. AD essentially converts food and other waste into biogas, a renewable energy source, and fertilizer, an input into agriculture. Urban agriculture operations can become closed-loop energy systems, using no power from the grid while simultaneously producing a variety of food. AD is the process of anaerobic bacteria breaking down organic matter within a contained, oxygen-free environment. The organic material transforms into biogas and sludge. In the UA context, inputs can include food waste, brewery byproducts, and livestock manure.

The biogas produced, a mixture of mostly methane and carbon dioxide, can be 1) used directly as energy on-site; 2) burned to produce electricity on-site; 3) sold and piped off-site; 4) burned to produce electricity and sold off-site; 5) flared, if produced in excess. The sludge produced can be used as fertilizer within the operation or sold for additional revenue. Most

of these options either reduce operation costs or increase revenues to the operation. These options positively impact the entity's economic position.

Producing food within communities increases the local multiplier effect: dollars spent on local food flows to the UA workers, which increases wealth within the community. Studies in Iowa concluded that restaurants buying food from local sources had a job income multiplier of 1.54, compared to 1.2 for other restaurants. Production of renewable energy is a key component in reducing greenhouse gas emissions worldwide. AD technology is taking root in many countries throughout the world, particularly Germany. As of 2010, the country has nearly 6,000 biogas plants, an increase of 600% over 11 years. Each year, 4.2 million tons of food waste and 4.5 million tons of landscaping waste is collected for biogas creation. In the United States, anaerobic digesters are found on farms at wastewater treatments plants, leaving the opportunity to convert the 40% of wasted food into energy within UA facilities.

AD is a relatively untested technology within the context of urban agriculture and its financial feasibility is unproven. Therefore, for smaller urban farms, the highest and best use of biogas is directly and on-site. Utilization of the biogas has an energy conversion of 75-80%, as opposed to the 20-30% efficiency for electricity production from biogas.