Prepared in partnership with the Maricopa Association of Governments, Pima Association of Governments and Central Arizona Association of Governments

Table of Contents

List of Figures

List of Tables

North American Opportunities and the Sun Corridor
Executive Summary

Overview

The Sun Corridor exists within a broader, somewhat integrated and dynamic North American economic context. Canada, Mexico, and the U.S. are sovereign nations but share in many sectors an "economic space," and Arizona, specifically the Sun Corridor, are an essential part of this economic space due to the proximity to the Mexican border, the competitiveness of Arizona's resources, and its easy access to central Mexico through its neighbor, the state of Sonora.

No one "planned" this economic interdependence on a continental scale. The most powerful drivers of economic change were corporate strategies and structures. The resulting degree of collaboration between governments is unique, as they are not so much trade partners, as partnerships in production. What flows across Arizona's international borders are not mainly finished goods, but inputs and raw materials into complex, cross-border production systems. The automotive industry is the largest example of this, as it represents a quarter of the goods that cross the Mexican border every day, and automobiles are the primary commodity that crosses Arizona's border. The billions of dollars in goods coming into Arizona from Mexico are not the only freight opportunities that may exist for the Sun Corridor, but also those coming from Asia through California, and from its eastern neighbors such as Texas. International sea port expansions in Mexico such as Manzanillo, Lázaro Cárdenas, Guaymas, and even Punta Colonet, can be expected to significantly increase the flow of freight and traffic through the U.S.-Mexico border.

These port developments will easily double the amount of freight coming through the California, Arizona, New Mexico, and Texas Ports of Entry. This activity is anticipated to be a primary driver for the expansion of development and economic growth in the nation's border states—especially Arizona. Even with the recession and peso devaluation delaying completion of the Punta Colonet development back to a 2016 timeframe, the Mexican government is set to begin the bidding process for the development by the end of 2009. Although Arizona should not rely on this opportunity immediately, the state should begin thinking how it could incentivize the port and rail development by anticipating and planning for the growth of freight in the near future. With possible freight shipments moving to Mexico to avoid the overcrowded ports in Southern California, the Sun Corridor must poise itself to take the necessary steps to capture the growth in global business opportunities with Mexico and the Far East.

It is also important to note that the ongoing expansion of the Panama Canal will also create ripple effects on global trade and competitiveness in the Western Hemisphere. In 2014, the maximum cargo load capacity of ships passing through the canal will increase to 14,000 containers per ship from the current 4,500 containers per ship. This is nearly three times as much cargo per ship that will be able to circumvent the California ports and no longer travel through Arizona. As 70% of the cargo unloaded in Los Angeles and Long Beach is destined east and north, if shippers chose to use the possibly less expensive (and in some cases faster) route through the Panama Canal, the Sun Corridor could potentially experience a net loss of freight transit from the Los Angeles and Long Beach ports. To remain a competitive and attractive alternative, the Sun Corridor must enhance its position and increase the economic and strategic profitability of the routes through Arizona by providing value added industry clusters and extensive transportation connections and distribution centers.

Existing Arizona Examples and Plans for Cooperation

There are already numerous entities and plans that coordinate efforts between municipalities and counties within the Sun Corridor. These preexisting plans help to plan for the future by leveraging resources and creating a more efficient and sustainable environment within the region. MAG has been a leader in bringing different stakeholders together to prepare for future needs within the MAG region. MAG began the process of coordination and long-range planning with the adoption of its *Regional Transportation Plan,* (RTP), which was uniquely developed including both policymakers and representatives from the business community.

The RTP addresses various transportation issues, with the intention of providing a guiding framework to guide long range planning efforts. This plan is a strong example for long term planning, and sets the stage for preemptive demand side management such as the introduction of possible commuter transit service between counties. The Pima Association of Governments (PAG) has become a leader within the state as well with its 2030 RTP which examines a broad range of multimodal transportation efforts to address its future demands. The Central Arizona Association of Governments works with the Arizona Department of Transportation (ADOT) to provide various transportation planning activities throughout Gila and Pinal counties and has also been active in the development of several Small Area Transportation Studies in the region.

MAG's Hassayampa and Hidden Valley Framework Studies, which illustrate the projected growth and transportation needs within and neighboring Maricopa County, initiated a statewide Reconnaissance Study leading to the Building a Quality Arizona (BQAZ) effort. BQAZ, envisioned as a key nexus of statewide collaboration, is aiming to collectively bring metropolitan planning organizations together with state government officials, as well as other stakeholders to coordinate and address Arizona's long term transportation and infrastructure needs. The goal of BQAZ includes the development of a Statewide Transportation Framework which will include regional framework planning efforts from across the state leading to an update of Arizona's Statewide Transportation Plan in 2010.

Another example of long term regional transportation planning was implemented by the Arizona Department of Transportation with its *MoveAZ Long Range Transportation Plan*. This living document provides a vision for future expansions and needs far beyond the current infrastructure level. MoveAZ is updated every five years to show changes in expectations, and update the needed infrastructure in the state. MoveAZ is largely driven by public interaction and outreach in order to collect and better understand the needs of the communities that the planned roadways and transit will serve.

With these long term plans, and the enormous forecasted growth for the Sun Corridor, these efforts provide a great opportunity to further implement smart and strategic growth in Arizona. These opportunistic strategies are called demand-side strategies because of their impact on the decisions of consumers to use more sustainable and long-term effective options. In contrast, supply-side strategies attempt to keep pace with the current growth and infrastructure cycles instead of changing them for more efficient growth.

Models of cooperation in Arizona regarding cooperative funding and finance span between multiple municipal and county governments and also bi-national coordination. The Greater Arizona Development Authority (GADA), and the Arizona International Development Authority (AIDA) are examples of models of government that cross county and municipal lines. GADA provides smaller communities with an instrument to finance public infrastructure projects that can promote economic development by providing leverage for bonds and other loans. This allows communities in the rapidly growing areas in Arizona that do not have large funds or high credit ratings, to obtain bonds for needed large-scale projects.

As part of the Arizona Department of Commerce, GADA, is a financing tool for public projects that are too expensive for a small municipalities or government entities to fund alone. This model shows a strategy that governments can use to provide large public projects that could benefit multiple communities in the long run, but no single community has the funds or capabilities to implement it.

Because of the large cost of many of the public transportation projects required to implement a cohesive megaregion or megapolitan, identification of avail-

able Public-Private Partnerships (P3) is key in order to provide the services. Toll roads, bridges, and lanes are all common strategies for P3 projects. It is often much easier to obtain bonds for part of the cost of a project, and let a private company manage the service and provide the rest of the capital. This option recently became more easily available in Arizona due to the passing of House Bill 2396 in March 2009 by Representative Andy Biggs through the Arizona Legislature. This bill will give Arizona Department of Transportation (ADOT) a broader ability to engage in P3 projects. ADOT can now partake in a spectrum of methods for funding transportation projects that range from Design- Build (DB) operations to Design-Build-Finance-Operate-Maintain cooperation. Initial indicators are that this will allow transportation infrastructure to be provided at a lower initial cost to the public, and produce new jobs and industry for the private-sector.

Key Opportunities

The location of the Sun Corridor could be its most powerful asset, and largest factor in its development, and growth in the future. The Sun Corridor's location:

- is equidistant from the sea-ports cities of Los Angles/Long Beach, California; Punta Colonet, Baja California; and Guaymas, Sonora,
- has multiple world class airports,
- exists at the intersection of three interstate highways and two major railroad systems,
- has access through land-ports to three major Mexican states, and
- contains the largest supply of solar energy.

Additionally, to the west of the Sun Corridor is the biggest economy of any state in the U.S., to the south is the largest reservoir of ready labor and skills on the continent, to the north are the fastest growing cities of the fastest growing states and the Canadian economy as well. To the east is the entire Midwest and eastern U.S., and surrounding it are the fastest growing parts of the U.S.. The Sun Corridor is central to all that matters in the future including innovative transportation strategies and alternate fuels that answer rising fuel costs. The key to advancing the Sun Corridor into the forefront of the developing Megapolitans will be to transform the multiple challenges facing the region into extensive and flourishing opportunities. The opportunities are:

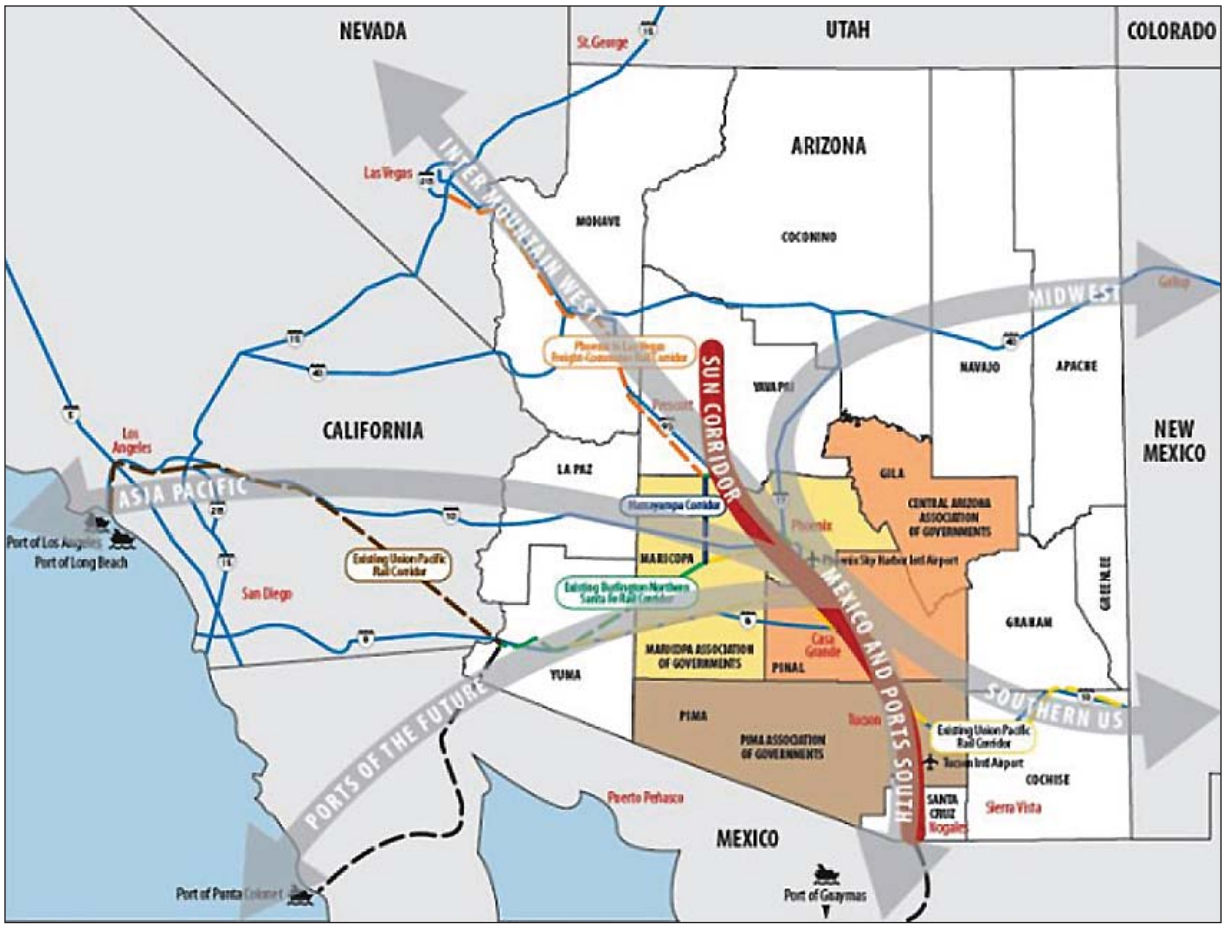
1. NAFTA (north-south) highway and Asia-Pacific (east-west) land-bridge

The Sun Corridor for the foreseeable future remains the corridor of choice for all the produce and products from western mainland Mexico destined to the western U.S. and western and central Canada. It will also continue to be the principal rail and trucking bridge for all the traffic coming to and from the Pacific seaports. The freight analysis shows continued growth of all modalities (rail, truck and air), and the majority of products into the mid-term future. Providing infrastructure, fuel, and transportation services for that traffic must remain a priority as the Sun Corridor designs ways to profit from adding value to the flow. Trade from NAFTA between U.S and Mexican border-states will flow to the degree that the Ports of Entry (POEs) facilitate it. The inland Associations of Governments can join the Pima Association of Governments (PAG) in advocating that the U.S government build and operate 21st century Ports of Entry along the Arizona-Sonora border. All three Associations of Government can advocate for development of seaports in Mexico to alleviate anticipated strain at ports on U.S. west coast. Both of these actions would facilitate more business into Maricopa, Pinal, Gila, and Pima Counties by increasing the affects of the region's competitive advantages.

2. Inland port and 'value chain' distribution center

So much freight, goods, and opportunity already pass through the Sun Corridor and will continue to do so through Arizona's transportation network. These billions of dollars of goods will ultimately need to be unloaded or uploaded onto rail, repackaged for trucking, or reprocessed, and the private companies in each industrial sector within the Sun Corridor can tap this natural flow to create jobs and prosperity for the region. Inter-modal centers can motivate the multiple neighboring sea ports to offload ships onto rail for processing at inland ports here. The port and distribution industries require strong government relationships and help in order to find sites that offer the greatest benefit for the community and the smallest impact. The support for large-scale transportation infrastructure and innovative finance mechanisms to support the construction will allow these services to be more productive, efficient, and bring the most benefit to the community.

Figure 1:
Sun Corridor Trade Routes



3. Growth industry clusters for the future

There are various industries within the Sun Corridor that can develop into extensive job and prosperity generators for the region. These include high tech, high paying jobs, as well as numerous service industry opportunities to meet the needs of these clusters. The manufacturing industries would cross county lines, and be bi-national as well. These high-tech manufacturing industries include aerospace, pharmaceuticals, precision instruments, supply chain management, and renewable energy. The labor market in Sonora, Mexico allows for efficient production of intricate and detailed products that require high-tech professionals with advanced educations to provide the designs, management, and final touches to complex products. Due to the binational and exporting characteristics of these industries, advanced transportation services for their supply-chain strategies is required. The provision of distribution hubs, and greater capacity at the Ports of Entry (POEs) will allow for Arizona companies to take advantage of, and increase their efficiency in these broad, bi-national manufacturing strategies.

4. Renewable, especially solar, energy hub

The location of the Sun Corridor also provides it with a vast natural resource of solar power. Since most of the energy consumed in the Sun Corridor is by mobile fleets and so much of the potential of the Sun Corridor will someday be realized by renewable energy (mostly solar power), it behooves the whole of government of the region to conceptualize exactly how that solar energy will be made available to the transportation sector. With public support for this industry through tax incentives, public-private cooperation, and university support, industries can take advantage of this unique asset, and bring the Sun Corridor to the forefront of U.S. energy production and independence.

Key Challenges

There are a myriad of existing and growing forces on the Sun Corridor that must be recognized and addressed by local agencies. These pressures demand action of both the private and public sectors within the region.

- **Multi-Functional Planning**

Social, demographic, economic, infrastructural, and environmental changes require innovative and all-encompassing solutions that deal not only with the local issue, but with spillover effects and the improvement of the region as a whole. With recent studies showing the Sun Corridor as the most rapidly growing megapolitan area in the nation by 2030 and the existing limits to water, transportation, energy, and land, the region has a unique opportunity to frame its future growth as a competitive region in a sustainable manner.

- **Sustaining Quality of Life**

Developing a competitive region is not just facilitating the movement and growth of goods and businesses, but also the efficient development of the communities and the people's movement throughout the region, to and from their jobs. Planners and decision makers must also take into account the livability of the region, and the sustainability of the region. This means not only long term effects on the environment, but long term economic development, and the effects of city, county, and megapolitan planning on society and its quality of life. Traffic, energy costs, and health issues due to densely populated urban regions such as air pollution can add or detract from a region's competitiveness with other megapolitans.

- **The Future of Smart Growth**

With the expected population growth in the Sun Corridor, the continued suburban expansion pattern can not be sustained. The large amount of state, federal, and other public lands, along with developments in state laws on eminent domain push back on the expansion of suburbs as space becomes less available. The limited space available for private development and the water demanded by an increasing population will require innovative plans for development and growth in the region. With numerous studies showing that transportation has overtaken industry as the greatest CO2 emitter across the nation, and vehicle miles traveled continuing to rise along with emissions, the demand for new development and transportation patterns rises as well.

Concluding Remarks

The Sun Corridor sits within a continental and international system of freight shipments, and is one of the key junctions within that system. Through strategic regional cooperation in economic development and infrastructure planning, it can become one of the drivers in this system and play an important logistical role which is home to a broad international transport and business hub. Using a North American paradigm strategy, significant, and longterm benefits of transboundary cooperation between regions on the issues of infrastructure, transportation, economic development and other planning and implementation projects may lead to the following:

- Reduced bottlenecks, traffic congestion, delays, and total Vehicle Miles Traveled (VMT)
- Increased trade flows and efficiency
- Leveraged funding for infrastructure development
- Reduced environmental pollution across borders
- Increased and broader mitigation options for water, land, air quality, and habitat restoration
- Lowered staff time and greater capacity between regional agencies
- Shared geographic information systems/science and spatial decision tools
- Enhanced and more comprehensive security at borders
- Better risk calculation and mitigation for climate change and environmental disasters
- Impact on migration and changing demographics on workforce population
- Attraction and presence of key industries for employment and business

Development of the very expensive Punta Colonet and improvements at Guaymas ports will require constant priming. It has been described as a chicken and egg situation in that shippers and suppliers on both ends of the supply chain need to voice need for the port's capacity and the port need to show progress toward meeting that need. The Sun Corridor, as the primary beneficiary, client and target for the supply chain through those ports, is a major decision node. Having a coherent vision and strategy to develop the region must be developed and communicated directly to decision makers.

Super-regionalism will be needed to confront and outdo the hyper-competitiveness of China, India, EU, Brazil, or Indonesia. This will require thinking long and large and out of the box. An inter-agency planning advisory council is advocated as a next step to implementing some of the recommendations in the report.

Partners

This initiative is a partnership between the North American Center for Transborder Studies (NACTS) at Arizona State University, the Maricopa Association of Governments, the Pima Association of Governments, and the Central Arizona Association of Governments.

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The Bottom Line

Significant and sustained cooperation among regional governance organizations in the Sun Corridor—the Maricopa Association of Governments (MAG), the Pima Association of Governments (PAG), and the Central Arizona Association of Governments (CAAG)—should be implemented to take advantage of international opportunities and bring broad benefits to the citizens of Arizona and especially the growing Megapolitan connecting Phoenix, Casa Grande, and Tucson.

1. Introduction

1.1 North America

1.1.1 A North American Reality

While the U.S., Canada, and Mexico remain sovereign nations, there is a "North American Reality." Some of the most important issues we all face in the coming decades can best be understood and—hopefully—be resolved through a North American paradigm approach. For example:

Environment: Globally, environmentalists, community, business, and political leaders are increasingly advocating that environmental concerns need to be addressed in a continental framework. According to the Environmental Protection Agency (EPA) Inventory of Greenhouse Gas Emissions and Sinks: 1990-2006, the sources of the carbon dioxide equivalent emissions include:

Electricity Generation – 33 percent;
Transportation – 28 percent;
Industry – 20 percent;
Agriculture – 8 percent;
Commercial – 6 percent; and
Residential – 5 percent.

Deeper economic integration and trade has significantly increased the flow of goods along trade corridors and across our borders. Increased levels of production have intensified environmental pressures in many areas—most notably perhaps in the U.S.-Mexican border region. A growth in Vehicle Miles Traveled (VMT) has contributed to pollution and the emission of greenhouse gas within the United States. Truck VMT has grown 217% since 1970,[1] while overall VMT has grown at 137% in the same period.[2] Some efforts to cope with these forces merely relocate the problem. Successful mitigation strategies require cooperation on a regional, interregional, and global scale.

Energy: For the U.S., it is beneficial to begin thinking of "energy security" in a continental rather than only a national perspective. The U.S. benefits from North America's deeply integrated oil, gas, and electrical grid systems. It is logical to work together to assure renewable energy sources, such as the extension of hydro systems, sustainable energy systems, and ensure that the energy infrastructure is accessible, maintained, and improved.

Competitiveness: The search for greater efficiencies in production and distribution has largely driven North American integration. North America's large markets, varied resources, and skillful labor provide the ideal platform for global competitiveness. Global competitiveness requires the presence of efficient, safe, and sustainable multimodal transport (road, rail, air, ports) logistics systems and border crossings.

Security: Federal governments remain responsible for national security. Security, however, can be enhanced by North American cooperation by sharing intelligence on threats such as threats at foreign ports and limiting congestion at our borders and along trade corridors. Flows of contraband drugs, guns, and cash are bi-national issues—and have emerged into continental businesses. To control these operations will require true North American cooperation.

Demographic changes: All three North American nations (U.S., Canada, and Mexico) are undergoing remarkable demographic changes. Canada is confronting the problem of an aging population and its likely impact on the nation's economic growth. Mexico is also aging and must speed economic development to ensure prospects for its future. The continued influx of immigration contributes to the U.S. population aging more slowly. The nation, however, confronts huge social issues caused by dramatic ethnic and cultural changes in its population. All three countries are experiencing high levels of internal migration as people seek to follow jobs and face growing imbalances of the supply of medical and educational resources, including changing levels of demand for these services. The costs and benefits of population movements in North America frequently affect both the northern and southern borders of the U.S.

1. *National Transportation Statistics 2000,* BTS01-01, Appendix A – Truck Profile, Bureau of Transportation Statistics, U.S. Department of Transportation, Washington, D.C., April 2001.
2. *National Transportation Statistics 2000,* BTS01-01, Appendix A – Highway Profile, Bureau of Transportation Statistics, U.S. Department of Transportation, Washington, D.C., April 2001.

1.1.2 An Incomplete North American System

Mexico's failure to develop adequate communications, transportation, and education infrastructure, and the new allure of Asia, has contributed to a lack of true "North American strategies" by the private sector. For example, the automotive industry had hoped that Mexico would become the major supplier for U.S. and Canadian firms—but it has not to the extent it was anticipated. Because of inadequate transportation infrastructure, Mexican industrial growth has continued to cluster in the border regions, leading to aggravating border congestion, environmental degradation, and internal migration problems.

Another emerging challenge concerns the area of freight transportation. Supply chains depend on an efficient and secure physical infrastructure of rails, roads, and bridges; pipelines and wires; ports and border crossings; and on a coherent and consistent set of commerce regulations that affect individuals, machines, firms, and goods. North America's freight transportation infrastructure faces a "perfect storm" of capacity, congestion, and deterioration due to the end of excess capacity, the emergence of global manufacturing value chains with vastly greater demand for freight-transportation capacity, the continued failure to harmonize regulations, and the accumulated effects of delayed maintenance. A review of recent research on North America's freight transportation system, conducted by the North American Transportation Competitiveness Research Council, concluded that "The JIT (Just in Time)-lean inventory advanced manufacturing system developed since the 1970s that enables North America to compete successfully with Asian and European manufacturers, is now reaching its capacity limits. The supporting transportation infrastructure is now inadequate to handle the projected volume growth of North American supply chains' freight flows."[3] It is important to now think about a North American freight transportation system for the 21st century and at the same time reduce congestion at sea and land ports of entry. Perhaps one way to do so is to shift more goods traveling by truck to rail.

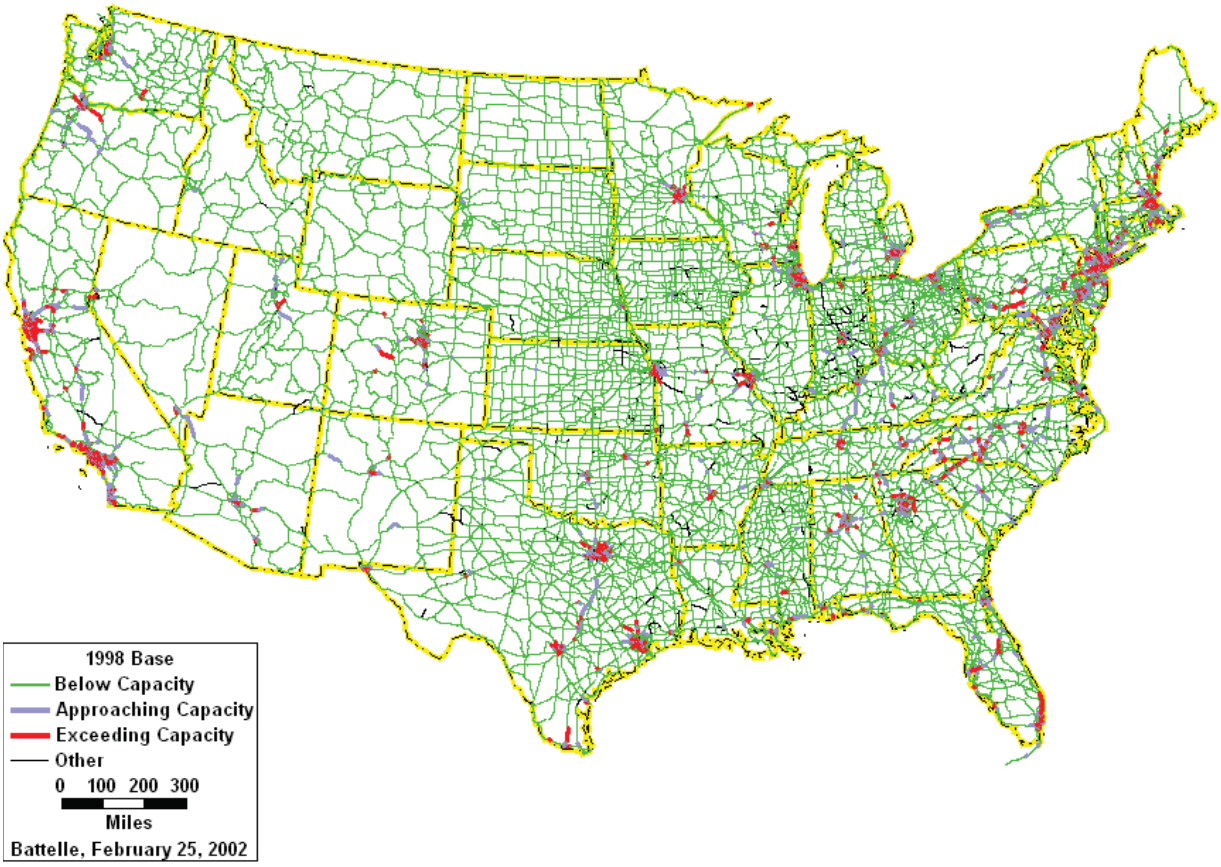


Figure 2: *1998 Base U.S. Highway Capacity Map*

3. Guy Stanley, Review of Recent Reports on North American Transportation Infrastructure, North American Transportation Competitiveness Research Council, Working Paper 3 (September 2007) http://natcrc.org

Today, North Americans also share in the world's most deeply integrated energy markets, with Canada and Mexico as the top two suppliers of crude oil products to the United States. Canada is the largest supplier of natural gas, uranium, and electricity to the U.S. and the U.S. frequently sells energy to Mexico to fuel its growing use of air conditioning and industrialization along its northern border. Baja California is more closely related to the U.S. energy market than to the Mexican market. Its natural gas industry has close ties with the U.S., exporting the majority of its resource through San Diego and Yuma. The pollution caused by energy production is not a state or a national issue, but a continental one, and potential solutions for effective Green House Gas (GHG) reduction could lie within development of tri-national agreements. No such agreements have been made, but regional agreements have begun to form. Examples of these regional agreements include the Regional Greenhouse Gas Initiative (RGGI) in New England and Eastern Canada, and the Western Climate Initiative (WCI), which includes observers and participants from every North American country.

1.1.3 Regional History of North America

Interregional economic systems have historically existed in the U.S. For example, in the Northeast, close economic ties existed from the early colonial era between Nova Scotia and New England (between Halifax and Boston), between Montreal and New York, and among French Canadians who populated not only Quebec, but all of northern New England. In the Pacific Northwest, where communities shared closely linked histories (the "Oregon Territory" was jointly administered by the U.S. and Great Britain from 1835 until 1849), and along the Rio Grande where communities developed on both sides of the river under Spanish rule and where Mexican-American communities grew during most of the 20th century. Communities along what became national borders often had more in common with each other than with more distant communities in their own countries.

The story of North American economic integration did not begin in 1994 with the signing of the North American Free Trade Agreement (NAFTA). In many ways, NAFTA (and its predecessor, the Canada-U.S.

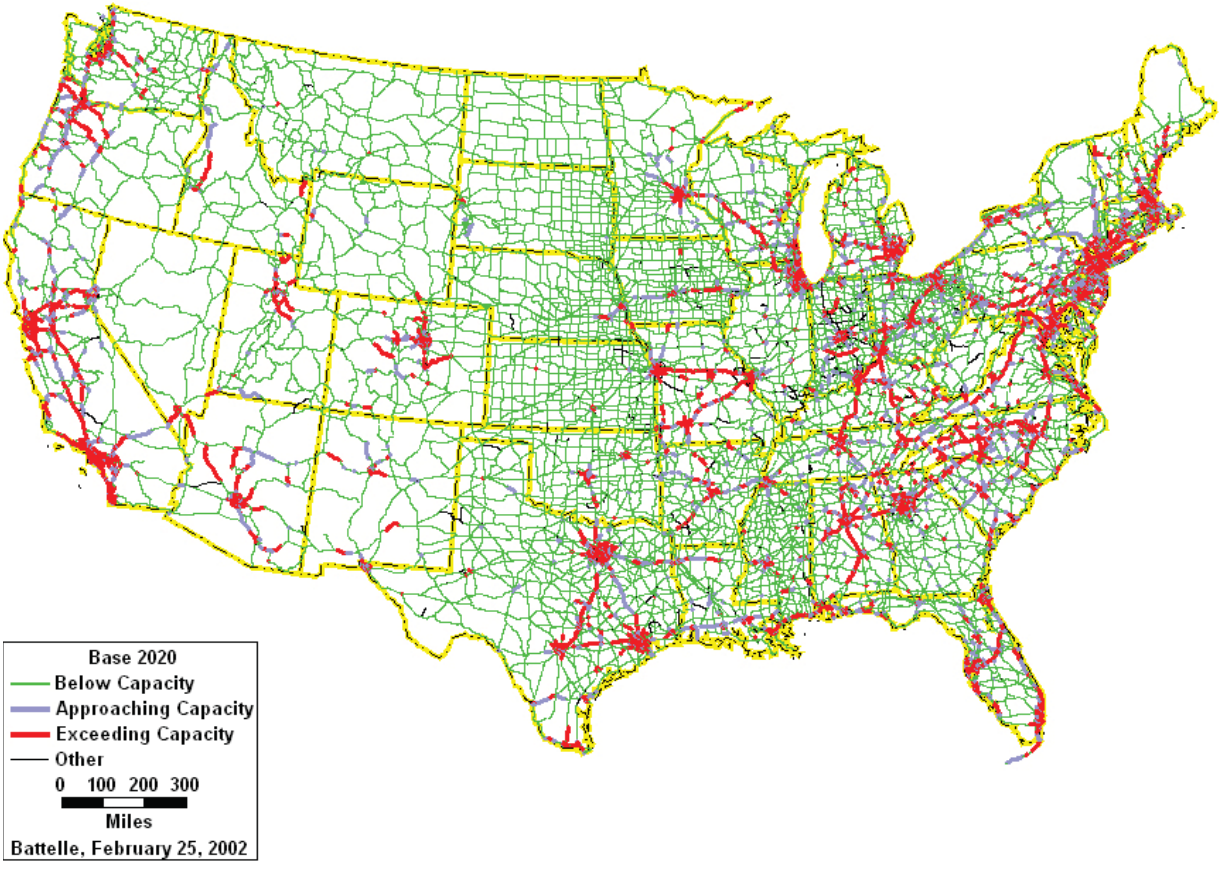


Figure 3: *2020 Base U.S. Highway Capacity Map Projection*

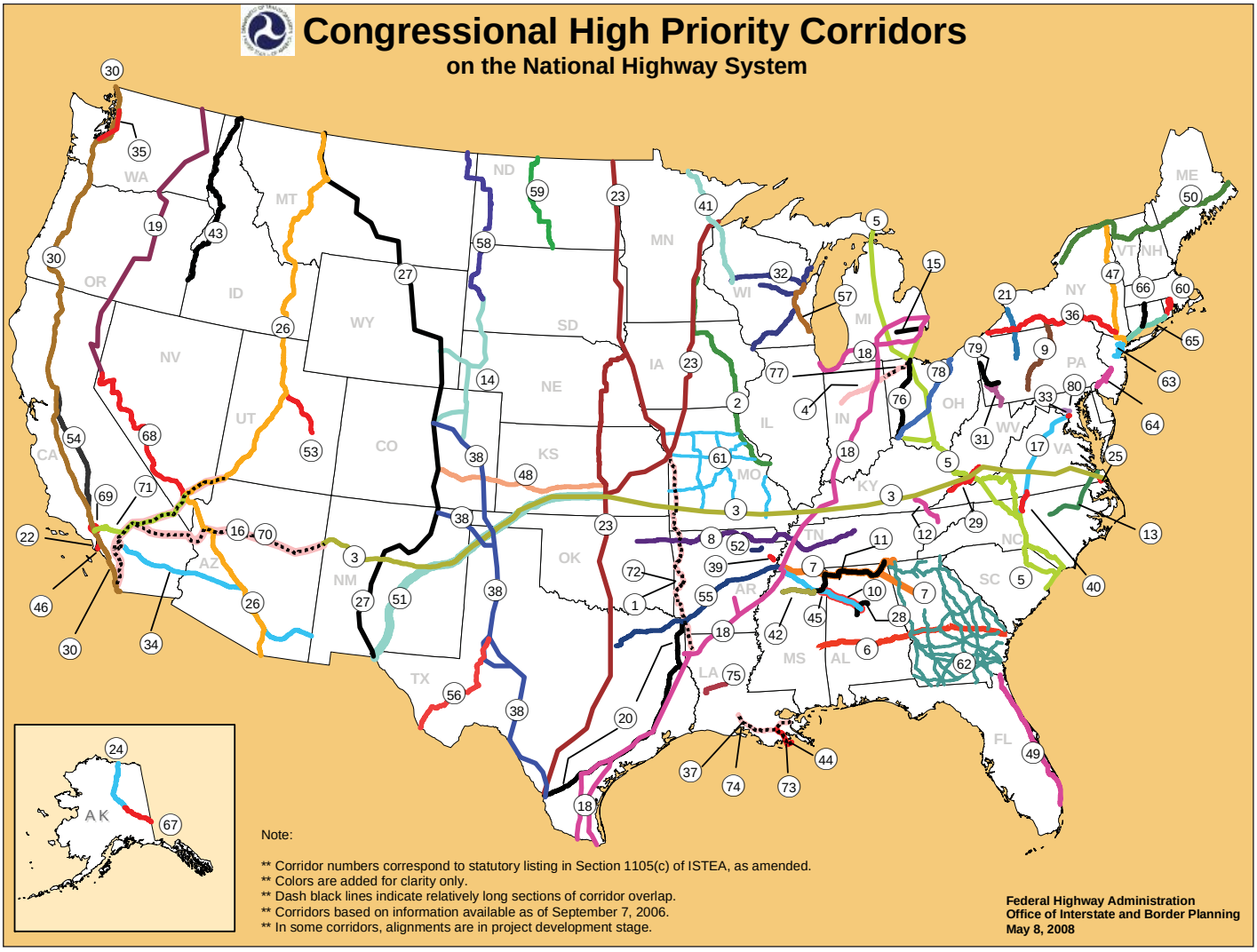
Free Trade Agreement signed in 1987) were responses to changes that were already underway in key sectors of the North American economy. During the 1980s, U.S. firms were faced with increasing international competition, diminished tariff protection due to successive General Agreement on Tariff and Trade (GATT) rounds, and falling profit margins. Many sought to reduce excess capacity and rationalize their production systems by integrating their Canadian and Mexican branch plants into single North American divisions, producing continent-wide production, distribution, and marketing systems. In the early 21st century, the North American economy can best be visualized as a deeply integrated continental system of supply chains. Supply chains are structured by networks linking production centers and distribution hubs across the continent from Canada to Mexico. These new production systems have enabled companies to link the most favorable sites for production and distribution, with the aim of enhancing their productivity on a continental and global scale.

1.2 Growth of Regionalism

1.2.1 Trade Corridors and the Role of Regional Organizations

Metropolitan and state/provincial areas together with business leaders have formed organizations to identify regional objectives and strategies throughout the nation. The Maricopa Association of Governments (MAG), Pima Association of Governments (PAG), and

Figure 4: *Congressional High Priority Corridors on the National Highway System*



Source: Federal Highway Administration Office of Interstate and Border Planning , May 8, 2008.

Central Arizona Association of Governments (CAAG) are key regional organizations in the Sun Corridor addressing regional issues. Organizations such as these have sought to link up with similar groups along new "trade corridors." Regional groups within Arizona such as the Border Trade Alliance, the Yuma, Nogales, and Douglas Port Authorities, the Governor's CANAMEX Corridor Task Force, the Arizona Mexico Commission, Arizona Sonora Manufacturing Initiative, and the state Universities (ASU, UA, and NAU) have all encouraged state/provincial and federal governments to improve transportation and border infrastructure. Their wish is to enhance the Arizona border's competitive capacity and to mitigate issues impacted by increased traffic flows within Arizona's own trade corridor, the CANAMEX Corridor.

These organizations and those across the nation have taken various forms and their strategies have differed. But their goal is the same—to work collectively to develop a competitive and industrious region. Some corridor organizations want to capture some of the flow of north-south trans-border business and want to build new transportation systems that would link urban regions and clusters in Arizona, the U.S., Mexico, and Canada. These organizations include both public and private leaders from within the state, and though they may see different reasons for integration, their end goal is the same.

Some organizations build on existing relationships among communities; others seek to construct ties among cities and towns that are barely aware of each other. Political alliances have been created to attract funds from state governments and federal agencies, particularly from the U.S. highway legislation of the 1990s.[4] Trade corridors are often transient, relying on the relatively short-term interests of a few business leaders. Others are more institutionalized, particularly where there is closer cooperation between the business community and metropolitan and state-provincial governments. All reveal a critical reality. A more accurate and useful map of North America today would focus much more on border associations, organizations of governors, trade corridors and supply chains linking urban centers, organizations and regions.

Trade corridors illustrate an exchange between firms seeking to build greater efficiencies into their production systems, including groups of local business and supply chains, and metropolitan government leaders offering solutions to help capture these efficiencies. As supply chains became more expansive, looking from Mexico to the U.S. and Canada, more local leaders seek to construct alliances that will support these new business arrangements and, in doing so, leverage local economic development initiatives.

The course of trade corridors, clearly, is not simply a function of geography. Geography is obviously important and trade routes have always tracked fine harbors, deep rivers, and flat valleys. But, entrepreneurs historically have seen different ways of getting from one point to another through new technologies and strategies, to move between "gateways" and "hubs." Research suggests that two other factors play a more powerful role.

First, geography is generally less important in determining which trade corridor will attract more business than the ability of those who visualize the corridors and build coalitions among communities along the route that include political alliances, business leaders, metropolitan, state, and federal governments.

Second, and more important, the key element of success in developing trade corridors is the exercise of entrepreneurial imagination and vision in policymaking. Entrepreneurial imagination drives the utilization of new technology and draws new lines on old maps. In the end, what the trade corridor evolution helps us understand most of all is the entrepreneurialism that drives North American integration.

In some more developed corridors, such as the Pacific Northwest Economic Region (PNWER), the corridor organization facilitates the development of collaborative strategies among urban and state-provincial leaders to encourage entrepreneurial development. But for the most part, cooperation between business, regional, and governmental organizations has been limited and intermittent.

Other regions have begun to coordinate and form organizations to coordinate and manage multi-county, multi-state, and multi-national issues. The previously mentioned Pacific Northwest Economic Region (PNWER) is based in Seattle, Washington, and convenes five U.S. states and four Canadian provinces to discuss a broad range of issues pertaining to their bi-national region. Another example is the Southern California

4. **Note:** We must underline the importance of the Transportation Equity Act for the 21st Century, "TEA 21" which authorized a wide array of highway, highway safety, transit and other surface transportation programs. Included was $700 million to support trade and improve security at borders and to design and construct corridors of national significance. Groups that formed corridors hoped to tap into TEA21 funds. This occasioned much controversy over the division of TEA21 funds between domestic corridors and the "NAFTA corridors".

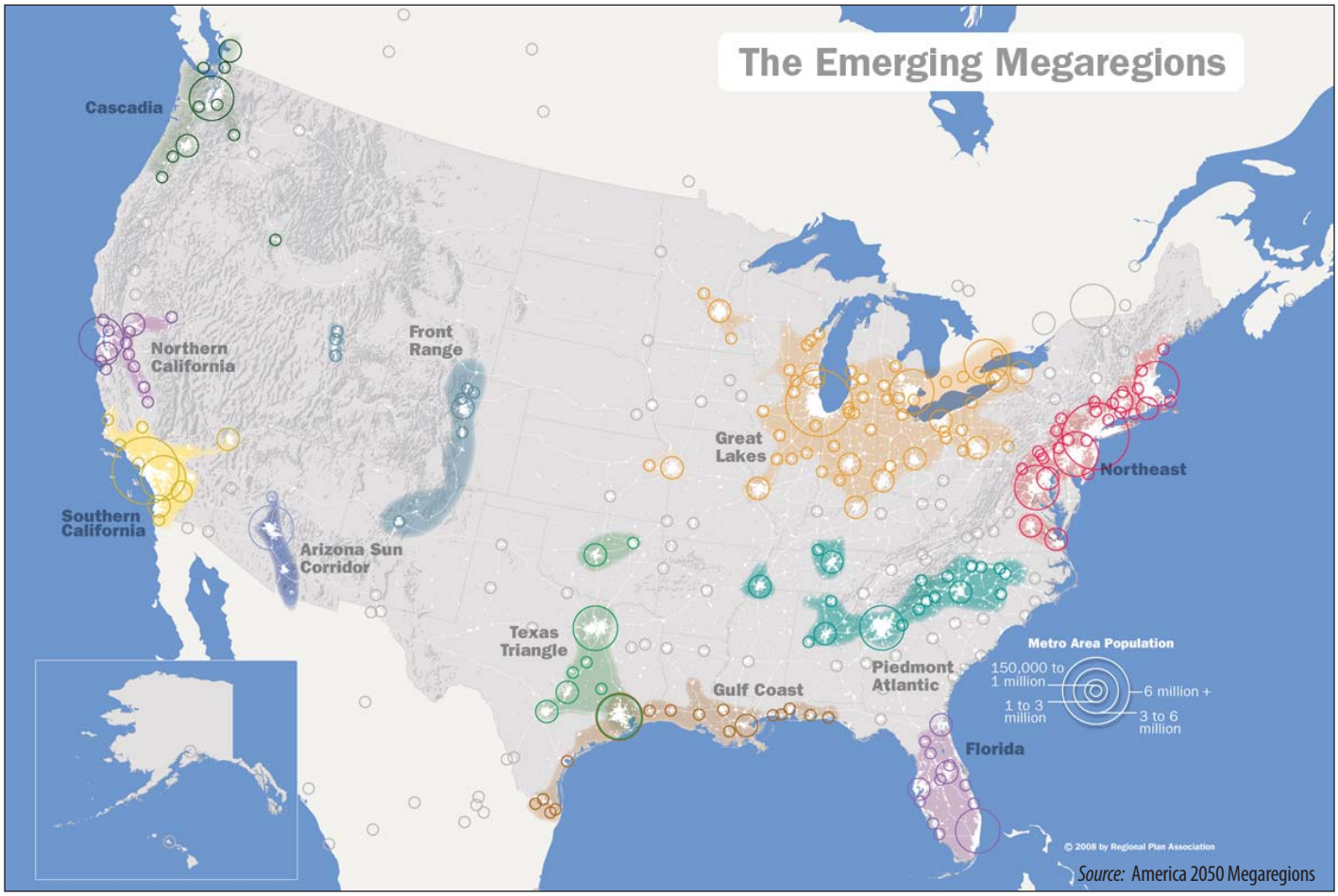
Association of Governments (SCAG) which includes six counties, fourteen Councils of Governments (COGs), and the cities of Calexico, Palm Springs, Long Beach, and Los Angeles. Mexico has begun to see the need for cohesion as well, with the formation of the Municipal Institute of Investigation and Planning, IMIP in 1995 in Juarez.

1.2.2 Megaregions and Megapolitans

Studies such as Brookings Institution's: *A Bridge to Somewhere and Mountain Mega Regions,* identify Arizona as the predominant megapolitan in the Intermountain West, growing faster than the Las Vegas, Northern New Mexico, Front Range (Denver), and Wasatch Front (Salt Lake City) regions. With the Sun Corridor's anticipated growth, the current infrastructure expenditure models will not meet the future demand of this area, as the economies within cities and counties become more intertwined.

America 2050, a conglomerate of multiple non-profit public policy organizations predicts rapid growth throughout the U.S. and predicts that current metropolitan borders will merge into megaregions. Megaregions are expected to include a conglomerate of multiple cities interlocking economic, ecological, and transportation systems with shared natural resources and interests. The Sun Corridor has been identified as one of these megaregions. Nine of the eleven identified megaregions by America 2050 include major international seaports such as Houston, Miami, New Orleans, and New York, or the megaregion borders Canada and Mexico, such as Arizona, Oregon, Michigan, and Texas.[5] This simple observation points out the importance of international trade in economic growth, and development.

Figure 5: *Emerging Megaregions in the United States*



5. America 2050, America 2050 Megaregions, http://www.rpa.org/america2050/sync/elements/america2050map.png

1.2.3 Sun Corridor Role in North American System and Regionalism

It is important to begin thinking about a structure within Arizona to help advance and sustain the benefits of economic integration in North America. We must consider what efforts will support sustained collaboration to deal with the transborder and continental issues noted above.

In the last fifteen years there have been large developments that have greatly affected the economy of Arizona. The passing of NAFTA in 1994 and the lowered tariffs and barriers to trade between the U.S. and Mexico provided incentives for large manufacturing and labor-intensive industries to develop in Mexico. Thus, states who share a border with Mexico, including Arizona, quickly saw a growth in truck and train freight on the border. The number of trucks crossing the Arizona border from 1995 to 2000 grew from 296,342 trucks to 344,265, while trains grew from 456 trains in 1995 to 774.[6] The number of maquiladoras, (a customs-privileged manufacturing plant that imports materials to be assembled and exported elsewhere for sale) along the US-Mexican border has grown rapidly since NAFTA's passing as well. In the years between 1990 and 1993, prior to NAFTA, the demand for manufacturing plants was already clear with a growth of 118 plants per year. Post NAFTA that number nearly doubled, with an average growth of 223 maquiladoras per year.[7]

After the September 11, 2001 attacks, U.S. borders with Mexico and Canada were tightened, resulting in an immediate drop in freight and business between Arizona and Mexico. With longer and highly varied wait times at the border, cross-border business was less efficient and desirable. Just-in-time deliveries, an important manufacturing and warehouse strategy that require specific deadlines and time requirements for processing products, became less reliable after the rise in security and inconsistent wait times. The cost of unproductive idling trucks became too high for some businesses. After its initial drop in 2001, the port of Nogales has seen a large increase in its freight crossings since 2004. All of the smaller ports in Arizona, except San Luis, experience fewer trucks crossing their border today than they did prior to 2001, due to regulations and streamlined processing.

1.2.4 Opportunities Presented by Collaboration

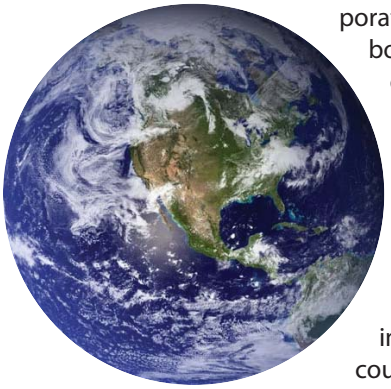
The purpose of this report is to outline global, North American, and Intermountain perspectives that may provide a basis for Councils of Governments (COGs) in the Sun Corridor to work cooperatively with one another to address shared issues. Comprehensive planning is needed to understand and address the regional, national, continental, and global forces that provide both challenges to the region and opportunities that can further develop the Sun Corridor as an economic engine and interconnected environment.
These forces can be prepared for through strategies that see the oncoming wave of economic and demographic changes as an opportunity, and can direct it into a force to be used to sustain the region and improve the Sun Corridor. These opportunistic strategies are called demand-side strategies because of their affect on changing the decisions of consumers to use more sustainable and long-term effective options. This is the opposite of supply-side management, which supplies more of the currently chosen option by the consumer. Supply side strategies attempt to keep pace with the current growth and infrastructure cycles instead of changing them for more efficient growth. Demand-side strategies are used in traffic and congestion issues in order to provide options that have fewer external effects on society through emissions, sound pollution, land-use, and the public's wasted time in traffic congestion.

These far-sighted and visionary strategies can cover a wide scale of options, from infrastructure to finance, and because of the rapid growth expected within the Sun Corridor, all of them must involve governments from the entire region in order to be truly effective and bring the greatest benefit to the Sun Corridor.

6. Research and Innovative Technology Administration, Bureau of Transportation Statistics, U.S. Border Crossings, http://www.transtats.bts.gov/BorderCrossing.aspx
7. Federal Reserve Bank of Dallas, The Border Economy, NAFTA and Maquiladoras: Is the Growth Connected? http://www.dallasfed.org/research/border/tbe_gruben.html

1.3 Global and External Developments

The world has seen amazing growth in population within the last thirty years in nearly every continent. Global financial systems, multi-national corporations, international laws, and trans-border governmental agencies have continued to grow with this economic growth in order to meet the demands and provide structure to managing this global engagement. There are a broad set of developments throughout the world, both environmental and economic, that could have a large impact on Maricopa, Pinal, and Pima counties in the Sun Corridor. Linear growth expectations are not always predictable alone because of their inherent dependency on the continuing pattern of the growth. Understanding the cause of the economic patterns and the possible changes to the source, can better prepare Arizona for anticipating its future economic environment. The following are large-scale developments that could potentially affect the global economy, and the Sun Corridor's role within it.



1.3.1 International Developments and Projects

International sea port expansions in Mexico such as Manzanillo, Lázaro Cárdenas, Guaymas, and possibly Punta Colonet, can be expected to increase the flow of freight and traffic through the U.S.-Mexico border. These port developments will easily double the amount of freight coming through the California, Arizona, New Mexico, and Texas Ports of Entry. This activity is anticipated to drive the development and economic growth in the nation's border states. Due to the recession and peso devaluation, the Punta Colonet development has been pushed back to a 2016 timeframe, though the government is set to begin the bidding process for the development by the end of 2009. This means Arizona should not rely on this opportunity immediately, but should anticipate and plan for the growth of freight in the near future. With possible freight shipments moving to Mexico in order to avoid the overcrowded California ports, Arizona should take steps to capture the growth in business opportunities with Mexico.

The ongoing expansion of the Panama Canal will also have ripple effects on global trade and competitiveness. In 2014, the ships passing through the canal will carry up to 14,000 containers per ship from the current 4,500 containers per ship. This is nearly three times as much cargo per ship that will be able to circumvent the California ports and no longer travel through Arizona. As 70% of the cargo unloaded in Los Angeles and Long Beach is destined east and north, if shippers chose to use the possibly less expensive (and in some cases faster) route through the Panama Canal, the Sun Corridor could potentially experience a net loss of freight transit from the Los Angeles and Long Beach ports unless the Sun Corridor adds value to the routes through Arizona by providing a value added industry and extensive distribution centers.

1.3.2 U.S. Trends and Developments[8]

Within the last ten years, the Mexican and North American manufacturing has slowed down, and seen heavy competition from Asia, particularly China. The maquiladoras that grew at exponential rates after the inception of NAFTA began to decline after numerous shocks to the North American manufacturing system. These shocks were primarily due to the fluctuating currency values; Mexico's peso gained value to the dollar from 2000-2002, and the dollar appreciated against most other countries during this time as well.[9] Manufacturing through North America dipped heavily during this period because of its more expensive products.

Though China's manufacturing grew during this time, its competition with Mexico is overrated. Between 2000 and 2005, the China import market into the U.S. rose from 8 to 15 percent, while Mexico's dropped from 11 to 10 percent. Though the countries' markets clearly changed directions, China's market growth did not overwhelm Mexico's. Today, Mexico still has numerous manufacturing competitive advantages over China, and continues to out-compete China on products that:

- have a high ratio of weight to value, such as motor vehicles, large screen televisions, and major household appliances,
- are quality (rather than price) intensive, such as medical goods and process control instruments,
- are inputs for industries that require just-in-time deliveries, customized production, or require frequent design changes, such as auto parts,
- require protection of intellectual property.[10]

8. **Note:** Much of the data and assumptions concerning freight expectations and growth through Arizona can be found in the Freight Analysis in the Appendices.
9. Watkins, Ralph. "The China Challenge to Manufacturing in Mexico" United States International Trade Commission, September, 2006.
10. Watkins, "The China Challenge to Manufacturing in Mexico"

The North American manufacturing industry will gain a boost when aspects of the NAFTA agreement is improved upon and followed. The impact of the U.S. Congress consistent decision to restrict Mexican trucks the rights to haul international freight to final destinations within the U.S. slows the progress of efficient trucking and border-crossing times. Although these rights were promised within the NAFTA agreement of 1994, it has continued to be denied to Mexican trucking companies primarily due to lower emission and safety standards required in Mexico. Most recent studies by Universities such as the Texas Transportation Institute and others show these issues are no longer tenable because of numerous advancements in the Mexican trucking industry.

These rights do not include cabatoge rights, which are the permission for a Mexican company to pickup and deliver goods between two different locations within the U.S. Thus, once this part of NAFTA is allowed, Mexican trucks will only be able to deliver goods from Mexico to a destination within the U.S. and return directly to Mexico without picking up another load in the U.S. When this limitation by Congress is lifted, it will increase the benefits of North American manufacturing and the sea port developments in Mexico due to the increased efficiencies at the border, and the resulting rise in productivity at the border. U.S. freight will no longer need to transfer their load to a different trucking company at the border for a delivery in Mexico, and Mexican freight will no longer need to do the same to enter the U.S.

During the current economic downturn, Los Angeles and Long Beach have lost 16% of their traffic.[11] However, they are using this time to expend $1.6 billion to upgrade the facilities in an effort to retain as much future shipping as possible. Plans include constructing deeper section of the ports to accommodate the larger ships, building closer UP and BNSF rail access, and new wharf freight handling facilities. These additions will help keep the California ports competitive with the expansion of the Panama Canal and ports on the east coast.

The rise of international megapolitans outside of North America such as Singapore, Shanghai, and, Frankfurt; and U.S. megapolitans such as Southern California, Chesapeake, Texas Gulf, and New England, leads to economic competition between regions. The possible future regional challenges of traffic congestion, outdated infrastructure, lowered environmental quality, outdated education systems, and inefficient energy/water use, could all lead to a lack of incentives for economic growth and development within the Sun Corridor and these other regions.

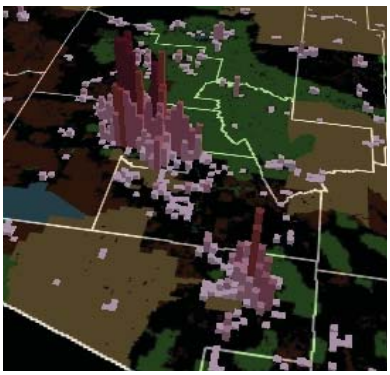
Many of these international and external developments could change the flow and direction of freight and the supply and demand for businesses. The Sun Corridor must ensure that it is not left behind in these global trends or pushed to the side by its much larger competing economies. Instead, Arizona can adapt to these trends through management strategies that prepare for the growth before it happens, rather than be reactionary. This can be done by recognizing its competitive advantages and constructing an environment that can compete successfully nationally and globally. The best option for the Sun Corridor is for the region to provide an environment to attract shippers and that offers such an added value that turning away from Los Angeles or Long Beach and other west coast facilities that pass freight through Arizona is a substantial loss in overall productivity to their company.

Whether freight shipments through Arizona rise due to Mexico's growth in manufacturing exports, or there is a rise in shipments to Mexican ports that pass through the Sun Corridor, or whether there is a rise in competition from the Panama Canal and eastern ports, the Sun Corridor should strongly consider creating the environment for an inland port and international business hub to enhance competitiveness and opportunity in the region.

11. Los Angeles County Economic Development Corporation (LAEDC).

2. Challenges[12]

There are a myriad of existing and growing forces on the Sun Corridor that must be recognized and addressed by local agencies. These pressures demand action of both the private and public sectors within the megapolitan region. Social, demographic, economic, infrastructural, and environmental changes require innovative and all-encompassing solutions that deal not only with the local issue, but with spillover effects and the improvement of the region as a whole. With recent studies showing the Sun Corridor as the most rapidly growing megapolitan area in the nation by 2030 and the existing limits to transportation, water, energy, and land, the region has a unique opportunity to frame its future growth as a competitive region in a sustainable manner.



Developing a competitive megapolitan is not just facilitating the movement and growth of goods and businesses, but also the efficient development of the communities and the people's movement throughout the region, to and from their jobs. Planners and decision makers must also take into account the livability of the region, and the sustainability of the region. This means not only long term effects on the environment, but long term economic development, and the effects of city, county, and megapolitan planning on society and its quality of life. Traffic, energy costs, and health issues due to densely populated urban regions such as air pollution can add or detract from a region's competitiveness with other megapolitans.

With the expected population growth in the Sun Corridor, the continued suburban expansion pattern can not be sustained. The large amount of state, federal, and other public lands, along with developments in state laws on eminent domain push back on the expansion of suburbs as space becomes less available. The inability to expand is due to the limited space available for private development, the pressure it places on freeway and highway systems, and the environmental spillovers resulting from the volume of commuting drivers. With numerous studies showing that transportation has overtaken industry as the greatest CO2 emitter across the nation, and vehicle miles traveled continuing to rise along with emissions, the demand for new development and transportation patterns rises as well.

2.1 Exponential Population Growth

The current population of Arizona is attributed to the rapid growth occurring in the last fifty years. Since 1960, Arizona's population has grown from 1.3 million to 6.1 million, over a 300% increase. Much of this has been due to the growing Hispanic community from Mexico and other regions of Latin America. According to the U.S. Census Bureau's 2007 data, nearly 30% of the Arizona population is from Hispanic or Latino origin. In the 2000 census, over 25% of the Arizona population spoke another language besides English at home.[13] As a result, there is an increased demand for speaking a second language in the region, largely because of the influx of Spanish speakers in Arizona. This demographic change can be seen as an opportunity to strategically connect Arizona industries to businesses in Mexico to stimulate business opportunities and expand economic activity in the region.

According to the Megapolitan Institute of Virginia Tech, the population growth in the Sun Corridor is expected to be the fastest of any megapolitan region through the year 2030.[14] This will place extensive expectations upon key regional organizations and stakeholders to address future demands for approximately 3.5 million more people in Maricopa, Pima, and Pinal counties. Such challenges include environmental, infrastructure, quality of life, economic strategy, business needs, and government services. The region will continue to be one of the largest immigrant receiving regions in the U.S. because of its close proximity to Mexico.

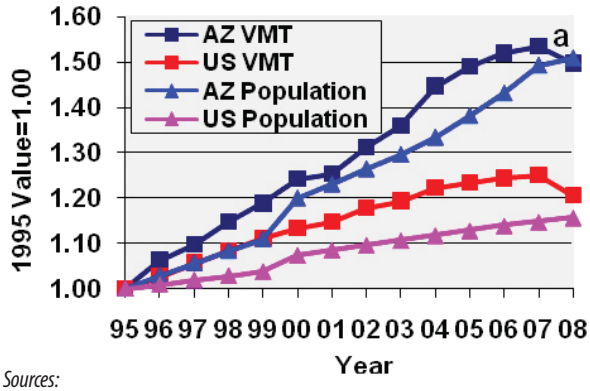
Economic demands and technological advances will also alter the job market for the Arizona population in the future. An increase in competition from international regions for high-skilled workers, industries, and entrepreneurs, challenges Arizona to provide an environment to retain the industries and jobs that currently exist in the state and to expand upon the competitive advantages of the region that will build an environment to attract new industries to the state.

12. **Note:** Much of the data and assumptions concerning freight expectations and growth through Arizona can be found in the Freight Analysis in the Appendices.
13. U.S. Census Bureau, Arizona Quick Facts, http://quickfacts.census.gov/qfd/states/04000.html
14. Metropolitan Institute at Virginia Tech, October 2006 tabulation from U.S. Census Bureau 2000 data and Woods & Poole Economics Inc. for 2030.

With the expected population increase, new jobs must be created for incoming residents as well as improved transportation corridors and services.

Arizona's rapid growth in population has affected transportation flows through the state as well. The number of cars and trucks on the road in Arizona and across the nation are much higher than they have ever been. This growth is relative to the population growth, but has been enormous and much greater than the rest of the country. Trucks passing hrough Arizona on to California, Mexico, and to the East Coast utilize the state's highway corridors and infrastructure. Additionally, Arizona has seen an increase in commuter traffic. Due to the expansion of suburban communities, this has produced longer drives to and from work for many Arizonans, leading to more congestion on the roadways.

Figure 6: *Vehicle Miles Traveled (VMT) and Population Growth in Airzona and the United States*



Sources:
Federal Highways Administration. Traffic Volume Trends.
www.fhwa.dot.gov/ohim/tvtw/tvtpage.cfm
and U.S. Census Bureau, Population Estimates.
www.census.gov/popest/estimates.php.

2.2 Transportation and Traffic Congestion

Transportation is a large piece of the challenge brought by rising population. With increased urbanization and density, there will be a greater number of people in smaller spaces. This, along with the expected rise in freight and cars passing through Arizona to and from other regions such as Mexico, California and Texas, could lead to a significant growth in traffic congestion on the current roadways.

Table 1: *Daily Commuters in Maricopa, Pinal and Pima Counties*

Residence County	Workplace County	Daily Commuters
Pinal	Maricopa	19,918
Maricopa	Pinal	7,751
Pinal	Pima	2,601
Pima	Pinal	1,974
Pima	Maricopa	1,838
Maricopa	Pima	1,214
Total		**35,296**

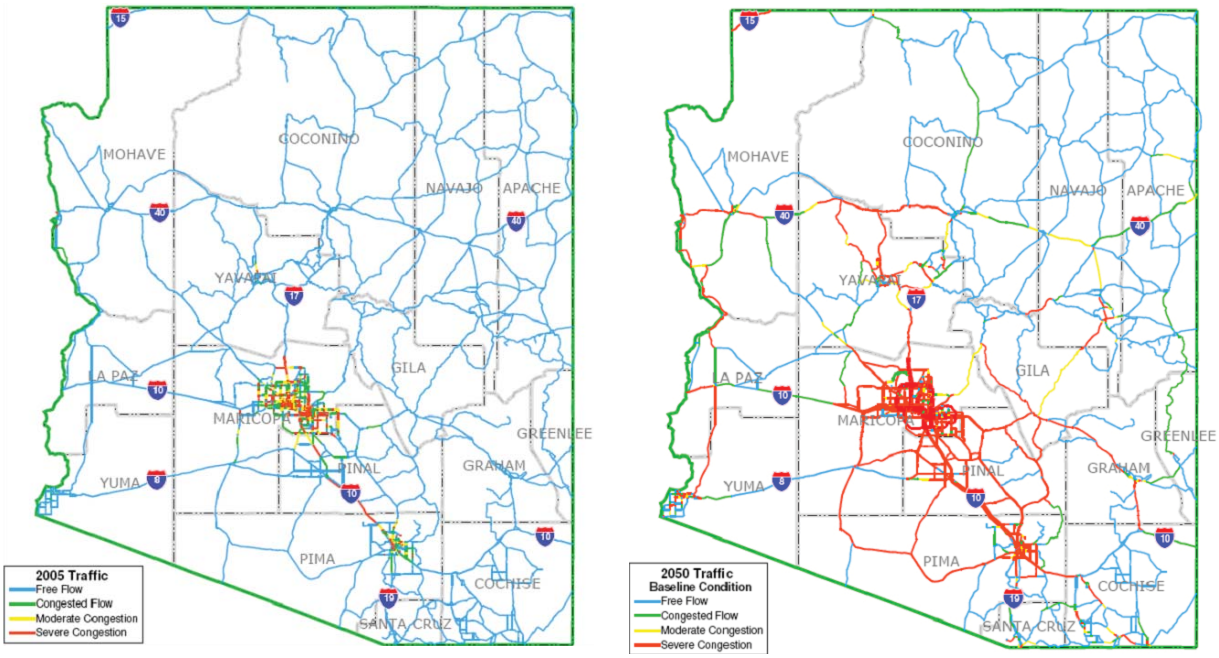
Source: Arizona Department of Transportation Phase I (2007) report based on year 2000 Census Transportation Planning Package

The employment flows between counties are already large, and will only continue to grow as the cities expand and their boundaries become more interconnected. Currently, between Maricopa, Pinal, and Pima, there are 35,296 workers who cross county boundaries to go to work on a daily basis. Over 27,000 of those are between Maricopa and Pinal, and the rest are relatively even between Pinal and Pima, and Maricopa and Pima.[15] As the two metropolitan areas of Phoenix and Tucson expand toward each other, their regional boundaries will blur and the economies of the two will continue to intertwine.

The transportation infrastructure shortage within metropolitan areas costs the nation billions of dollars in lost revenue according to the Brookings Institute. This lost revenue is due to the wasted time workers and freight spend waiting in line to get to their work, warehouse, or meetings, and the cost of goods arriving late. This could mean spoiled food at the local grocery store, delayed car production between Sonora and Michigan, an increase in CO2 emissions expended, and less productive work hours for the people involved. In 2007, the estimated lost productivity in the Phoenix area was 1.89 billion dollars,[16] and 393 million dollars lost in Tucson.[17] That is roughly $1,034 and $923 lost per traveler in Phoenix and Tucson respectively.

15. United States Census Bureau, United States 2000 Census, Arizona County to County Worker Flows, 2000
16. 2009 Annual Urban Mobility Report, The Mobility Data for Phoenix, Texas Transportation Institute, The Texas A&M University System, July 2009
17. 2009 Annual Urban Mobility Report, The Mobility Data for Tucson, Texas Transportation Institute, The Texas A&M University System, July 2009

Figure 7: *Current (2005) and Projected (2060) Arizona Traffic Conditions*

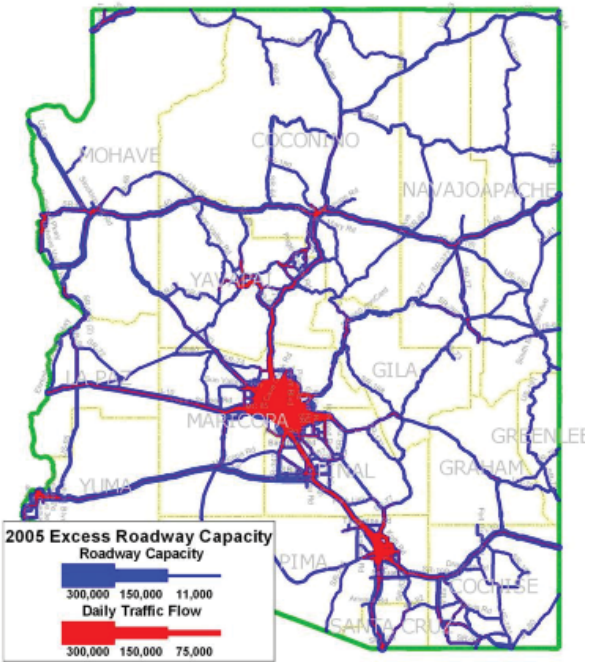


Source: Arizona Department of Transportation

The congestion within the Sun Corridor is currently lower than many other heavily populated megapolitan regions in the U.S. largely due to the younger age of the state, and its effective finance and supply of roadways through the years. Arizona has had the opportunity to develop with broad and long-term issues in mind because of the available resources to the region. The amount of available land, pre-existing transportation funds, and finance strategies allowed for the rapid construction of infrastructure since the 1960s and more recent years. State and federal funds were allocated effectively to transportation because of Arizona's importance at the time as a link between California and the east coast. Land prices have risen, and the development of the Corridor has caught up with its surrounding states. Competition for federal funding is high and Arizona lacks the presence of a stable funding mechanisms to address ongoing transportation infrastructure needs.

At the current rate of infrastructure investment, the Brookings Institute and Arizona Department of Transportation expect congestion to reach detrimental levels to the economy and society if there are no expansions to the current transportation system. Current estimates show 2.28 billion dollars is lost annually due

Figure 8: *Arizona 2005 Excess Roadway Capacity*



Source: Arizona Department of Transportation

to the total congestion within the Sun Corridor. With the expected growth in population and the amount of private land available diminishing, the Sun Corridor will need to provide for alternative transportation services to ease the impact caused by congestion. Congestion not only hurts the economy of a megapolitan, but also constricts other quality of life opportunities.
The costs for building transportation infrastructure are much more within metropolitan areas than between them. This is a compelling reason to design transportation infrastructure that utilizes demand-side management that drive the long-run traffic trends into ways that are more cost effective for the region in the future. Land will only rise in cost as demand rises and supply lowers. Adding lane after lane of highway will become less practical and more expensive. The I-10 connecting Phoenix, Casa Grande, and Tucson continues to be the primary route between the three cities, and the growing number of workers and trucks on the highway must continue to struggle to fit within the same roadway until new options are available.

2.3 Air, Energy, Water, and the Challenge of Sustainability

Arizona's energy production has been impacted by the population growth, and the state's dependency on fossil fuels has made the state vulnerable to a fluctuation in prices. Coal is the second largest source of energy for the Sun Corridor according to the Energy Information Administration, however the supply is finite and primarily comes from a single region near northern Arizona and New Mexico. Broad regional plans will be required to provide long-term, sustainable, and clean energy alternatives such as solar, wind, and nuclear sources. Although Arizona's Palo Verde plant is the highest capacity nuclear plant in the U.S., Arizona should consider using renewable energy sources due to the sensitivity of the subject, and the high start-up cost. The abundance of sunshine and wind in the state gives a huge opportunity for energy sustainability.

The water supply in Arizona has become a challenging force as the supply has continued to diminish while population growth in the Sun Corridor and the Intermountain West continues to grow. Arizona has managed its water well compared to other southwest states, but still faces an uncertain future especially

in the face of climate change. To ensure long-term growth and prosperity for Arizona, long-range regional plans and systems need to be expanded to consider the growth of water use in the region. Transportation and development planners can better accommodate both the environmental, hydrological, and ecological impacts by collaborating with neighboring jurisdictions on planning, construction, and operations.
Finally, no discussion of sustainability issues is complete without some consideration of the impacts of global climate change. The most obvious alerts of regional concern come from drought. Water supply forecasts for Arizona are beginning to see pressures to find new strategies for water usage due to the current 13 year drought. But regional and transportation planners must take a more serious look at heat wave, storm, and flood implications as minimization and mitigation is more likely to be regional in nature. The continued possible future of droughts with increased floodings and monsoon storms means that flood control and storm water recharge need to be executed on a more regional scale to reach higher efficiency of water use and collection.

Adapting to extreme heat and accommodating extreme flood flows will require all (building, neighborhood, community and regional) planners and permitting agencies to prepare and respond to these increasingly likely climate changes. Inter-jurisdictional and regional planning will also be required to adapt to new monsoon regimes that may bring substantially more flood flows and greater winds and erosion.

2.4 Competition with Other North American Regions

The Sun Corridor needs to build incentives for smart growth and compete with other megaregions with significant international hubs. These competing megaregions and megapolitans surrounding the Sun Corridor can be looked at for examples and as partners for broad cooperation, but also as competitors seeking similar jobs and companies.

U.S.

Southern California is a region with a massive economy with large exports, imports, clusters, advanced infrastructure, and tens of millions of people in population. The region has three of the largest and busiest deep sea ports in the nation, including Long Beach, Los Angeles, and San Diego which bring in billions of dollars in freight from around the world. In addition, the southern border with Mexico provides the Southern California region another strong trade partner. Already San Diego County, Imperial County and Baja California are working closely to form CaliBaja, a bi-national manufacturing region. California regional government agencies such as Southern California Association of Governments (SCAG) are allowing the region to plan broad economic development strategies. However, this region is afflicted with extreme traffic congestion and fewer places to expand. Port facilities are reaching their full capacity and shipments have already begun to look elsewhere for deliveries and distribution centers.

Texas has become one of the main gateways for freight into the U.S., and has numerous well developed industries spanning from agriculture and oil to technologically advanced industries within the "Silicon Hills" outside Austin. Houston is one of the busiest ports in the world. The economy of Texas is roughly equivalent to India's, and has the public infrastructure to support it. Organizations such as the Border Trade Advisory Committee and the Port Authority Advisory Committee bring Metropolitan Planning Organizations, Ports of Entry, universities, county officials, and Regional Mobility Authorities all together to set forth plans and share information. These public entities allow Texas to provide a coordinated infrastructure and environment for the large industries that exist beyond national boundaries.

Continental

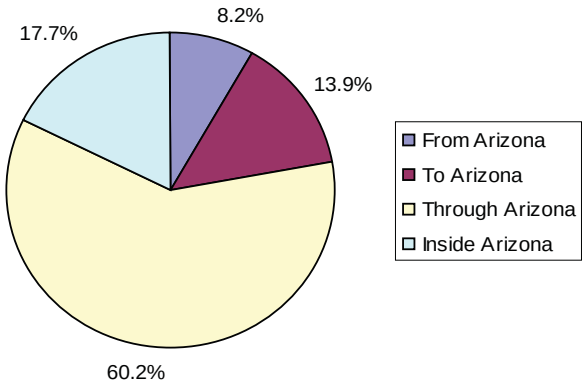
The northwestern states of Oregon, Washington, and others have begun to work together to build a cohesive economic region that include Canadian provinces as well. There are numerous international ports in the Cascadia, North Western region; Portland, Seattle, Tacoma, Whitman, Valdez, and Prince Rupert are just a few of them. Vancouver, Seattle, Portland and Eugene are connected by passenger rail, and the region works together constantly to improve its economic advantages. The Pacific Northwest Economic Region (PNWER) was created to better coordinate the region for the shared issues of water rights, transportation, energy, homeland security, and economic development. The region has port expansions and transportation plans that break the national boundaries to bring the region as a whole greater prosperity.

Mainland Mexico has the benefit of being home to one of the largest cities in the world and the largest city in North America. The deep sea port of Manzanillo is Mexico's largest port and the country plans to expand its capacity by nearly double its current use, as will Lázaro Cárdenas, its sister port to the south. The agriculture industry is rapidly growing, and natural resources are abundant as well. With the resources and labor available, and the enormous quantities of freight that is arriving and being shipped as far as Chicago, this region of Mexico is quickly becoming a major economic powerhouse. Government inefficiencies weaken its capabilities, but it continues to grow, and produce new manufacturing companies and others that plan to break into the high-tech industries within the US.

3. Opportunities[18]

The development of NAFTA and varied economic and social developments from around the world have affected the competition and of the U.S. and Arizona – especially in local regions and communities. However, the local institutions are challenged with being able to control or address the impact of the increasing numbers of trucks on the highways, the movement of industries to other regions, the flow of immigration, and the shifting economic environment. From a thirteen year drought of central Arizona and the Colorado river, to the prohibition of Mexican trucks into the country, a municipality or a county alone does not have the revenue, the personnel, or the political power to affect or deal with these regional and international forces. However, with joint efforts, the Sun Corridor can use these international movements to drive its economy forward and increase the competitive environment of the region.

Figure 9: *2005 Inbound, Outbound, Internal and Through Freight (based on weight)*



Source: Arizona Multimodal Freight Analysis Study, Technical Memorandum #1

Table 2: *Freight Carried by Mode of Transportation (2005)*

Mode Type	Weight (1000 tons)	Value (1,000 $)	Weight %	Value %
Truck	421,525	$1,998,091	75.7%	85.5%
Rail	134,527	$ 334,756	24.2%	14.3%
Air	505	$ 5,208	0.1%	0.2%
Total	**556,557**	**$2,338,055**	**100%**	**100%**

Source: Arizona Multimodal Freight Analysis Study, Technical Memorandum #1

As stated before, the Sun Corridor exists in the midst of multiple trade routes and has the ability to bring its own economic strengths to contribute to the global economy. All of these routes contribute to the countless goods, people, and businesses transactions impacting the local communities within the region. Billions of dollars in goods are brought through Arizona every year, and this number provides a large opportunity for Arizona to grow its manufacturing and distribution industries.

These broad strategies can also take into account the saturated capacity of port cities on the West Coast such as Los Angeles and Long Beach. This filled capacity in California could lead to large economic development opportunities in Arizona and the Sun Corridor if the right incentives and services are provided to bring businesses and industries to the region. With little space left at the California ports, Arizona could provide for distribution centers and inland ports that avoid the heavy congestion in Southern California. This is an opportunity that the Sun Corridor should take advantage of in order to continue to grow and prosper.

The manufacturing industries in Mexico and the possible movement of sea-going freight to Mexican ports should be taken advantage of as well. With the cheap labor in Mexico pulling large industries to the maquiladoras along the border and elsewhere, Arizona has the opportunity to promote value-added industries that bring goods through the border into Arizona for finishing touches on products. These could be products that require a highly skilled workforce, such as the recent move of the computer hardware company, Avnet Inc. to the Phoenix area. Other value added industries could take advantage of the large amount of produce and edible goods coming from Mexico as well, processing the imports into final food products. With the port developments in Mexico at Guaymas and Punta Colonet, Arizona businesses can take advantage of these new business corridors to further economic transactions and business activity.

The current recession and the passage of the American Recovery and Reinvestment Act can present Arizona with new opportunities. Though the recession has lowered the funds for Arizona's budget and slowed the amount of goods crossing into, out, and

18. **Note:** Much of the data and assumptions concerning freight expectations and growth through Arizona can be found in the Freight Analysis in the Appendices.

through the Sun Corridor, these trends of growth will continue into the future. The growth predictions and expectations for population, freight, demographics, and land use may have slowed, but only by a few years. The population of Arizona will still reach the estimate of 8.4 million people, but it may occur some years later. As countless economic trends have shown, after a recession comes rapid growth. Thus, Arizona can take this time as an opportunity to organize and develop a planning and economic development strategy for the Sun Corridor region.

3.1 Competitive Advantages of the Sun Corridor

The Sun Corridor has numerous competitive advantages that it can leverage to produce a better, wealthier, and more sustainable region. Some of these advantages include higher education, population structure, healthcare industry, climate, location and the tax system.

Arizona has an extensive higher education system that includes Maricopa Community Colleges, NAU, UofA, ASU, University of Phoenix, ITT Tech, Pima Community Colleges, Thunderbird School of International Management, and countless other schools. These schools have provided an environment for an advanced Biodesign institute at ASU, and a high ranking MBA community as well. The medical field has become a large educational industry, with acclaimed nursing degrees and MD degrees within the valley including the prestigious Medical campus at UofA.

The age of the Sun Corridor's population is also a valuable asset to the region. The current population of Arizona is relatively young, with the percentage of population under 5, and under 18 both being greater than the national average. This means an opportunity for growth in a potential productive workforce in the future—a large workforce that will be trained and educated in the latest technology. The diversity of the region affords Arizona the ability to adapt to international forces and compete with a wide range of global businesses and industries.

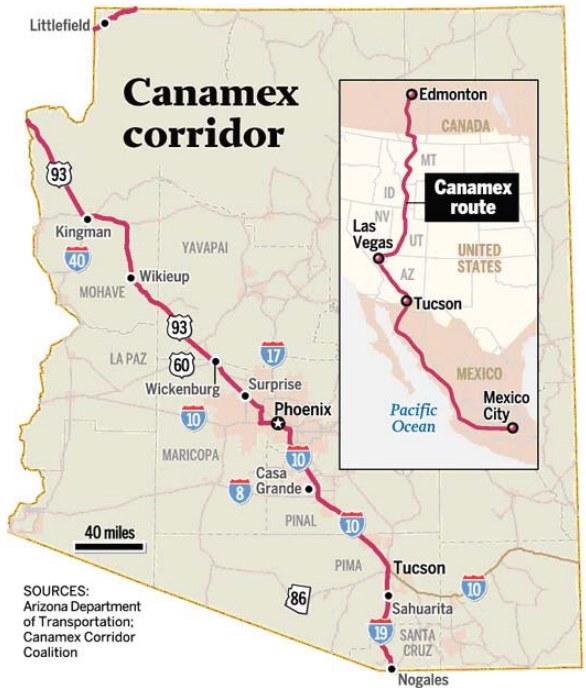
The healthcare industry has grown in Arizona. There are multiple top ranking hospitals in the region, and the growth of Arizona as a retirement location has grown the nursing industry also. The comfortable climate has brought a large population to Arizona to retire, and this has brought with it a large demand for healthcare and nursing homes. The climate will continue to bring retirees to the region pushing this technologically advanced industry to grow. In order to meet this need, advanced telecommunication and transportation infrastructure will be needed to connect the medical facilities and people at their homes.
Tourism is another industry that continues to grow because of the temperate fall, winter, and spring seasons. This industry has continued to grow throughout Arizona, and the region can expect it to continue to grow and be a consistent drive for development. Conference centers, hotels, and tourist 'hot spots' such as shopping malls are all helped greatly by public transportation, as visitors lack the ability to get around freely. The newly constructed light rail system in Phoenix is a perfect service for the tourism industry, as it will eventually connect many of the primary tourist spots in the city, and there are already plans to expand it north and south to other tourist sites within the valley.

The Sun Corridor's location already connects multiple highways, railroads, and international trade routes, making it a desirable distribution point. There are countless connections to other states, and Mexico through the highways and rail lines and the six Ports of Entry, including San Luis, Lukeville, Sasabe, Nogales, Naco, and Douglas. These transportation arteries and Arizona's location in the middle of them connects the Sun Corridor to some of the world's largest economies and ports. With Arizona's inexpensive land compared to its neighboring U.S. megaregions, and its location, it could easily take these transportation advantages in order to develop as a powerful international force.

The Canamex Corridor has the ability to produce enormous growth. The National Highway Systems Designation Act of 1995 defined and designated the CANAMEX Corridor as a high-priority, and yet the route connecting Phoenix to Las Vegas is minimally funded, and only formed through the mingling of three state highways. With Mexico and Canada as Arizona's first and second largest export markets respectively, and 550,000 Arizona jobs supported by trade, 50,000 Arizona jobs tied to Mexico, and 128,750 jobs tied to US-Canada trade, the CANAMEX Corridor already exists as a integral part of the economy. It still has huge potential for growth due to the advantages and the connections that Arizona has.

Figure 10: CANAMEX Corridor

Figure 11: CANAMEX Corridor—Arizona Portion



The Sun Corridor's location also has a competitive advantage as an alternative energy source. With sustainability and climate issues on the rise throughout the world, Arizona's heavy desert winds and sunlight give the region an edge in the production of sustainable, clean energy. Arizona has perhaps the densest solar energy in the world, giving the region an endless supply of energy. With the right foresight and regional planning, Arizona could be at the forefront of energy independence and technology.

Arizona's advantage in state taxes can bring businesses in from other parts of the country, and all over the world. According to the Tax Foundation, the current national average state tax burden is 9.7%. Arizona's is over a percentage point lower, at 8.5%. This puts Arizona as the 41st lowest state tax burden, providing a truly business-friendly environment. This is a strong pull for businesses that want to escape high taxes, and find new markets to grow in.

3.2 Economic Clusters

3.2.1 International Transportation and Business/Research Center

With the region's own trade advantages and goods to offer, the Sun Corridor has the potential to become an integral node in the national freight system. Inland ports have begun to develop in the Corridor, and with the expected growth of freight shipments, and the existing land routes and numerous airports, the Sun Corridor has the capability to develop as a strong inland port for the rest of the nation. Shipments coming from the Nogales, San Luis, and Douglas ports, and Southern California's ports overflowing down the I-10, give the Sun Corridor the opportunity to develop advanced value-added industries.

The following are development locations within Arizona that have the potential and momentum to grow as inland ports:

- **Puerto Nuevo:** in Tucson, a joint effort among Tucson International Airport, Pima County, the City of Tucson, University of Arizona, and the regional economic development organization. Its goal is to attract intermodal traffic from I-10, the UP Railroad, and the airport for re-handling, processing, and other value-added activities. It complements a federally funded training initiative to develop

logistics and transportation workers in the area.

- **Volunteer Mountain Industrial Park:** Twelve miles west of Flagstaff, touted as a potential intermodal processing installation, as well as a support facility for other industrial development.

- **Kingman:** The industrial park that BNSF is working with as a potential intermodal terminal. The park already includes a major Wal-Mart distribution center to serve the region.

- **Mesa Gateway Airport:** Has been attempting to develop a freight and distribution capability as a reliever for Sky Harbor. Although the airport now has scheduled passenger service and customs processing facilities, it still handles little or no freight.

- **Yuma:** Continues its attempt to develop an inland port in conjunction with the expanded San Luis port of entry, as well as at its airport, which has a very long runway, capable of processing larger cargo planes.[19]

The highways and rail lines passing through the Sun Corridor help provide the surrounding economic regions the products they need to expand, build, and produce their goods and services. Some of these regions, primarily southern California, are unable to expand further due to space, and have reached their capacity in some of the services they provide. Mexico has begun to take advantage of the over crowded ports of California by expanding its ports to receive more freight from Asia. Companies are looking for other, more efficient locations to move to, and because of Arizona's placing amidst these ports, it can become a major inland port to distribute goods on to destinations as far as Canada and Chicago.

In order to keep freight transportation by rail efficient for companies, two guidelines must be followed: move the longest distance by rail as possible in order to save fuel costs, and to stop the train as few times as possible. The Sun Corridor's location sits between 350 and 500 miles from Guaymas, Los Angeles, and the eventual port at Punta Colonet. This means that the majority of the freight arrivals intended for Arizona from those three ports will move by truck, and most of the shipments on rail from these ports are intended for destinations further inland.

These shipments by train will pass through the Sun Corridor with only modest value-added revenues unless Arizona can incentivize rail to use the Sun Corridor as the inland sorting and repackaging port and as the intermodal terminal. Optimum places to do intermodal transfer and to process freight are at the BNSF Grand Avenue site in Surprise, the Union Pacific yard near Red Rock in Pinal County, and the terminal in Tucson. With the correct foresight and investments in infrastructure, the Sun Corridor could rise to the occasion, and give these industries, goods, and people the environment they need.

Though Arizona sits closer to Mexico, its connection with Canada cannot be forgotten as a pivotal partner in international trade and business. The CANAMEX Corridor has become an important connection between Mexico and Canada, and trade between the country and Arizona continues to grow as well. In 2007 Arizona-Canada trade was valued at $3 billion dollars, and Arizona sold Canada over $405 million in transportation equipment. The tourist industry in Arizona draws thousands of Canadians each year, and the climate brings retirees every fall.

3.2.2 Renewable Energy Cluster

If the Sun Corridor really wants to imagine itself as a vital and visionary region in the future it should be imagining and moving towards powering traffic flows to and through the Sun Corridor with hydrogen. Renewable energy could very well be the trademark of the Sun Corridor if strong changes are made by the state and regional agencies to utilize the natural resources of the state. Arizona has the solar resources to make hydrogen in order to fuel the prosperity of the state, to propel the freight, and its people to and around the state, and just as importantly, to export to neighboring regions through the current natural gas pipeline system. Integrated planning today for the innovative energy production of tomorrow can provide the basis for large federal grants to implement the hydrogen infrastructure prototype.

Arizona's available technical solar energy could provide an extensive industry for technology and energy production. Wind potential exists along that corridor as well. The possibility of fields with mixed energy production using wind in the morning and evenings and solar throughout the day are possibilities for the Sun Corridor. This sort of energy cluster could supply Arizona

19. Maltz, Arnold. "Arizona 2009 Town Hall, Chapter 13: Freight and Logistics" April, 2009

power but also be exported to California, Mexico and possibly to the north. Inter-jurisdictional cooperation is necessary to complete this complicated scheme. No fewer than 15,000 jobs could be produced and more if Arizona could lure renewable energy equipment manufacturers to the region. According to the Center for Energy, Resources, and Economic Sustainability, California's energy efficiency policies created nearly 1.5 million jobs from 1977 to 2007. With Arizona's vast infinite energy resources, and broad cooperation and investments between counties, Arizona could produce similar numbers in energy associated jobs. This industry could become Arizona's distinct trademark and unique competitive advantage over its neighboring megaregions.

MAG and PAG recently partnered with the private sector, ECOtality Inc. and Nissan North America to assist facilitating the introduction of Electric Vehicle (EV) infrastructure in the MAG and PAG regions. The zero emission initiative will also include infrastructure along the I-10 corridor between the two regions making it the first true EV corridor in the U.S.

3.2.3 Tourism and Health Cluster

The Tourism industry in Arizona has been a constant factor of growth for the region, and this will continue to be a factor in the oncoming years. The tourism industry in Arizona has consistently been one of the largest export-oriented industries in Arizona, bringing in almost 7 billion dollars in 2006. The countless hotels within the Corridor, the nearby tourist locations throughout Arizona, and comfortable level of the region brought a total of 35.2 million over-night visitors to Arizona in 2007. The direct travel expenditures by visitors to Arizona were $19.3 billion that same year.[20] The climatic advantage that Arizona has will continue to bring visitors to the region, but also retirees and older residents escaping the winters from further north. As the Sun Corridor continues to attract retirees and those seeking healthy places to live, the health, medical, elder and nursing care industries need to keep up by specializing and expanding.

3.2.4 Research Cluster

The medical research industry has been growing in the Sun Corridor, and has well established organizations. In Maricopa County and in Flagstaff, the Translational Genomics Research Institute (TGen) is a state of the art non-profit organization working to better diagnose and treat illnesses through DNA and human genome research. Its location in Flagstaff is working to better understand pathogens. The Universities of ASU and UofA have extensive biological and other research facilities, with research parks, ASU's Biodesign Institute, and UofA's extensive Bioscience research, and its planned park.

The Sun Corridor is already a central location for issues of border security, international supply chain management, immigration reform, and transnational citizenship. Texas has long held this banner, but the Sun Corridor has been dealing with these same issues for many decades. With these international and security issues already prominent in the state, and with the possible economic developments in the near future, this region could be the home for a federally funded research and development center (FFRDC). Arizona has no centers for these issues that are essential to Arizona's economy, and central for the expansion of the Sun Corridor. All states adjacent to Arizona have several federal labs, and this is an opportunity that the Sun Corridor could leap upon to advance the region.
The current university system in Arizona is already extensive and advancing steadily. Coordination between the universities has begun to grow with efforts and programs such as the University Transportation Center (UTC), North American Center for Transborder Studies (NACTS), and others. These issues already have a strong background in the universities of the Sun Corridor. Thus, supporting this cluster could produce an effective US-Mexico border research and development region to support the growing international freight industry.

20. North American Center for Transborder Studies, CANAMEX Corridor Profile, December, 2008

4. Options for the Sun Corridor

Demand side management strategies can help to direct public demand into more sustainable trends that have less external costs to society. The highway system has numerous options. Trucking and toll lanes allow long-distance haulers to shorten their travel time, and provide more space for daily commuters and residents. Triple truck trailers could be possible if these separate lanes were built solely for freight trucks.

At the ports, an appointment system may have advantages at bottlenecks. Researchers at ASU have worked with ports operators to suggest and model the productivity boost enabled by a system which allows trucks to set an appointment for arrival at otherwise congested ports of entry. The savings are potentially immense. Such a scheme can be imagined at highly congested bottlenecks.

These sorts of visionary solutions need to be looked at in order to find new and sustainable solutions to congestion and the demands of society. Improving highway routes can both bring business through the Sun Corridor, and create jobs in it as well. Trucking depots, distribution centers, and hubs can continue to grow in the region with sufficient transportation infrastructure.

Some of the strategies available are still not viable because of cost and public demand for them. Dedicated freight lanes are built when the congestion levels reach such high levels that the public and industries demand bypass options. Regardless of the motivation, such lanes will probably only get built with projected toll revenues due to the high cost. Another possible strategy is to track GPS-equipped trucks. These trucking flows can be monitored, scheduled, and expedited through a Sun Corridor intelligent transportation system.

Railway expansions between major ports and cities would make the Sun Corridor a more competitive inland port with more options and cheaper shipping costs to businesses. Expansions to the existing rail yards are essential for this cluster to develop as well. Because of the Sun Corridor's proximity to its ports of origin, the majority of the goods will come by truck, but leave by rail. Thus, rail lines and depots are an important part to sending out the freight from the Sun Corridor. The already existing Union Pacific and BNSF routes allows for many possibilities of expansion, varying greatly in costs and effects. The current rail system to send freight out of Arizona requires multiple line transfers and indirect, meandering routes. Because of these intricacies, the majority of freight sent to northern California from Arizona is sent by truck, even though it is far beyond the 500 mile rule for freight and fuel efficiency.

4.1 Arizona Models and Efforts

There are already numerous entities and plans that coordinate efforts between municipalities and counties within the Sun Corridor. These preexisting plans help to save money and create a more efficient environment within the region. MAG has been a leader in bringing these different stakeholders together to plan ahead and begin to prepare for future needs within its jurisdiction inside the Sun Corridor. MAG began the process of coordination and long-rang planning with its Regional Transportation Plan, (RTP), which was the first of its kind in Arizona. The RTP looks at various transportation issues, with the intention of providing the appropriate information in order to plan ahead and Building a Quality Arizona (BQAZ) has become the next step and a strong start for coordination between counties. It brings nearly every facet of state government together from MPOs to the Governor's office, and includes interest groups and businesses as well in order to find solutions to statewide problems. MAG has continued to lead the way with its Framework Studies that looked into the Hassayampa and Hidden Valleys projected growth and transportation needs.

The BQAZ will include a Statewide Transportation Framework which will include these sorts of regional framework planning efforts from across the state, starting with the MAG RTP. This plan has set an example for long term planning, and set the stage for preemptive demand side management, including potential commuter transit between counties. PAG has become a leader within the state as well with its 2030 RTP which looks into a broad range of multi-modal transportation to handle its future demands.

Another example of regional long term transportation planning was done by the Arizona Department of Transportation with its MoveAZ Long Range Transportation Plan. This living document provides a vision for future expansions and needs far beyond the current infrastructure level. MoveAZ is updated every five years to show changes in expectations, and update the needed infrastructure in the state. MoveAZ is largely driven by public interaction and outreach in order to collect and better understand the needs of the communities that the planned roadways and transit will serve.

With these sorts of far-sighted plans, and the enormous forecasted growth for the Sun Corridor, these plans can provide a great opportunity to produce smart growth in Arizona. These sorts of far-sighted plans have the ability to foresee and prepare for external effects of growth before they can be detrimental to society. The detrimental effects of congestion, smog, water shortages, and an unprepared economy can all cause long term damage to a region, but with smart growth, these effects can be minimized.

Expanding railways, light rails, and bus lines can provide alternatives to the current transportation system available for labor movements in the region. This would take cars off the roadways, and lower the external costs of air and sound pollution to the nearby Arizona communities. Rail connections between the metropolitan areas of Phoenix and Tucson are already under review, though some the options are very costly, when they are compared to options of continued I-10 expansion, they may be more plausible in the long run.

Characteristics of Railroad Development Alternatives in Arizona

	Conventional rail with minor upgrade	Conventional rail with major upgrade	High-speed, partially elevated electric rail
Type of Rail Tracks	Use of existing train tracks	Use of existing train tracks	Exclusive track
Top Speed	110 mph	125 mph	175 mph
Average Speed	62 mph	88 mph	125 mph
One-way Trip Time	117 minutes	82 minutes	61 minutes
Construction Costs	$800 million	$1.57 billion	$5.2 billion
Number of one-way trains/day	7	18	18
Seats per Train	520	500	480
Operating and Maintenance Costs (Annual)	$34.1 million	$130.8 million	$190.4 million
One-Way Fare	$20.00	$44.00	$51.00
Annual Users	1,002,000	1,332,000	1,409,000
Annual Fare Revenue	$16.0 million	$46.9 million	$57.5 million
Farebox Recovery*	50%	36%	30%
Annual Subsidy Needed	$18.1 million	$83.9 million	$132.9 million
Time Saved Compared to Automobile**	-14 minutes	21 minutes	42 minutes
I-10 Vehicle Miles of Travel Savings (Annual)	98,550,000	193,450,000	219,000,000
Population at Endpoints[21] (Metro Areas)	Phoenix: 4,179,424	Tucson: 967,089	
Population Along the Route	47,704		
Total Population	5,194,220		
Employment at Endpoints[22] (Metro Areas)	Phoenix: 1,891,210	Tucson: 379,560	

Sources: Arizona Department of Transportation: 1998 report, 2007 Phase I report, 2008 Phase II report, and authors' calculations.

Table 3: *Characteristics of Railroad Development Alternatives in Arizona*

21. U.S. Bureau of Census estimates as of July 1, 2007
22. Bureau of Labor Statistics, May 2007 Metropolitan and Nonmetropolitan Area Occupational Employment and Wage Estimates

The current transportation infrastructure within the Sun Corridor region primarily provides for fossil fuel powered transit. Because of the inherent rise in gas prices, Arizona is currently vulnerable to a high fluctuation in gas prices because of the lack of alternative transportation services between cities, counties, and regions within the Sun Corridor. There are numerous options that the region can take in order to provide a more sustainable transportation system. Public transportation and infrastructure can lower this vulnerability to volatile fuel prices. Rail passenger lines and freight lines can both provide for a better prepared region when gas prices return to $4.00 per gallon and higher within the next few years

Support of alternate fuels could help lower this vulnerability as well. MAG and PAG have both signed Memorandums of Understanding to help implement electric vehicle infrastructure in the Maricopa and Pima regions and to connect Phoenix and Tucson along an electric corridor on the 1-10. With proper support, this program could provide a cheaper, alternate mode to travel between counties.

4.2 External Models to Consider

There are other city clusters and megapolitan regions that can be used as examples for coordination and cohesion outside of Arizona. Many regions have found issues that concern their multi-state, city, and county regions, and have taken the necessary steps to cooperate and work together to find solutions to their complex issues. From a broader association of governments such as Southern California Association of Governments (SCAG), to bi-national cooperative organizations such as Pacific North West Economic Region (PNWER), and CaliBaja, these regions can provide the Sun Corridor with examples of effective regional cooperation. Other examples are San Diego Association of Government's (SANDAG) Committee on Bi-national Regional Opportunities (COBRO) and the city of McAllen, Texas, and its Chamber of Commerce' concentration on international development and cooperation.

Other creative and innovative services and incentives can be given in the Sun Corridor that provide what companies continue to demand; a reliable, time-efficient, and low-cost location to distribute their goods. A less expensive example of incentivizing within the Los Angeles and Long Beach area is called PierPASS. In order to get truckers to load and move freight in the off-peak traffic hours, companies can receive a discounted rate at the ports during the weekends and nights. Still, many shippers do not take advantage of the reduced costs because their destinations are not prepared to receive deliveries at off-peak hours. These sorts of uncontrollable demands on the shippers require them to find new spaces to load and unload their freight such as inland ports.

4.3 Finance and Funding Strategies

Across the nation, funding for transportation infrastructure has been on the decline in relation to its demand. Though the Sun Corridor is a relatively new megapolitan, its infrastructure is quickly facing the same financing issues. The supply side management strategy of adding another lane as traffic congestion reaches its limit is incapable of meeting the long term rapid growth and demand for extended transportation routes through metropolitan areas. Current funding strategies are incapable of funding the supply of such rapid expansion either. As gas prices rise and the fuel efficiency of cars on the road increase, current gas tax revenues are not expected to rise in relation to the growth of VMT. Thus, government and development agencies now have the opportunity and need to change strategies for the supply of transportation and the finance mechanisms used to collect the capital for these public goods.

Because of the large cost of many of the public transportation projects required to implement a cohesive Megaregion, identification of available Public-Private Partnerships (P3) is key in order to provide the services. Toll roads, bridges, and lanes are all common strategies for P3 projects. These allow private investments to pay for part of the cost of expensive infrastructure projects that are demanded, but too expensive for the government to supply. It is often much easier to obtain bonds for a part of the cost of a project, and let a private company manage the service and provide the rest of the capital. This option recently became more easily available in Arizona due to the passing of HB 2396 by Representative Andy Biggs through the Arizona Legislature. This bill will give Arizona Department of Transportation a broader ability to engage in P3 projects. ADOT can now partake in a spectrum

of methods for funding transportation projects that range from Design-Build (DB) operations to Design-Build-Finance-Operate-Maintain cooperation. This will allow transportation infrastructure to be provided at a lower initial cost to the public, and produce new jobs and industry for the private-sector.

At times projects are too expensive for a single private company to cover, and too many public interests are involved in the project for only one or two public entitities to be involved. Environmental issues, health and safety concerns, and the impact on quality of life are growing aspects to transportation and border projects. This has been a cause for the growth of philanthropy in these public projects. Capital and support may be found from this part of the community to fund the aspects of the complicated projects that private firms are unwilling to invest in. This could be the piece that completes the pie for many of these projects, to create Public-Private-Philanthropic-Partnerships (P4). ASU's proposed University Transportation Center (UTC) would be a cohesive policy program that brings experts from every field of interest to these complicated programs.

The expansion of border infrastructure can be used as an example for finance mechanisms and implementation strategies with limited federal resources, and cooperation between public and private entities. The development of Douglas international port is an example of these strategies. Governments and private interests worked together to finance and plan the expansion to the port.

4.3.1 Funding through Demand-Side Transportation Strategies

There are already a variety of strategies available, and currently being used in the Corridor that could be expanded or introduced to meet these needs. Various demand side management policies could be set in place that help show what some call the "true cost to consumers" and also increase the capital available for transportation infrastructure. With the Arizona gas tax at 18 cents per gallon since 1991, and taking into account the national average state gas tax at 21 cents, and inflation levels since then, some would say there is room to expand this income for the state. With a minor rise in gas tax, this would not only provide a greater ability to meet the demand for infrastructure, but also push a change in demand away from the same transportation modes. New technologies make VMT taxes available as well, charging consumers for the actual number of miles of public roadway used. As VMT increases, and fuel efficiency as well, the individual consumer is seeing less of the true cost of their vehicle use.

Congestion pricing, toll ways, and specified trucking routes are available as well. These can all help drive demand towards other transportation modes that are less damaging to the public health, the environment, and urban space, but also less costly to the public in the long run. Congestion pricing charges roadway users for their detrimental affect on others by placing a toll during the busiest times on the arterial roadways and highways. Toll ways open up the roads by adding another lane, allow those willing to pay for faster travel to do so, and provide for better infrastructure funds. Lastly, trucking routes would take large long-distance haulers off the primary highways, and expedite their travel to distant destinations.

4.3.2 Finance Examples in Arizona

Arizona already has models of cooperation in existence that can be looked at for examples of cooperation and coordination. These models span between multiple municipal and county governments within Arizona, and also bi-national coordination. The Greater Arizona Development Authority (GADA), and the Arizona International Development Authority (AIDA) are examples of models of government that cross county and municipal lines. The Arizona Mexico Commission is an office of the Governor that crosses national lines as well.

As part of the Arizona Department of Commerce, GADA, is a financing tool for public projects that are too expensive for a small municipalities or government entities to raise money for alone. GADA provides smaller communities with an instrument to finance public infrastructure projects that can promote economic development by providing 11 million dollars in leverage for bonds and other loans. This allows communities in the rapidly growing areas in Arizona that do not have large funds or high credit ratings, to obtain bonds for needed large-scale projects. This model shows a strategy that governments can use to provide large public projects that could benefit multiple communities in the long run, but no single community has the funds or capabilities to implement it.

A similar entity is currently being developed in the Arizona Legislature with House Bill 2252, by Representative Russell Jones. The Arizona International Development Authority currently exists within the Arizona statutes under the Department of Commerce; however it lacks the ability to raise or spend funds. The current bill, HB2252, will augment AIDA to allow it do so, and thus give the financial support and tools needed for Arizona's borders and other international economic zones. AIDA is to be put under the Department of Transportation, and will only use tolls and other user fees that are already collected at the Ports of Entry to pay for its projects.

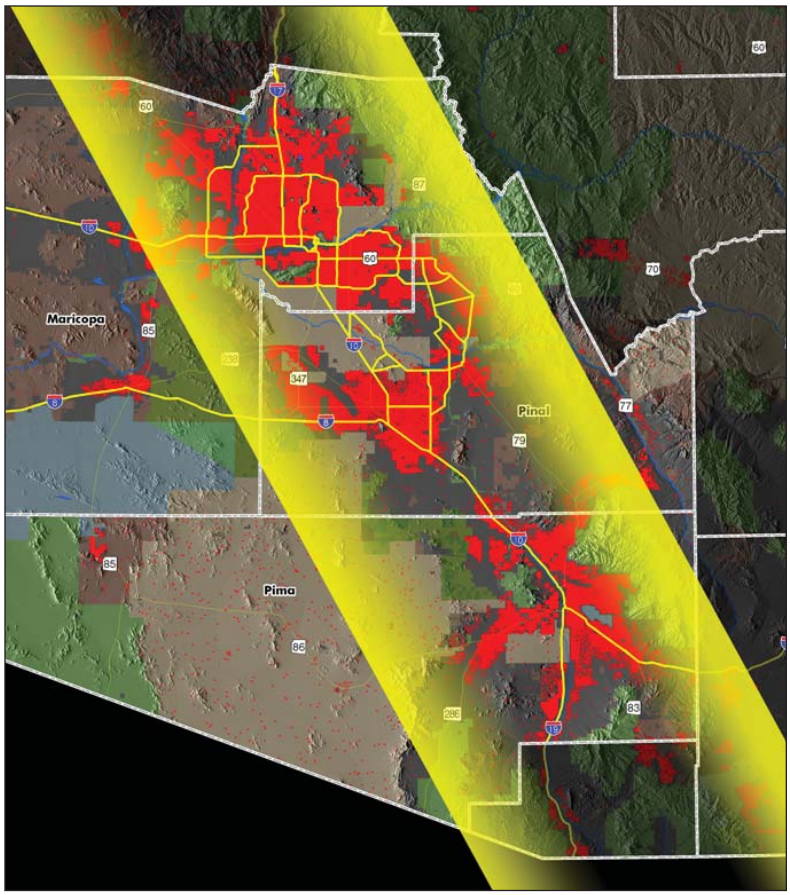
Much like GADA, it will be able to issue bonds and provide funding for expensive border projects that are in high demand at the Ports of Entry, but do not have sufficient capital to fund them. AIDA will bring the ports into a cohesive funding mechanism that provides the leverage and capital to meet their needs. The CANAMEX Corridor Task Force expects the start up costs for this program to be only $400,000, a small price to pay for the increased capacity and faster allocation of money. In the past it has taken numerous years to collect the funds for expansions at the port, with the Nogales and San Luis expansions as examples of the slow process. This sort of inexpensive government solution can supply some of the infrastructure demanded by the public and the business sector at a much faster rate. This in turn would allow Arizona to keep its share of the cross-border market and bi-national trade with Mexico.

5. Conclusions

In order to build and support the infrastructure for a megapolitan that efficiently connects the routes in and out of the Sun Corridor, a single city is not able to meet the far reaching demands of such a system. Nogales alone can not bring goods across the border, without infrastructure to get it to the final destination. Phoenix needs Tucson to support the development of the Union Pacific tracks and the I-10, and it also relies on border cities to facilitate transportation of goods across the border. The economic possibilities of each city can not be maximized without the support, cooperation, and coordination of its neighbors. The key is to develop the Corridor into a cohesive entity that provides an economic strategy for the goods and information that pass through the region to stop and grow within the Corridor.

The strategies that the Sun Corridor uses to address the future growth for this business friendly environment should include large-scale infrastructure improvements, broad finance mechanisms, regional tax incentives, and sustainable planning and livability for the residents within the Sun Corridor. Understanding the role of these tools in economic development enables discussion of the facilitating and integrating roles of trade, education, health care, and environmental control over air pollution and greenhouse gases. All of these require joint planning efforts from the regional agencies within the Sun Corridor due to the intricacy of these strategies and the broad effect they will have on a region incorporating a three county area and the greater state of Arizona.

Whether freight shipments through Arizona rise due to Mexico's growth in manufacturing exports, or a rise in imports through Southern California, or a rise in shipments to Mexican ports that pass through the Sun Corridor, the Sun Corridor should take advantage of this freight movement and work closely to produce value-added industry and distribution industries that takes advantage of this traffic. Even if there is a rise in competition with the Panama Canal, eastern U.S. ports, and elsewhere, the Sun Corridor should create the environment for an inland port and international business hub to continue to bring competitiveness and opportunity to the region. Its unique advantages



in renewable energy, and its existing economic clusters in the medical, tourism, and research clusters must be supported to expand and support the growing international manufacturing and value-added industries. The renewable energy industry in the Sun Corridor could lead to more high-tech manufacturing jobs in the region and help push the region to the front as a global leader in renewable energy production and manufacturing. This is an enormous opportunity for Arizona, but these goals can not be reached without the cohesion and joint efforts between regions throughout the Sun Corridor.

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Public-Private Partnerships Potential for Arizona-Mexico Border Infrastructure Projects: Description of Freight Flows

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Appendices

Contents

2005 Arizona Department of Transportation "Traffic Counts" Map

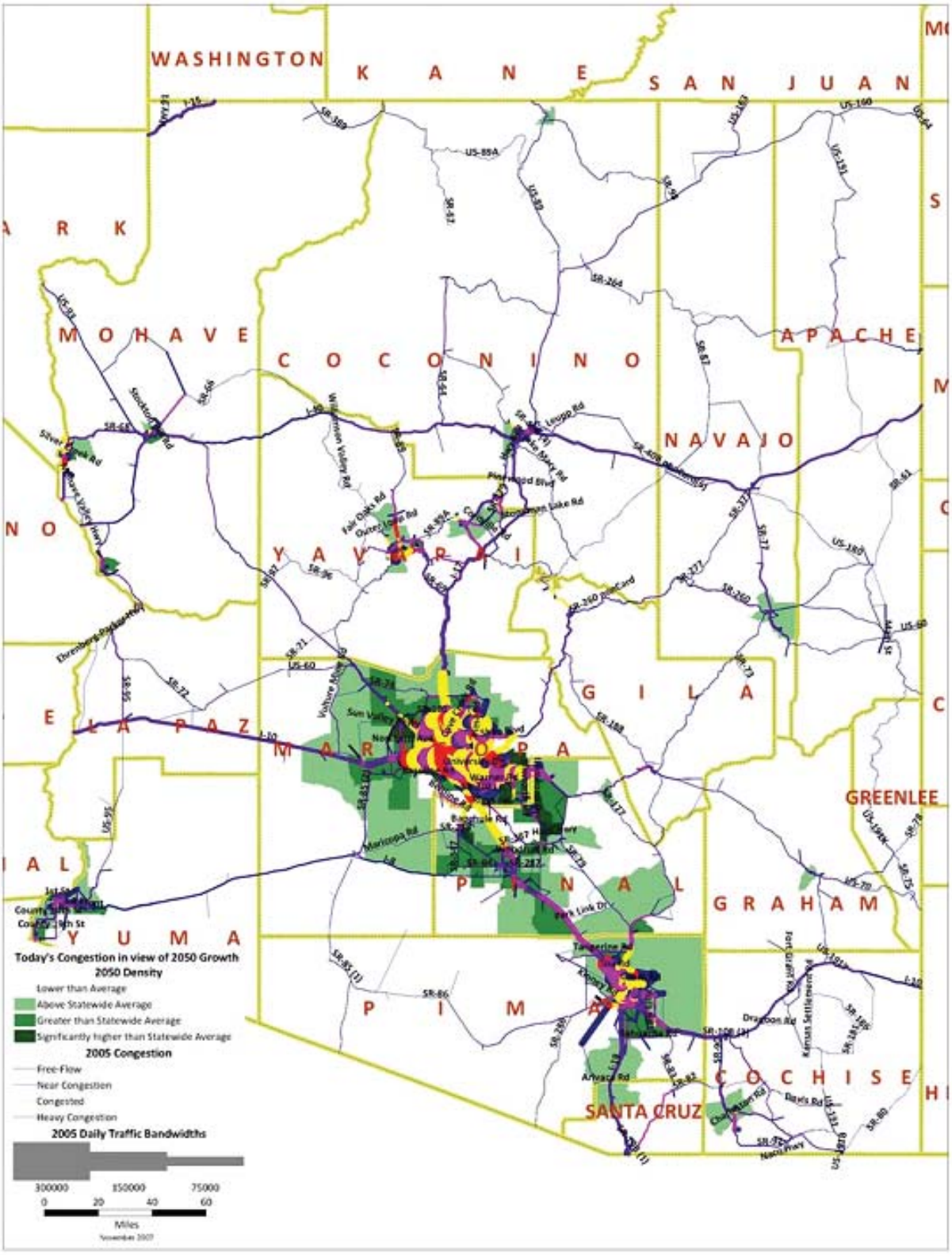
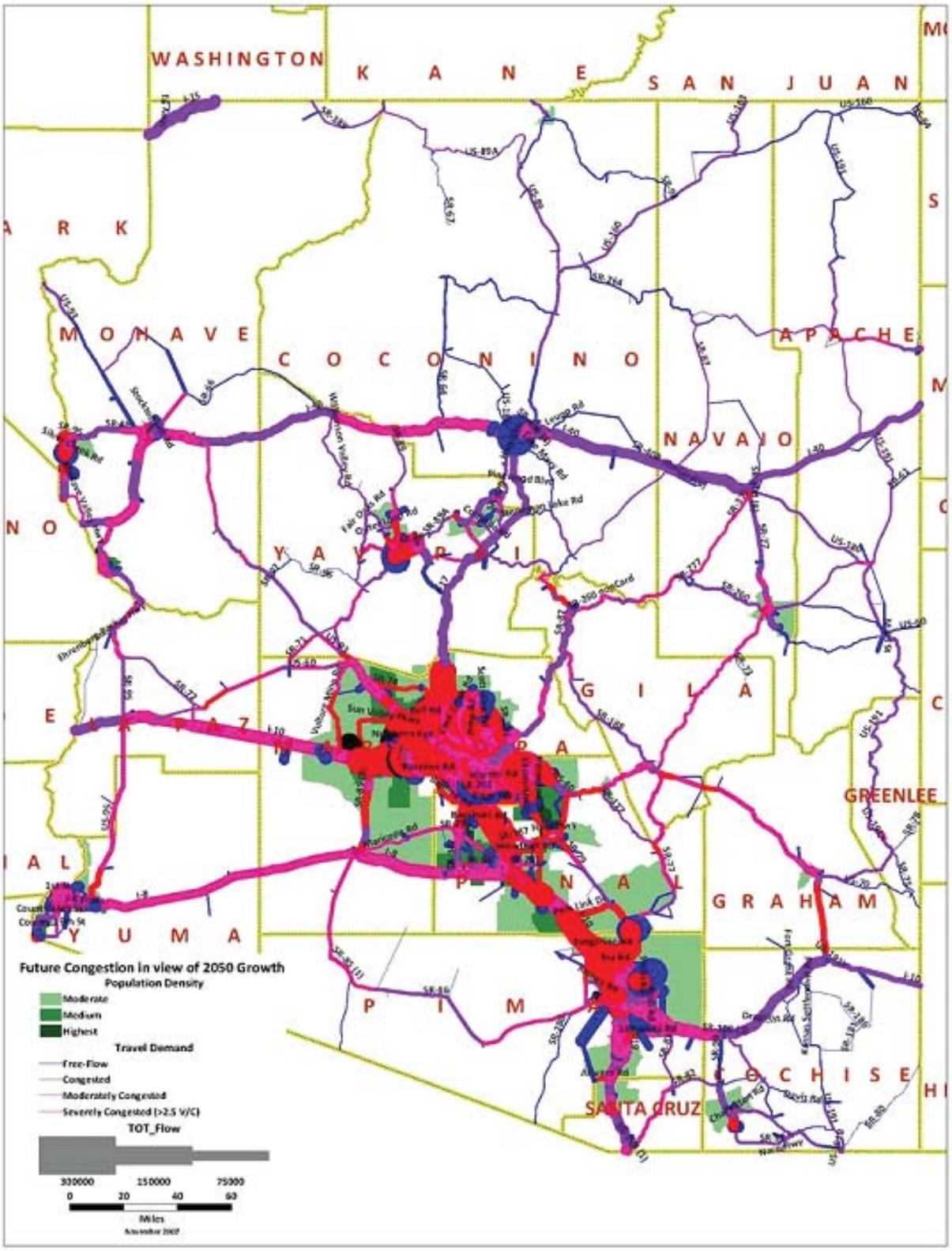


Figure 12: *2005 Arizona Department of Transportation "Traffic Counts" Map*

Source: Arizona Department of Transportation

2050 Arizona Department of Transportation "Traffic Counts" Predictions Map

Figure 13: *2050 Arizona Department of Transportation "Traffic Counts" Predictions Map*



Source: Arizona Department of Transportation

Freight Analysis

Introduction

This "snapshot" of freight flows to and through the Sun Corridor provides the basic background data needed to perform an analysis of added value that could be added. It examines flows both to and from other states and Mexico both by road and rail.

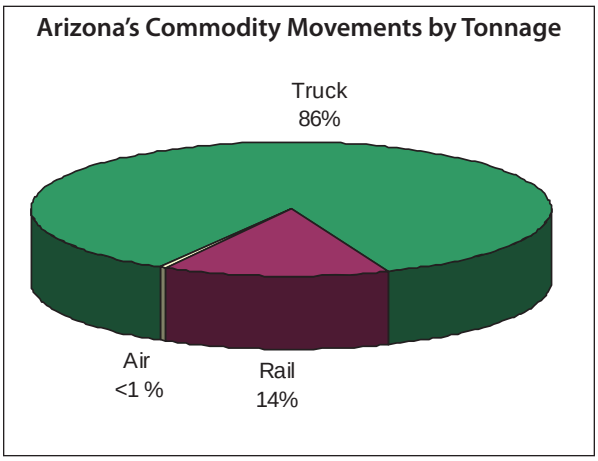
Other States Freight with Mexico

In 2008 375,850 trucks passed through the Arizona Port of Entries into the United States to deliver goods across the nation. This freight goes north, east, and west to bring a large assortment of goods throughout the country. The I-10 brings goods from the I-19 and Nogales, the AZ-80, AZ-191 and Douglas, and the I-8 and Yuma westwards towards Los Angeles and eastward towards Houston, New Orleans, and Jacksonville. The CANAMEX Corridor connects Mexico City to Edmonton, Canada. Passing through Nogales, Tucson, Phoenix, and Kingman, it allows Mexican goods to reach Las Vegas and Salt Lake City. The Union Pacific Railroad connects the Nogales port with Chicago, St. Louis, Kansas City, and Denver. With these connections throughout the country, goods are not only shipped from Mexico to points within the States, but also exported out of the U.S. into Mexico.

Exports from the United States that pass through Arizona ports were valued at just under 7 billion dollars in 2007. Arizona alone exports 4.3 billion dollars to Mexico. However that does not make up the entire value of exports, as much of these come from as far as Michigan (automobile capital), which sends the most, over a billion dollars in exports through Arizona's ports. California and Texas combined send over half a billion dollars through Arizona highways and ports. Illinois, Washington, Indiana, North Carolina, Wisconsin, and Iowa together ship over half a billion dollars in goods to Mexico as well, and use Arizona's highways and ports to do so.

The primary receiver of these goods is Arizona's neighbor, the Mexican state of Sonora. Over 5.4 billion dollars worth of exports go no further than Sonora. Beyond Sonora, the state of Mexico, the Federal District,

Figure 14: *Modal Shares of Arizona Freight by Weight*



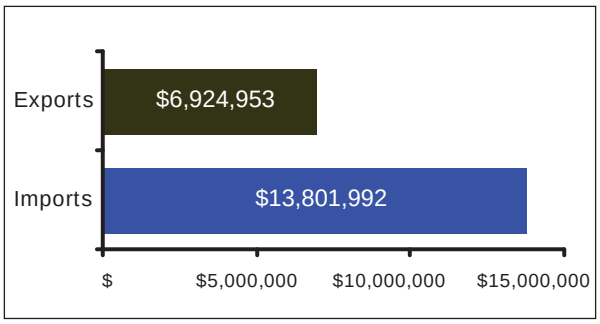
Source: WSA Analysis of 2005 TRANSEARCH data

Sinaloa, and Jalisco, receive almost a billion dollars of exports through Arizona from the U.S. combined. The growth of the Maquiladoras and other industrial developments has raised the demand for advanced electrical machines, vehicles, boilers, and other machines. These goods make up the large majority of exports to Mexico, followed by an assortment of various raw materials and basic intermediate goods.

Imports entering through Arizona's ports heavily outweigh the exports exiting to Mexico. Imports that pass through Arizona into the continental U.S. are valued at almost 7 billion dollars more, totaling at 13.8 billion dollars in value. This almost doubles the exports that pass through Arizona into Mexico from the U.S. Arizona brings in 37% of the imports from Mexico, but California and Michigan combined bring in almost the same amount through Arizona, with Michigan at 3.5 billion dollars in imports alone, and California at 1.2 billion dollars. Illinois is the third largest importer through Arizona POEs with 787 million dollars in imports. Pennsylvania, Texas, New York, and Massachusetts are not far behind.

The primary types of freight coming through the ports into the U.S. are labor intensive goods that continue to be produced in Mexico at greater numbers. The top five imports through Arizona's ports are engines (non rail), electrical equipment and machinery, vegetables, machinery and boilers, and other edible products such as nuts and fruits. These five imports categories total 10.4 billion dollars out of the 13.8 billion dollars in total imports through Arizona. It is these imports that fill the majority of the trucks and trains passing through Arizona. Though Arizona receives 4.7 billion dollars of the imports, Michigan is not far behind with 3.5 billion dollars in imports.

Figure 15: *2007 Exports and Imports through Arizona POEs (Value in 1,000s)*



Source: WSA Analysis of 2007 Bureau of Transportation Statistics

Table 4: *2007 Value of U.S. Exports to Mexico from Top 10 U.S. Exporting States (Value in 1,000s)*

Export's Top 10 Origin US States	Border Crossing At Arizona Port of Entry (POEs)						Origin State Total
	San Luis	Lukeville	Sasabe	Nogales	Naco	Douglas	
Arizona	$225,744	$7,857	$290	$3,814,777	$26,306	$306,053	$4,381,028
Michigan	$223			$1,024,066	$2,634	$48	$1,026,972
California	$131,102	$302	$302	$214,918	$1,705	$4,360	$352,688
Texas	$24,425			$109,416	$6,485	$20,644	$160,970
Illinois	$989			$107,095	$549	$1,016	$109,648
Washington	$24,358			$59,040	$4,895	$518	$88,811
Indiana				$88,674	$13	$77	$88,764
North Carolina	$1,553	$2,545		$77,828	$696	$178	$82,800
Wisconsin	$823			$76,427	$475	$687	$78,411
Iowa	$16			$78,190	$90	$36	$78,331
Value For Top 10 States	$409,234	$10,704	$592	$5,650,430	$43,848	$333,616	$6,448,424
Percent Of Top's 10 Total	6.3%	0.2%	0.0%	87.6%	0.7%	5.2%	
Value Of Total Exports (Exhibit 2)	$426,792	$11,028	$592	$6,031,780	$53,479	$401,283	$6,924,953
Top 10's Percent of Total	95.9%	97.1%	100.0%	93.7%	82.0%	83.1%	93.1%

Source: WSA Analysis of 2007 Bureau of Transportation Statistics

Table 5: *Value of Top 10 Commodities Imported from Mexico through Arizona's POEs (Value in 1,000s)*

Top 10 Import Commodities From All Mexican States	Border Crossing At Arizona Port of Entry (POEs)					Commodity Total
	San Luis	Lukeville	Nogales	Naco	Douglas	
Vehicles, other than railway	$12,091		$3,496,610	$3	$103,576	$3,612,279
Electrical machinery and equip	$374,669		$3,021,574	$6,328	$101,227	$3,503,798
Edible vegetables, roots, tubers	$78,863		$1,546,758		$166	$1,625,787
Nuclear reactors, boilers, machines	$10,989		$944,016	$17,936	$19,731	$992,672
Edible fruit and nuts	$103,294		$598,336		$743	$702,374
Copper and articles thereof	$2		$191,475	$37,082	$333,991	$562,551
Optical, photographic, instruments			$393,105	$5	$2,326	$395,436
Special classification provisions	$11,961	$136	$344,101	$4,669	$25,988	$386,855
Fish and crustaceans, others	$1,638		$312,502			$314,140
Misc articles of base metal	$1,012		$144,131		$9,349	$154,492
Value of Top 10 Import Commodities	$594,519	$136	$10,992,609	$66,023	$597,096	$12,250,383
POE's Percent of Total	4.9%	0.0%	89.7%	0.5%	4.9%	

Value Of Total Imports (Exhibit 14)	$704,950	$485	$12,143,162	$68,261	$885,133	$13,801,992
Top 10's % Of Total Imports	84.3%	28.0%	90.5%	96.7%	67.5%	88.8%

Source: WSA Analysis of 2007 Bureau of Transportation Statistics

Table 6: *Value of Imports from Mexico through Arizona's POEs to the Top 10 U.S. Destination States (Value in 1,000s)*

Import's To Top 10 US Destination States	Border Crossing At Arizona Port of Entry (POEs)					Destination State Total
	San Luis	Lukeville	Nogales	Naco	Douglas	
Arizona	$54,119	$149	$4,170,267	$24,230	$454,725	$4,703,491
Michigan			$3,513,016	$626		$3,513,642
California	$224,591		$957,180	$8	$5,700	$1,187,480
Illinois			$777,227	$17	$10,024	$787,268
Pennsylvania	$2,990		$618,868	$3,058	$5,956	$630,871
Texas	$2,425	$306	$447,799	$62	$108,794	$559,386
New York			$282,199	$30,121	$148,657	$460,977
Massachusetts	$378,353		$29,982			$408,334
Wisconsin			$215,685			$215,685
Connecticut	$801		$140,306	$5,524	$44,094	$190,725
Value For Top 10 States	$663,279	$455	$11,152,529	$63,646	$777,952	$12,657,861
Percent Of Top's 10 Total	5.2%	0.0%	88.1%	0.5%	6.1%	

Value Of Total Imports (Exhibit 14)	$704,950	$485	$12,143,162	$68,261	$885,133	$13,801,992
Top 10's Percent of Total	94.1%	93.8%	91.8%	93.2%	87.9%	91.7%

Source: WSA Analysis of 2007 Bureau of Transportation Statistics

Arizona Freight with Mexico

Mexico is Arizona's largest trading partner. Arizona is the fourth largest exporting state to Mexico, and posted exports of 4.3 billion dollars to Mexico in 2007, which is over one-quarter of the state's entire export shipments for the year. Arizona's ports see 380,000 trucks, 600 trains, and 32 million people pass through every year. This brings great wealth and numerous jobs, as approximately 50 thousand jobs in Arizona are tied to exports. And the exports are expected to grow by exponential rates through 2030 to 7.4 billion dollars in exports. The counties of Maricopa, Pima, Cochise, Pinal, Yuma, and Santa Cruz made up 86% of the exports to Mexico in 2005. The primary goods shipped to Mexico ordered by value were nonferrous metal basic shapes, plastic matter or synthetic fibers, farm machinery or equipment, motor vehicles or equipment, and steel mill products. These make up 91% of the export value to Mexico, with nonferrous metal basic shapes and plastic matter/synthetic fibers making up 72%.

Maricopa County exports the largest amount to Mexico, and according to HIS Global Insight's 2005 TRANSEARCH forecasts as published in ADOT's *Multimodal Freight Analysis Study Technical Memorandum #1: Analysis of Arizona's Freight Dependent Industries,* Maricopa's export market in Mexico is expected to grow at outstanding rates till 2030. They show that Maricopa's export market of just under $3 billion dollars in 2005 will grow to over $5 billion dollars in goods to Mexico in 2030. This is predicting approximately 80% growth in the 25 year span between 2005, and 2030. According to the study, Pima, Pinal, Yuma, Navajo, Apache, and Santa Cruz counties are expected to have similar export growth rates to Mexico. In tons, the report predicts exports to grow from 3,538,353 to 6,203,161 tons total shipped to Mexico from all Arizona counties. With the current trends in the supply of infrastructure and the supply chain management, this overwhelmingly is sent by truck.

The same study expected imports from Mexico to rise quickly as well. Sonora has long been the greatest trade partner with Arizona, and this is not expected to change. In 2005 Sonora exported 943 million dollars in goods to Arizona, and by 2030, it is expected to grow to $2.5 billion dollars in shipments to Arizona. This is a 169% export growth rate forecast for the 25 year span. After Sonora, the states of Nuevo Leon, Mexico, Veracruz, Coahuila, the Federal District, and Jalisco are expected to be the next highest exporters to Arizona. These states combined exported nearly $1.8 billion to Arizona in 2005. By 2030, theses states are expected to export $3.8 billion to the state of Arizona, a 111% increase. These imports from Mexico are expected grow in tonnage from 2.4 million tons to 5.4 million tons. This will grow at relatively the same rate as well and will also mainly be shipped by truck if Arizona continues its current strategies.

The majority of the freight that passes through Arizona's ports is shipped by truck. Trucks shipped 82.6% of the exports to Mexico, and 73.1% of the imports enter through the Arizona border by truck. That leaves the rest to rail, which ships more into Arizona than out, almost solely through Nogales. Over one billion dollars in goods were shipped to Mexico by rail, and over 3.7 billion dollars in goods were sent by rail into Arizona. Compared to the 5.7 billion dollars in exports and 10 billion dollars in imports by truck, the railways are currently not used as frequently. However this does not mean that rail use will not grow. In fact, it can be expected to grow exponentially due to external developments in Mexico, Panama, and the rising price of fuel.

Table 7: *2010 Value Forecast for Top 5 Export Commodities from Arizona Border Counties to Adjacent Mexican States (Value in $1,000s)*

Arizona Origin Counties	Commodity	Sonora	Jalisco	Sinaloa	Arizona County Total
Maricopa	Nonferrous Metal Basic Shapes	$1,101,992	$35,002	$1,282	$1,138,276
	Plastic Matter Or Synthetic Fibres	$429,483	$3,603	$5,763	$438,849
	Farm Machinery Or Equipment	$229,487	$24,466	$13,928	$267,881
	Motor Vehicles Or Equipment	$104,875	$1,651	$4,853	$111,379
	Steel Mill Products	$78,127	$51	$1,814	$79,992
Maricopa Total		$1,943,964	$64,773	$27,640	$2,036,377
Pima	Farm Machinery Or Equipment	$64,480	$6,055	$3,853	$74,388
	Nonferrous Metal Basic Shapes	$71,744			$71,744
	Plastic Matter Or Synthetic Fibres	$46,851	$382	$619	$47,851
	Paper	$31,560	$150	$5,375	$37,085
	Meat Or Poultry, Fresh Or Chilled	$3,978		$1,778	$5,755
Pima Total		$218,612	$6,587	$11,624	$236,823
Cochise	Farm Machinery Or Equipment	$25,106	$1,909	$1,444	$28,459
	Waste Or Scrap	$20,803		$352	$21,155
	Plastic Matter Or Synthetic Fibres	$16,381	$104	$216	$16,701
	Iron Ores	$16,398			$16,398
	Nonferrous Metal Basic Shapes	$7,808			$7,808
Cochise Total		$86,496	$2,013	$2,011	$90,520
Pinal	Nonferrous Metal Basic Shapes	$52,476			$52,476
	Plastic Matter Or Synthetic Fibres	$6,715	$40	$90	$6,845
	Paper	$5,025	$18	$852	$5,895
	Steel Mill Products	$3,734		$43	$3,778
	Nonferrous Primary Smelter Products	$3,715			$3,715
Pinal Total		$71,666	$58	$985	$72,709
Yuma	Nonferrous Metal Basic Shapes	$17,082			$17,082
	Plastic Matter Or Synthetic Fibres	$9,052	$57	$119	$9,228
	Farm Machinery Or Equipment	$3,015			$3,015
	Paper	$1,810	$6	$305	$2,120
	Steel Mill Products	$1,261			$1,261
Yuma Total		$32,219	$63	$424	$32,706
Santa Cruz	Leather Luggage Or Handbags	$3,475	$34	$156	$3,665
	Paper	$2,858	$10	$483	$3,351
	Narrow Fabrics	$1,654			$1,654
	Meat Or Poultry, Fresh Or Chilled	$357		$151	$507
	Field Crops	$252			$252
Santa Cruz Total		$8,596	$44	$789	$9,429
Mexico State Total		$2,361,553	$73,538	$43,473	$2,478,564

Source: WSA Analysis of 2005 TRANSEARCH data

Table 8: *Import Value Growth from All Mexican States to Arizona Counties (Value in 1,000s)*

Mexico Origin State	2005	2010		2020		2030	
	Value	Value	Percent Change	Value	Percent Change	Value	Percent Change
Sonora	$943,571	$1,286,474	36%	$1,920,182	49%	$2,540,582	32%
Nuevo Leon	$442,321	$571,531	29%	$773,956	35%	$895,067	16%
Mexico	$361,890	$478,123	32%	$661,938	38%	$804,307	22%
Veracruz	$323,051	$422,166	31%	$572,639	36%	$675,338	18%
Coahuila	$249,489	$326,254	31%	$440,266	35%	$509,762	16%
Federal	$238,690	$314,434	32%	$430,808	37%	$517,071	20%
Jalisco	$183,992	$243,261	32%	$336,048	38%	$408,082	21%
Sinaloa	$129,276	$171,300	33%	$241,208	41%	$298,976	24%
Guanajuato	$86,631	$113,705	31%	$155,054	36%	$185,774	20%
Puebla	$81,923	$108,752	33%	$147,329	35%	$174,718	19%
San Luis Potosi	$77,918	$102,401	31%	$137,293	34%	$158,277	15%
Chihuahua	$74,133	$97,740	32%	$134,272	37%	$162,205	21%
Michoacan	$71,335	$93,340	31%	$125,862	35%	$147,721	17%
Hidalgo	$68,478	$90,254	32%	$123,312	37%	$148,205	20%
Oaxaca	$56,979	$74,357	30%	$100,820	36%	$119,966	19%
Tamaulipas	$47,689	$62,701	31%	$86,066	37%	$104,370	21%
Baja North	$35,905	$47,861	33%	$66,871	40%	$82,602	24%
Colima	$33,937	$44,294	31%	$60,182	36%	$71,690	19%
Chiapas	$33,353	$43,495	30%	$58,901	35%	$70,284	19%
Nayarit	$29,133	$38,258	31%	$52,553	37%	$63,481	21%
Morelos	$28,337	$37,181	31%	$50,707	36%	$62,609	23%
Durango	$27,705	$36,040	30%	$48,065	33%	$56,137	17%
Queretaro	$27,221	$36,485	34%	$50,483	38%	$61,075	21%
Tabasco	$24,272	$31,673	30%	$43,071	36%	$51,686	20%
Tlaxcala	$20,032	$26,175	31%	$35,407	35%	$41,690	18%
Yucatan	$18,632	$24,385	31%	$33,096	36%	$39,449	19%
Guerrero	$17,098	$22,183	30%	$29,894	35%	$35,477	19%
Zacatecas	$16,031	$20,280	27%	$26,822	32%	$31,597	18%
Quintana Roo	$12,221	$15,917	30%	$21,555	35%	$25,567	19%
Baja South	$4,313	$5,709	32%	$8,008	40%	$9,920	24%
Campeche	$2,643	$3,431	30%	$4,601	34%	$5,457	19%
Mexico Total	$3,768,201	$4,990,158	32%	$6,977,270	40%	$8,559,144	23%

Source: WSA Analysis of 2005 TRANSEARCH data

Table 9: *Growth in Export Value from Arizona Counties to All Mexican States (Value in $1,000s)*

Arizona Origin Counties	2005	2010		2020		2030	
	Value	Value	Percent Change	Value	Percent Change	Value	Percent Change
Maricopa	$2,767,770	$2,921,525	6%	$3,895,491	33%	$5,019,369	29%
Greenlee	$468,290	$440,051	-6%	$542,538	23%	$648,152	19%
Pima	$303,894	$331,714	9%	$431,945	30%	$542,800	26%
Mohave	$183,457	$203,695	11%	$247,778	22%	$291,959	18%
Yavapai	$132,506	$140,294	6%	$187,853	34%	$243,330	30%
Cochise	$115,378	$125,677	9%	$150,798	20%	$178,070	18%
Pinal	$89,764	$90,294	1%	$117,335	30%	$147,591	26%
Yuma	$38,782	$41,250	6%	$55,782	35%	$72,205	29%
Coconino	$31,717	$32,146	1%	$41,563	29%	$52,073	25%
Navajo	$31,265	$35,738	14%	$46,534	30%	$58,258	25%
Apache	$24,575	$29,541	20%	$41,594	41%	$55,526	33%
Gila	$17,416	$16,751	-4%	$21,334	27%	$26,230	23%
Graham	$14,483	$14,550	0%	$19,014	31%	$24,097	27%
Santa Cruz	$10,751	$12,530	17%	$16,377	31%	$20,670	26%
La Paz	$4	$4	1%	$5	18%	$6	10%
Arizona Total	$4,230,050	$4,435,760	5%	$5,815,942	31%	$7,380,335	27%

Source: WSA Analysis of 2005 TRANSEARCH data

Table 10: *2007 Value of U.S. Exports by Mode to Mexico through Arizona's POEs (Value in 1,000s)*

Exports to Mexico By Mode	Border Crossing At Arizona Port of Entry (POEs)						Export Total
	San Luis	Lukeville	Sasabe	Nogales	Naco	Douglas	
Truck Value	$426,568	$10,527	$592	$4,827,451	$53,294	$400,093	$5,718,524
Truck Percentage	6.2%	0.2%	0.0%	69.7%	0.8%	5.8%	82.6%
Rail Value	$13			$1,112,048		$5	$1,112,065
Rail Percentage	0.0%			16.1%		0.0%	16.1%
Other Value	$212	$501		$92,281	$185	$1,186	$94,364
Other Percentage	0.0%	0.0%		1.3%	0.0%	0.0%	1.4%
Total Export Value	$426,792	$11,028	$592	$6,031,780	$53,479	$401,283	$6,924,953
POE's % of Total	6.2%	0.2%	0.0%	87.1%	0.8%	5.8%	100.0%

Source: WSA Analysis of 2005 TRANSEARCH data

Table 11: *2007 Value of Imports from Mexico by Mode through Ariozna's POEs (Value in 1,000s)*

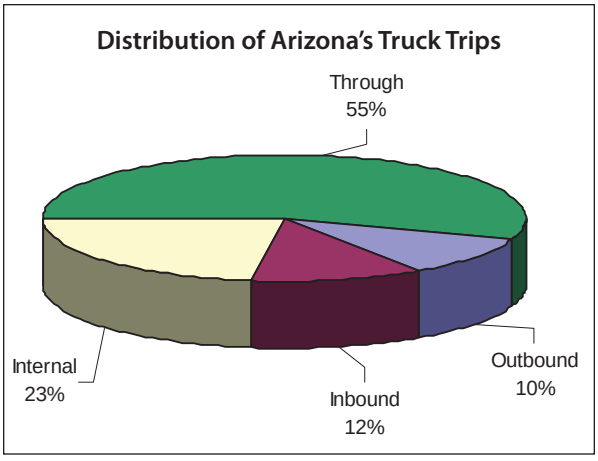
Imports to Mexico By Mode	Border Crossing At Arizona Port of Entry (POEs)					Export Total
	San Luis	Lukeville	Nogales	Naco	Douglas	
Truck Value Truck Percentage	$704,950 5.1%	$485 0.0%	$8,425,247 61.0%	$68,261 0.5%	$885,133 6.4%	$10,084,076 73.1%
Rail Value Rail Percentage			$3,716,990 26.9%			$3,716,990 26.9%
Other Value Other Percentage			$925 0.0%			$94,364 0.7%
Total Import Value	$704,950	$485	$12,143,162	$68,261	$885,133	$13,801,992
POE's % of Total	5.1%	0.0%	88.0%	0.5%	6.4%	100.7%

Source: WSA Analysis of 2005 TRANSEARCH data

Interstate Truck Freight in and out of Arizona

The Wilbur Smith and Associates analysis of 2005 TRANSEARCH data showed that the majority of the freight in and out of Arizona is with the neighboring states of Texas, New Mexico, Nevada, Utah, and overwhelmingly with California. In 2005 thirty-six percent of trucks delivering in Arizona came from California, and 45% of trucks leaving Arizona delivered their goods in California. This totals over 36 million tons of shipments between Arizona and California alone. The primary California cities sending and receiving freight were Los Angeles, San Francisco, Sacramento, Fresno, and San Diego. The port cities of Los Angeles and San Francisco alone make up over 30 million tons of the shipments from California. With California's enormous economy, numerous international ports, and close proximity to Arizona, it is not surprising the relationship is so strong.

Figure 16: *Distribution of Truck Traffic in Arizona*



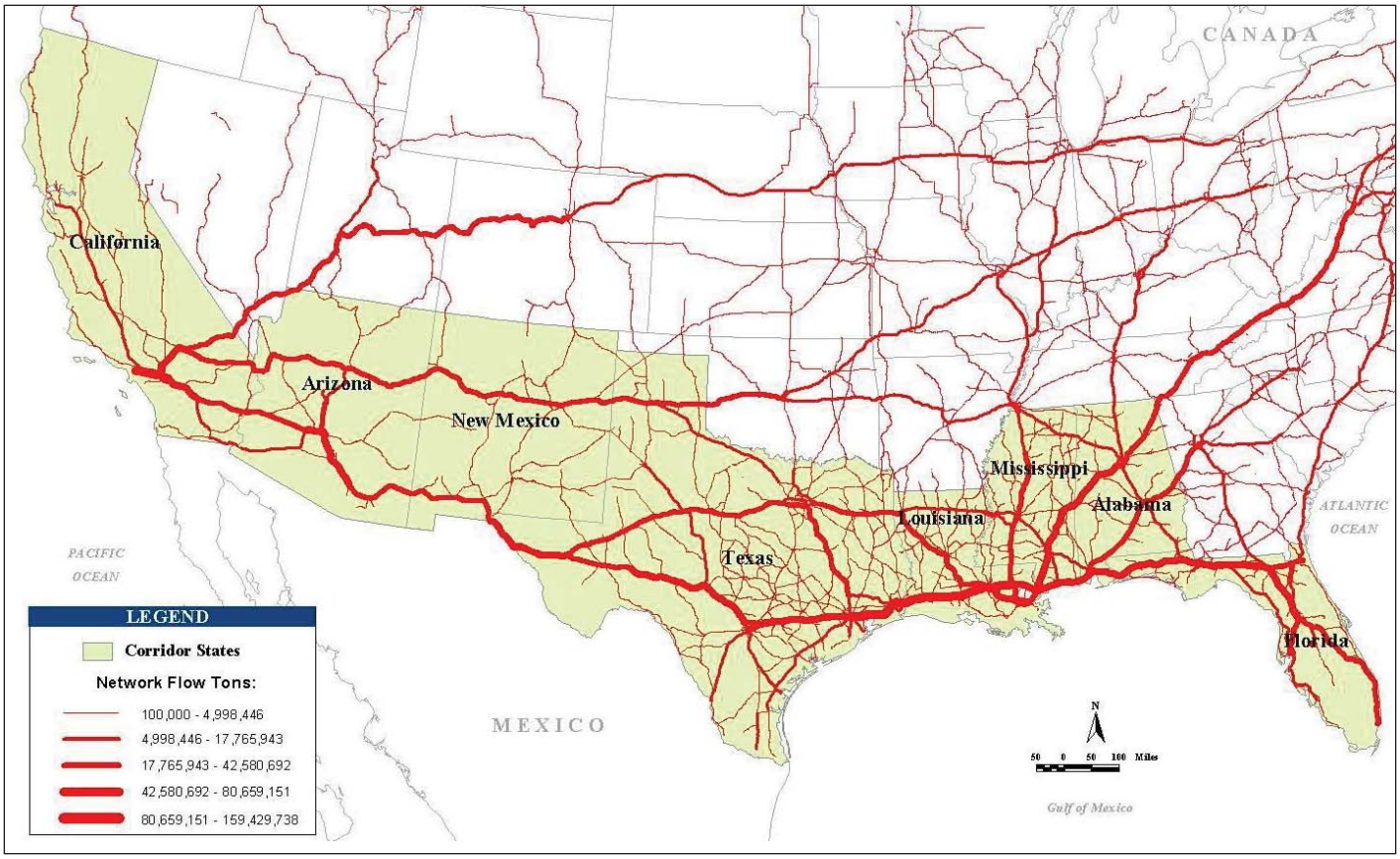
Source: WSA Analysis of 2005 TRANSEARCH data

Table 12: *Inbound Truck Traffic—Principal Origin Locations*

Origin Name	Tons
Los Angeles, CA	9,521,485
San Francisco, CA	5,481,039
Albuquerque, NM	972,754
Salt Lake City, UT	855,443
Sacramento, CA	840,871
Fresno, CA	699,802
Denver, CO	651,973
San Diego, CA	526,566
Hobbs, NM	359,548
El Paso	337,956

Source: WSA Analysis of 2005 TRANSEARCH data

Figure 17: *Total Volume for Trucks Using Interstate 10 (2002)*



Source: TRANSEARCH 2000, from the I-10 National Freight Corridor Study, Tech Memo #4.

Table 13: *Outbound Truck Traffic—Principal Destination States*

Destination State	Tons	Percent of Total Tons
California	18,922,163	45%
Nevada	3,278,868	8%
Texas	2,828,729	7%
New Mexico	2,655,350	6%
Colorado	1,707,006	4%
Utah	1,646,705	4%
Illinois	964,030	2%
Indiana	523,354	1%
Missouri	464,838	1%
Ohio	405,967	1%
Other	5,686,982	13%
Domestic Total	***39,083,993***	93%
Total with Mexico & Canada	**42,250,260**	100%

Source: WSA Analysis of 2005 TRANSEARCH data

After California, trucks coming into Arizona are primarily from the states of Texas, New Mexico, Louisiana, Indiana, Illinois and Oklahoma. The majority of these lie along or near the I-10 and I-40, and these states send over 13.3 million tons of freight to Arizona. Freight that is shipped out of Arizona had five major receiving states besides California in 2005, Nevada, Texas, New Mexico, Colorado and Utah. These states received 12.1 million tons of freight from Arizona.

The cities with the most truck traffic to and from Arizona were Albuquerque NM, Salt Lake City UT, Denver CO, Hobbes NM, and El Paso TX. The cities that are not within the principal freight shipping states tend to be their state's main metropolitan and economic hub, thus there are few shipments from elsewhere in the state. These cities had over 3.1 million tons of freight back and forth with Arizona.

Table 14: *Inbound Truck Traffic—Principal Origin States*

Origin State	Tons	Percent of Total Tons
California	17,243,171	36%
Texas	5,139,577	11%
New Mexico	2,277,101	5%
Louisiana	1,922,786	4%
Indiana	1,545,085	3%
Illinois	1,224,587	3%
Oklahoma	1,213,295	3%
Washington	1,033,996	2%
Kansas	990,982	2%
Arkansas	975,164	2%
Other	12,561,676	26%
Domestic Total	***46,127,418***	***95%***
Total including Mexico	**48,314,940**	**100%**

Source: WSA Analysis of 2005 TRANSEARCH data

Table 15: *Outbound Truck Traffic—Principal Destination Locations*

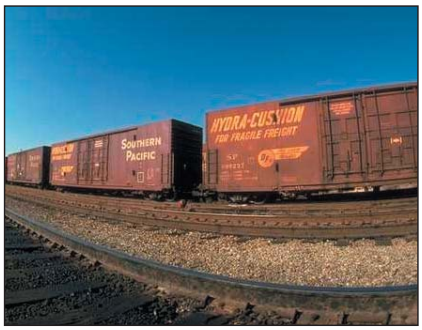
Destination Name	Tons	% of Total Tons
Los Angeles, CA	9,521,485	44%
San Francisco, CA	5,481,039	25%
Albuquerque, NM	972,754	4%
Salt Lake City, UT	855,443	4%
Sacramento, CA	840,871	4%
Fresno, CA	699,802	3%
Denver, CO	651,973	3%
San Diego, CA	526,566	2%
Hobbs, NM	359,548	2%
El Paso	337,956	2%
Other	1,514,766	7%
Total	**21,762,203**	100%

Source: WSA Analysis of 2005 TRANSEARCH data

Interstate Freight by Rail

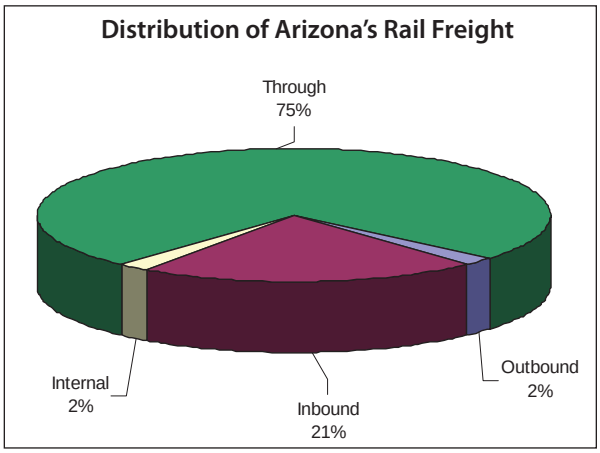
Currently, rail in and out of Arizona does not carry as many tons or as much value in goods as the highway system. In 2005, the railways sent almost nine times more freight by rail into Arizona, than out. Total, the U.S. states sent 27.7 million tons of freight into Arizona, and Arizona only sends 3 million tons out. New Mexico sends the largest amount of freight by train into Arizona, and in 2005 sent 10.6 million tons, and 37% of the inbound rail traffic into Arizona. Albuquerque sends the majority of this freight; in 2005 around 5 million tons came from Albuquerque on the BNSF line. Coal is New Mexico's primary outbound commodity by rail, and Arizona's primary inbound commodity. The coal from New Mexico supports numerous power plants in Arizona such as the Cholla, Navajo, and the Four Points power plants in Northeastern Arizona. Texas, California, Wyoming, Colorado, and Illinois all send over a million tons of freight combined. Total, these states ship 10.2 million tons by rail into Arizona. The primary origins for train freight are Los Angeles and Denver, each sending over a million tons into Arizona.

Arizona ships very little freight by train to its fellow U.S. states. In 2005, Arizona sent only 3 million tons of freight to other states. Texas and California received the majority of this freight with 900,000 tons and 800,000 tons respectively, and Illinois followed distantly with 400,000 tons of received freight. Again, Albuquerque and Los Angeles were the main recipients of Arizona train shipments.



Possible reasons for the low railroad usage for outbound freight shipments could be due to the close proximity of some of the destinations. The large receivers of freight from Arizona that could fit in this category are Los Angeles, Albuquerque, El Paso, and possibly Fresno. These cities are all within or near the five hundred mile rule from Arizona, and could be to close for rail to be profitable or efficient. This is due to the high cost of rail, the inability to make

Figure 18: *2005 Distribution of Rail Traffic in Arizona*



Source: WSA Analysis of 2005 TRANSEARCH data

Table 16: *Inbound Rail Traffic—Commodity Distribution (Tonnage)*

Description	Tons	Percent of Total Tons
Coal	13,377,418	46%
Lumber or Wood Products	2,628,222	9%
Petroleum or Coal Products	2,151,764	7%
Food or Kindred Products	1,911,112	7%
Chemicals or Allied Products	1,695,263	6%
Clay, Concrete, Glass or Stone Products	1,635,799	6%
Farm Products	1,630,879	6%
Primary Metal Products	873,705	3%
Transportation Equipment	817,180	3%
Miscellaneous Mixed Shipments	575,798	2%
Other	*1,530,848*	*5%*
Total	**28,827,987**	**100%**

Source: WSA Analysis of 2005 TRANSEARCH data

frequent stops, and the inconvenience of movement to and from the rail depot. Another possibility is the complications of competing rail road companies, and the resulting costs of trackage and haulage rights, and limited rail available for use. All rail lines are not owned by the same company, and some routes require two or three separate companies' rail tracks in order to arrive at a final destination. This means transferring to a separate rail yard, and possibly different rail cars. The two rail lines in Arizona, Union Pacific and BNSF, have varied trackage right agreements, but only for certain connections and they are not permanent. San Francisco, Salt Lake City, Sacramento, and Denver could all be in this category, since numerous rail road lines are required to reach them directly from Arizona.

Table 17: *Outbound Rail Traffic—Commodity Distribution (Tonnage)*

Description	Tons	Percent of Total Tons
Waste or Scrap Materials	805,014	26%
Primary Metal Products	407,258	13%
Clay, Concrete, Glass or Stone Products	357,740	12%
Farm Products	247,333	8%
Chemicals or Allied Products	212,422	7%
Petroleum or Coal Products	185,125	6%
Miscellaneous Mixed Shipments	182,922	6%
Food or Kindred Products	149,134	5%
Containers, Carriers or Devices, Shipping Returned Empty	116,178	4%
Non-metallic Minerals; except Fuels	90,888	3%
Other	*298,990*	*10%*
Total	**3,053,004**	**100%**

Source: WSA Analysis of 2005 TRANSEARCH data

Table 18: *Inbound Rail Traffic—Principal Origin States*

Description	Tons	Percent of Total Tons
New Mexico	10,602,960	37%
Texas	2,487,463	9%
California	2,069,743	7%
Wyoming	2,036,836	7%
Iowa	1,484,389	5%
Colorado	1,240,714	4%
Illinois	1,137,055	4%
Montana	846,432	3%
Oregon	712,122	2%
Nebraska	666,018	2%
Other	*4,427,507*	*15%*
Total	**27,711,237**	**96%**
Total Including Canada	**28,827,987**	**100%**

Source: WSA Analysis of 2005 TRANSEARCH data

Table 19: *Outbound Rail Traffic—Principal Destination States*

Description	Tons	Percent of Total Tons
Texas	904,860	30%
California	807,977	26%
Illinois	419,708	14%
Utah	216,371	7%
New Mexico	189,235	6%
Colorado	136,705	4%
Louisiana	36,594	1%
Mississippi	36,340	1%
Tennessee	32,194	1%
Missouri	26,722	1%
Other	*212,227*	*7%*
Total	**3,018,934**	**99%**
Total Including Canada	**3,053,004**	**100%**

Source: WSA Analysis of 2005 TRANSEARCH data

Table 20: *Inbound Rail Traffic—Principal Origin Locations (BEA Regions)*

Origin Name	Tons
Albuquerque, NM	4,559,172
Los Angeles, CA	1,486,942
Denver, CO	1,118,281
British Columbia	545,376
Houston, TX	516,814
Albuquerque, NM	515,987
Des Moines, IA	490,546
Des Moines, IA	455,800
Kansas, City, MO	430,287
Casper, WY	415,426

Source: WSA Analysis of 2005 TRANSEARCH data

Table 21: *Outbound Rail Traffic—Principal Destination Locations (BEA Regions)*

Destination Name	Tons
Albuquerque, NM	346,439
Los Angeles, CA	309,094
El Paso, TX	239,582
Salt Lake City, UT	134,186
San Antonio, TX	128,726
Denver, CO	111,281
Corpus Christi, TX	100,716
Houston, TX	74,978
Salt Lake, City, UT	69,178
Chicago, IL	47,234

Source: WSA Analysis of 2005 TRANSEARCH data

Interstate Freight Shipments through Arizona

The freight passing between states through Arizona greatly outweighs the freight leaving and arriving in Arizona. Interstate truck freight through Arizona in 2005 totaled over 234 million tons, and interstate rail freight passing through Arizona totaled over 100 million tons. This can be compared to around 86 million tons of trucking freight and 30 million tons of rail freight arriving and leaving Arizona. The amount of freight passing through Arizona onto other destinations dwarfs the freight shipments that involve Arizona industries and businesses. Of the top ten truck and rail traffic flows through Arizona, the state of California is either the origin or the destination state for each traffic flow. Texas, Illinois, and Louisiana have the largest amount of freight passing through Arizona onto California and back. This data shows the huge influence the California economy could have on Arizona, and the opportunities available to develop industries and businesses that can take advantage of the enormous economy of California, and the freight that passes to and from the state.

Table 22: *Through Truck Traffic Flows by Top Origin and Destination States*

Origin State	Destination State	Tons
Texas	California	18,997,603
Louisiana	California	15,925,085
California	Texas	15,383,961
Illinois	California	8,171,615
California	Ohio	6,905,210
California	Illinois	6,369,509
Indiana	California	6,369,406
Ohio	California	6,117,653
Georgia	California	5,480,246
Kansas	California	5,295,158
Other		*139,641,053*
Total		**234,656,499**

Source: WSA Analysis of 2005 TRANSEARCH data

Table 23: *Through Rail Traffic Flows by Top Origin and Destination States*

Origin Name	Destination Name	Tons	Percent of Total Tons
Illinois	California	16,462,672	16%
Texas	California	15,464,050	15%
California	Illinois	15,304,212	15%
California	Texas	12,663,242	13%
Kansas	California	3,211,640	3%
California	Tennessee	3,078,176	3%
Louisiana	California	3,076,228	3%
Tennessee	California	2,778,655	3%
Arkansas	California	2,507,556	3%
California	Arkansas	2,344,476	2%
Other		*23,320,771*	*23%*
	Total	**100,211,677**	**100%**

Source: WSA Analysis of 2005 TRANSEARCH data

Summary

The freight flows into, through, and leaving Arizona have strong implications for the growth opportunities, infrastructure demands, and pressures that face Arizona. The expected freight growth shows enormous demand for greater supply of transportation infrastructure in Arizona and the Central Arizona Region. The patterns of the current and future freight flows through Arizona also show opportunities for the state. With the interstate freight passing through Arizona almost tripling the interstate freight arriving or departing Arizona, and the billions of dollars that pass through the Arizona port of entries, the state has the opportunity to provide industries that capitalize on this flow of goods.

The shipments passing through Arizona's ports, and the interstate shipments passing to and from California are far larger than the shipments directly in and out of Arizona. The states of California, New Mexico, Texas, Michigan, Illinois and Louisiana, have the most freight shipped to, from and through Arizona. The inbound freight into Arizona from these states far exceeds the outbound shipments that Arizona sends out to them. Total, California ships the most tons of goods into and out of Arizona, though New Mexico's shipments by rail are much bigger than any other state. Michigan ships the most goods through Arizona's ports to implement its massive car industry, and Sonora, Mexico has the strongest import-export relationship with Arizona out of all the Mexican states.

The percentage of the freight shipped by truck is outstanding, with commodities in Arizona shipped by truck, and of these trucks 75% of the half are only passing through. It is these ratios that Arizona can change for the better, and take advantage of the opportunities for improvement. With these pressures and trends, Arizona has a unique opportunity for smart growth and to change the course of these trends with demand side management. Building incentives for rail use over trucks, and developing incentives for value-added industries, or inland port capabilities can bring great benefits to Arizona. These new directions could form jobs, lower traffic, lower pollution, and raise the wealth of Arizonans.

The expected freight flows through Arizona will place extreme pressures on the current infrastructure levels. However, in order to answer the huge demands for new and improved roadways, increasingly expensive answers are required. Thus, innovative finance mechanisms and management strategies will need to be used to deal with these issues. From new strategies for obtaining capital to new strategies for supplying long term and manageable solutions, the municipalities, counties, and regions must find ways to deal with these external and large movements.

The external demands for freight require that billions of dollars and millions of tons of goods cross through the Central Arizona Region. This means billions of dollars and millions of tons of opportunities for businesses in Arizona. However, due to complicated factors such as economies of scale, expensive infrastructure, and regional tax laws, entrepreneurs need an environment that is conducive for industries that can take advantage of these freight flows. Many of these factors are too large for a single city or county to deal with alone, due to the state-wide ramifications, benefits, and costs. Thus, in order to provide this business environment, broad government strategies will be needed.

The Central Arizona region must coordinate to find the solutions to these complex issues and opportunities. The expansion of the Panama Canal, the development of Mexican ports, and the rerouting of freight could greatly affect the region. In order to respond to a double in freight flow growth, or in order to create incentives for freight to continue to pass through Arizona, broad measures need to be taken to answer these expensive and intricate concerns.

CANAMEX CORRIDOR COALITION

THE SAFE, SMART AND SECURE (S³) CORRIDOR

www.canamex.org

Economic Profile of the CANAMEX Corridor

NAFTA at a glance

- Each day the NAFTA partners conduct nearly $2.4 billion in trilateral goods trade
- Since the creation of NAFTA in 1994, U.S. exports to Mexico have risen 223% and Mexican exports to the U.S. have grown 396%
- US two-way trade in goods with NAFTA partners exceeded U.S. two-way trade with the twenty-seven members of the European Union and Japan combined
- From 1996 to 2006, trade among NAFTA nations climbed from $297 billion to $883 billion
- The U.S. buys over 85% of Mexico's exports
- The U.S. provides up to 50% of all inputs for Mexico's maquiladora firms, which translates to over $41 billion in annual sales
- Canada and Mexico are the USA's first and second largest export markets
- Last year, U.S. exports to NAFTA partners alone accounted for 35 percent of total U.S. exports
- Canada–U.S. trade supported 7.1 million U.S. jobs

Table of Contents

Sources: Alberta International/Intergovernmental Relations Office, BST Associates Trade Impact Study, Office of Foreign Affairs and International Trade- Canada, International Trade Administration–US Department of Commerce, Pro-Mexico Trade and Investment

CANAMEX at a glance

- One of the first north-south corridors designated as a High Priority Corridor under the National Highway Systems Designation Act
- States and provinces along the CANAMEX Trade Corridor have a combined population of over 50 million
- States and provinces along the CANAMEX Trade Corridor have a combined GDP of _____ and average $20,538 USD in per-capita income.
- The 532 infrastructure projects submitted by the U.S. CANAMEX states under the economic stimulus plan have the potential to support over 500,000 jobs.

Arizona

- **GDP: $206 Billion**
- **Per-Capita Income: $33,441**
- National leader in **copper production**
- **13th Largest** US state exporter to China
- **Manufacturing** is the leading economic activity
- Population of **over 5, 130,000** (2000 census), a 40% increase since the 1990 census
- Nationwide, Arizona ranks **eight in exports growth**
- Arizona ranks fourth in the production of **electronics and computer products** in the US
- **Fastest growing state** in the United States

- Ranked 1st in Entrepreneur Magazine's list of "Hot States for Entrepreneurs" in August 2006
- Arizona's **export shipments of merchandise** in 2007 totaled $19.2 billion, ranked 18th among the 50 states in terms of total exports in 2007.
- The Phoenix-Mesa-Scottsdale Metro Area accounted for **75.5% of Arizona's export value** in 2007
- The Tucson Metro Area accounted for **14. 7% of Arizona's export value in 2007**
- A majority of winter produce imports pass through the **Nogales Port of Entry**

International companies employ over 71,000 workers in Arizona

Foreign Investment in Arizona

- In 2006, international companies employed over **71,100 workers in Arizona**
- Over **550,000 Arizona jobs** are supported by trade
- Foreign investment in Arizona was responsible for **3.1 percent** of the state's total private-industry employment in 2005

- Approximately **one of every fourteen** manufacturing workers (7.1 percent) in Arizona were employed by foreign-controlled companies in 2006
- More than **4,500 companies** exported from Arizona in 2007, 88 percent of which were small or medium sized enterprises

- Major sources of foreign investment in Arizona in 2006 included the **United Kingdom, Canada, Germany, France, and the Netherlands**
- **Over 100 Canadian companies** have operations in AZ
- **Small and medium-sized firms** generated 20 percent of Arizona's total exports of merchandise in 2006

Arizona–Canada Relationship

- Canada is **Arizona's second-largest export market** , bilateral trade between Canada and Arizona grew to $3 billion in 2007
- **128,750 Arizona jobs** are supported by Canada-U.S. trade
- Arizona sold Canada over **$405 million in transportation equipment**

- **Aircraft parts and engines**, along with computers, are the state's main exports to Canada, accounting for $183 million worth of goods
- Major Canadian employers in Arizona include **Alimentation Couche-Tard Inc**, with over 500 Circle K locations and **Bombardier Aerospace** employing over 500 workers

- Canadians made **496,300 visits to Arizona** in 2005, spending more than $359 million during their stay
- Arizona residents made **161,800 visits to Canada**, spending $110 million
- Canada buys over 11% of Arizona **worldwide merchandise exports**

Arizona–Mexico Relationship

- **Arizona's largest trading partner** in 2007 was Mexico
- Approximately **50 thousand jobs in Arizona** are tied to exports to Mexico
- Arizona posted **exports of $5.2 billion** to Mexico, over one-quarter (27 percent) of the state's total export shipments in 2007
- In 2001, Arizona-Mexico bilateral trade was higher to the Mexico-South America commerce relationship
- Over **23 million Mexican visitors** visit Arizona each year, spending an estimated $969.2 million dollars annually

- Highest percent of Mexican shoppers in Arizona spent an estimated **$301.6 Million in Pima County**
- **The Mexican tourist expenditures** in Arizona supports over 35 thousand jobs in the state
- Mexican companies doing business in Arizona and Arizona companies doing business in Mexico accounted for **global sales of over $15 billion annually**
- Arizona is ranked as the **4th largest exporting state** in the transfer of goods and services to Mexico from the US

Asian Trade

- Arizona ships about **$5 billion in goods to Asia** each year, mostly aerospace products
- In 2006, Arizona exports to China were $918 million. That grew to **$1.5 billion by 2006**
- China and Singapore are Arizona's **3rd and 4th top export markets** respectively
- Arizona companies -- including **Avnet Inc., Intel Corp, and First Solar Inc.**— have significant operations in Malaysia.
- Exports to Singapore increased from $509 million in 2003 to **$1.2 billion in 2006**

China and Singapore are Arizona's 3rd and 4th top export markets respectively

Utah

GDP: $82 Billion

Per-Capita Income: $32, 357

- Population: 2.6 million
- The State's leading export category is **primary metal manufactures**, which accounted for $3.2 billion (41 percent) of Utah's total merchandise exports in 2007
- Emerging as a high tech centre, with **more software enterprises than California's Silicon Valley**
- Utah is now a center for **aerospace research** and the production of missiles, spacecraft, computer hardware and software

- **Top agricultural commodities** include cattle and calves, dairy products, hay, greenhouse and nursery products, and hogs.
- **Rich in natural resources**, Utah is a leading producer of copper, gold, silver, lead, zinc, and molybdenum
- **80 percent** of Utah's population can be accessed by CANAMEX along the Wasatch Front
- Utah is ranked the top state in the nation for **Economic Dynamism** by the State New Economy index

International companies employ over 34,600 workers in Utah

Foreign Investment

- In 2006, international companies employed **34,600 workers in Utah.**
- Utah's export shipments of merchandise in 2007 totaled **$7.8 billion**
- Major sources of Utah's jobs in 2006 were the **United Kingdom, France, Germany, Switzerland, and Japan**
- Utah's largest export market in 2007 was the United Kingdom; **30 percent of Utah's merchandise** export total
- Export-supported jobs linked to manufacturing account for an estimated **4.1 percent of Utah's total private-sector** employment
- **2,236 companies** exported goods from Utah locations in 2006

Utah–Mexico/Canada Trade Relationship

- Canada is Utah's **second largest export market**, after the United Kingdom.
- In 2006, **Canadian imports** from Utah totaled approximately $1 billion.
- Two-way trade between Utah and Alberta, Canada averages **$469 million per year**.
- In 2004, Mexico was **Utah's 8th largest trading partner**

- Utah exports to Mexico are **valued at over $122 million**
- **Transportation equipment** and chemicals are the largest Utah-Mexico exports
- In 2004, Utah imported **$308 million of goods from Mexico**
- **Vehicles and jewelry/precious metals** are Utah's main imports from Mexico

Nevada

GDP: $117 Billion

Per-capita income : $46,108 (11th in the nation)

- Population: 2.5 million
- Nevada is the **largest gold-producing state** in the nation. It is second in the world behind South Africa
- Nevada is also one of only a few states with **no personal income tax** and no corporate income tax
- Agricultural outputs: **cattle, hay, alfalfa, dairy products, onions and potatoes**.

- Industrial outputs: **tourism, mining, machinery, printing and publishing, food processing, and electric equipment**
- State gambling taxes account for **34.1% of general fund tax revenues**
- Nevada's leading manufactured export category is **primary metal manufactures**
- Tied second in **export growth** with a 39.5 percent rise
- Over 90% of Nevada's 484,000 acres of cropland is used to **grow hay mostly alfalfa for livestock feed**

Foreign Investment

- In 2006, foreign-controlled companies employed **35,900 workers in Nevada**
- Major sources of foreign investment in 2006: **United Kingdom, Canada, France, Japan, and Switzerland**
- Foreign investment responsible for **3.1 percent of the state's total private-industry employment** in 2006
- Nevada's export shipments of merchandise in 2007 **totaled $5.7 billion**

- Nevada's world exports from 2003 to 2007 **increased 182 percent**
- **Second largest** percentage gain in world exports amongst U.S. states
- Nevada exported to **169 foreign destinations** in 2007
- Export-supported jobs linked to manufacturing account for an estimated **1.4 percent of Nevada's total private-sector employment.**
- **Over 250,00 Nevada jobs** supported by trade

Nevada exported to 169 foreign destinations in 2007

Nevada–Mexico/Canada Trade Relationship

- Trade relationship with Canada generated **$1.5 billion in bilateral revenue in 2007**
- Nevada sold Canada **$376 million in merchandise,** while purchasing $850 million worth
- Canadians made **931,600 visits to Nevada** spending $641 million
- Nevadans made **62,900 visits** spending $38 million in Canada

- Mexico is Nevada's **fourth largest international market**
- Nevada exports to Mexico were valued at over $208 million in 2006
- In 2006, Mexican visitors to Nevada number more than **368,000**
- Mexican visitors average nearly six nights per trip and spend an **average of $1,333 per person.**

CANAMEX CORRIDOR COALITION

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Montana

- GDP: $29.9 Billion
- Per-Capita Income: $30, 688
- Population: 944, 632 (2006 Estimate)
- **Doubled its exports** between 2002 and 2006, from $386 million to $887 million.
- **Wheat and wheat products** are Montana's main exports
- 80% of Montana's population is **employed by small business**
- Ranked 8th in U**.S. oil reserves**

- Ranked 3rd in US agricultural products exports
- 8 million pounds of cargo and mail pass through Gallatin Field Airport each year
- One of the **fastest growing exports for Montana is chemicals**, which grew at an annual rate of more than 50 percent between 2000 and 2005
- In 2005, Montana companies sold their products in **111 foreign markets**.
- 2.5% of Montana's gross domestic product came from **exports in 2005**

Idaho

GDP: $49.9 Billion (2007)

Per-Capita Income: $29,952

- Population of 499,402 people
- **Fastest economic growth** rate in the U.S. during 2006 (7.4%)
- In 2005, exports represented **6.9 percent of Idaho's state GDP.**
- Main industries: agriculture, high technology, forestry, mining, amongst others

- Producer of over one third of potatoes grown in the U.S.
- In 2004, more than **1,200 Idaho companies** sold their products abroad
- **Computers and electronics** were Idaho's leading export products in 2005 and accounted for 38 percent of total exports
- Trade supports nearly one **in five jobs in Idaho**
- In 2005, **7% of Idaho's GDP** came from exports

Idaho exports over 25 percent of the products it produces

Foreign Investment in Montana and Idaho

- Foreign-controlled companies employ **6,700 workers in Montana**
- Sources of Montana's foreign investment in 2005 were the **United Kingdom, France, Canada, Japan, and Switzerland**
- **More than 100,00 Montana jobs** are supported by trade

- In 2005, Montana-produced manufactured goods **generated nearly 5,100 jobs** for workers in Montana.
- Idaho exports over **25 percent** of the products it produces.
- Idaho exports exceeded **$4.7 billion** in 2007
- **More than 800,000 Idaho jobs** are linked to trade

- High-tech goods account for **72 percent** of all Idaho exports
- Export-supported jobs linked to manufacturing account for an estimated 4.6 percent of Idaho's total **private-sector employment.**
- Foreign-owned companies employ **more than 12,900 workers** in idaho

Idaho- Mexico/Canada Trade relationship

- Since the implementation of **NAFTA,** Idaho's exports to Canada have increased $365 million (223 percent).
- Exports to Mexico have increased **$65 million (178 percent)** since NAFTA was introduced in 1994
- Idaho's exports to Mexico totaled **$138.6 million in 2007,** a 5% increase from 2006
- Mexico was Idaho's **ninth largest** export market in 2007
- Idaho Food & Agriculture exports to Mexico are valued at **$85.3 million**.
- **33,500 Idaho jobs** are supported by Idaho–Canada relationship.
- Canada is **Idaho's second largest export market**
- Canada is Idaho's main agricultural exports market.
- Canadians made more than **203,100 visits** to Idaho, spending $34 million.
- Idaho residents made **82,600 visits** to Canada, spending $35 million
- In 2005 Canada became Idaho's **leading export destination**.
- State exports to Canada totaled **$472 million** (2005); Imports from Canada totaled $633 million 2005.
- **Top Canadian employers** in Idaho include: McCain Foods Group, Agrium Inc., Extendicare, and the Royal Bank of Canada, among others.

Montana-Canada Relationship

- **24,250 Montana jobs** are supported by Canada–U.S. trade
- In 2007, Canada was **Montana's most important export market** (More than $547 Million in Exports)
- Bilateral trade between Montana and Canada climbed to $5 billion in 2007 as the partners exchanged **$13.7 million in merchandise goods on a typical day**
- Montana supplied Canada with $80 million in forest products
- Canadians made more than **513,100 visits to Montana** (2007) spending $112 million

Asian Trade

- **Most of Idaho's high-tech exports are now heading to East and Southeast Asia**. Singapore topped the list at $1.05 billion worth in 2007, followed by China ($658 million), the Philippines ($299 million), Taiwan ($261 million) and Japan ($184 million
- Idaho is one of 3 states who rank among the top 10 U.S. states in terms of their **share of exports to Asia in 2007**.
- **China** is one of Idaho's fastest growing trading partners. In 2005, Idaho exported $318 million worth of goods to China
- Montana's second largest export market is **Japan**
- Korea is one of **Montana's fastest growing trading partners**
- In 2005, Montana companies exported **$24 million worth of goods to Korea**

Korea and China are some of Idaho's and Montana's fastest-growing export markets

Sonora

GDP: $18.4 Billion (US)

Per Capita Income: $18, 284 dollars (9th in Mexico)

- Population: 2,448, 138 **Second largest** Mexican state after Chihuahua.
- Home to the **largest automotive project** in Latin America (Ford Motor Company)
- **Main Companies**: Bachoco, Maquilas Tetakawi, Chamberlain, Amp Amermex, Ford Motor Company, GE Mexico
- Considered the birthplace of the green revolution in Mexico
- According to the last census in 2000, Sonora had **2,839,969 habitants**.
- As of 2005, Sonora's economy represents **2.8% of Mexico's total gross domestic product**
- **$2 billion (US) invested by Ford Motor Company** in the automotive sector in 2005.
- **National leader** in wheat, cotton, watermelon, grapes and asparagus production

Sinaloa

- GDP: $1.3 Billion (US)
- **Per Capita Income: $10,600**
- Population: 2,639,442
- Mexico's **leading vegetable producer** and exporter
- Area of over **two million hectares of fertile land**; most important food supplier in Mexico; more than 8 million tons per year.
- **First place** in terms of **production value** (agriculture)
- and third place in volumes of fish and seafood production
- Eighteen municipalities; Home to approximately **2,425,675 inhabitants**
- Main productive activities of Sinaloa are **agriculture, fishing, livestock breeding, food processing and apparel**
- **51.8% of population** employed by commerce and services; 19.9% employed by industrial sector
- Recent three- way agreement with **Agri-World Exchange**
- Agri-World Agreement expected to **expand the exports of growers in Sinaloa**
- Fruit and vegetable products represent more **than 60% of Sinaloa's total exports**
- Main Companies: **Ari-Son International, Bimbo, Campbell's, Delphi, Grupo Modelo**

Foreign Investment in Sonora/Sinaloa

As of 2005, 181,277 people employed by the maquiladora sector in Sonora

- Sonora has a total of **212 maquiladora factories**, with over $256 million in foreign investment in 2006
- As of 2005, **181,277 people employed** in the manufacturing sector (maquiladoras)
- As of 2006, 89,477 people in Sonora were employed in the **exporting maquiladora sector**
- Sonora's exports valued at **$5,495 million dollars**
- Sinaloa **attracted 81 new companies in 2004.**
- Major international companies in Sinaloa and Sonora include **General Motors, Delphi, Ford Motor Company, and Walbro, among others**

Nayarit

GDP: $3.4 Billion (US)

- Population of over **948.3 thousand**
- Population estimated to grow to more than **1 million by 2010**
- **Agriculture as main economic activity**; limited industrial development
- Leader in tobacco production with over **75% of national production**
- Foreign investors include **Canada, US, Germany, Italy, Spain and Switzerland**
- As of 2005, **244 international companies** present
- With **over 173 companies**, the United States is Nayarit's main foreign investor
- Service industries account for over **65% of Nayarit's foreign investment**

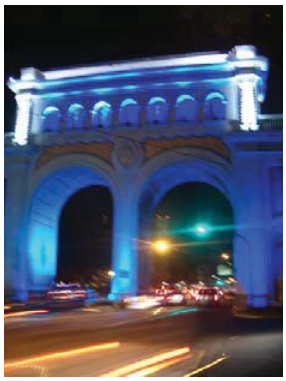
Jalisco

Considered Mexico's "Silicon Valley"; Jalisco produces over 60% of Mexico's entire computer output

GDP: $28 billion (US)

Per-Capita Income: $5,000

- **Population of over 6.6 million**
- Considered **Mexico's "Silicon Valley"**
- 50% of Mexico's consumer market is within **a 300 mile radius of Jalisco**
- High concentration **of high tech and computer manufacturing** plants
- Considered **Mexico's Cultural center**
- Jalisco is **the 2nd largest tourist destination** in Mexico
- **Third largest economy** and third largest manufacturing base in Mexico
- **4th largest receptor of foreign investment**
- **Main foreign investors**: USA, Singapore, Germany, Canada, Spain, UK, Holland, amongst others
- Annual **exports exceed $3 billion,** with 77% going to the U.S. and 3% to Canada
- **Production leadership** in computers, telecommunication devices, tequila production, amongst others



Mexico State and City of Mexico (D.F.)

- **GDP: $716.5 million pesos**
- GDP equivalent to **all Central America's GDP**
- **9.5%** of Mexico's economy
- **11% of all corporations** in Mexico
- Mexico State has a **population of over 13.8 million**
- Principal **productive activities** are manufacturing, construction, commercial activities, services, financial and non-financial services
- Mexico State is the **largest consumption market** in Latin America
- Over **2500 exporting companies** in the state
- 6.9% of total **Mexican exports** in the manufacturing sector
- 2nd state in foreign investment; **Over 1000 companies with foreign capital**
- Hosts over **360,000** companies (Mexico State)
- Both account for approximately 40 percent of Mexico's industrial base.
- Mexico City's $22,696 **PCI is higher than any other** city in Latin America
- Mexico City has a population of over **8,836,045**
- **21.4% of national GDP**; could alone be the 20th largest economy in the world
- **280,000 companies** in D.F.
- **Primary industries**: auto parts, food processing, electrical equipment, electronics, and machine tools

Alberta

GDP:

Estimated population of 3,223,415

- Alberta's economy is **one of the strongest in Canada**, supported by its growing petroleum industry
- Energy now is **one-quarter of Alberta's gross domestic product**.
- Alberta is Canada's **2nd-largest agricultural producer**, earning 22% of Canada's farm cash receipts
- Alberta is the **largest producer of conventional crude oil**, synthetic crude, natural gas, and gas products in the country.

- Over the past five years, Alberta had the highest **rate of economic growth rate in Canada** at 4.7% per year.
- Alberta's exports of goods and services more than **doubled between 1997 and 2007** to $90.5 billion
- **Average annual employment** in the province in 2007 increased by 88,200 over 2006.
- Nearly **one half of all Canadian beef** is produced in Alberta.
- US firms are the largest source of foreign investment, accounting for about **70% of investment in Alberta**

US firms account for over 70% of Investment in Alberta

Alberta-Mexico Trade Relationship

- Alberta accounts for **17% of Canada's exports to Mexico.**
- Alberta-Mexico two-way trade valued over **$1.4 billion in in 2007**
- Mexico's **third largest trading partner** within the Canadian provinces
- Mexican imports to Alberta totaled **$730 million in 2007**
- Mexico ranked as Alberta's **fourth largest export market** and first in Latin America
- In 2007, **Alberta exports to Mexico exceeded $715 million**
- Main export products to Mexico include **beef, canola seeds, plastics, and wheat**

Alberta-United States Trade Relationship

- The U.S. was Alberta's largest trading partner, buying almost **90% of provincial exports**
- The U.S. provides **2/3 of foreign investment and 60% of foreign tourists to Alberta.**
- Alberta's merchandise exports to the U.S. in 2006 were valued at close to **$73.8 billion**
- In 2006, Alberta crude oil exports to the U.S. totaled **1.35 million barrels per day**
- Alberta **oil, gas, natural gas liquids, mining, chemical and petrochemical exports** to the U.S. totaled approximately $61.6 billion
- **17 states** are among Alberta's top 20 international export markets.

- Approximately **1 million Americans visit the province every year,** accounting for more than 60% of Alberta's international tourists
- Alberta supplies **63% of U.S. natural gas imports**, meeting about 12% of U.S. demand
- Alberta exported roughly **27% of its primary agricultural exports** and 61% of its value added processed exports to the U.S
- **Major exports** include beef products ($720 million), live cattle ($690 million), processed potatoes ($153 million) and pork ($130 million)

Hoover Dam Bypass Project

- The completion of the entire Hoover Dam Bypass Project is **expected in June 2010.**
- The Hoover Dam Bypass Project is a **3.5-mile corridor crossing the Colorado River** approximately 1,500 feet downstream of the Hoover Dam
- U.S. 93 has been designated as a **CANAMEX high priority asset**
- The bridge will span 2,000 feet across Black Canyon just south of the Hoover Dam.
- It will remove a **major bottleneck to interstate and international commerce** and travel by reducing traffic
- Will reduce travel time through Hoover Dam to an **estimated 6 minutes**
- More than **17,000 cars and trucks** are expected to use the new bridge daily .

The Bridge will reduce travel time through Hoover Dam to an estimated 6 minutes, removing a major bottleneck to interstate and international commerce

Punta Colonet

- Punta Colonet is considered President Felipe Calderon's most ambitious **multimodal project in Mexico**
- Includes **Construction of new port facilities**, container terminals, a desalination plant, highway improvements, and 186 miles of rail lines
- Southern Arizona is recognized as a viable gateway to U.S. markets for Punta Colonet
- Situated on approximately **6,700 acres**
- Expected to generate **83,000 jobs,** 24,000 during construction and 59,000 during operation, and US$500 million in annual revenue
- Expected to receive approximately **2 million containers of goods per year**, with the capacity to receive up to 9 million containers per year
- Projected to become **third largest port in the world**, after Hong Kong and Singapore

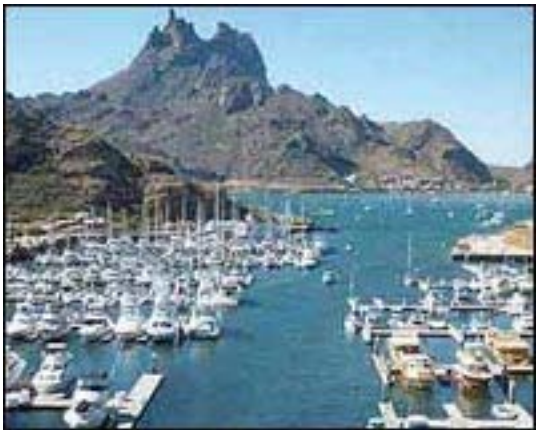
Punta Colonet is expected to become the third largest port in the world

Nogales Ports of Entry

- Nogales is positioned at the **core of the CANAMEX trade corridor**
- **4.1 million vehicles**, commercial and noncommercial vehicles cross annually through Nogales' three ports of entry
- The Mariposa Port of is one of the **largest ports of entry (POE) for fruit and vegetables** in the Southern Border
- U.S. imports of fresh produce grown in Mexico **valued at more than $3 billion** (2003).
- Over **4 billion pounds of produce grown in Mexico, entered through Nogales**
- Economic activity associated with the Mexican produce industry is the **largest private sector employer in Nogales** and Santa Cruz County
- **50% of the nation's total produce** pass through the Nogales Ports of Entry
- The U.S. Services Administration is planning a **$199 million expansion** to the Mariposa POE

Guaymas

- About **200 miles south** of the Arizona-Mexico border city of Nogales
- With improvements, could hold a container service comparable to other Mexican regional ports, such as the Port of **Mazatlan and Ensenada** on the Baja peninsula
- **Limited by lack of quay cranes** (land-based cranes that lift cargo to and from ships)
- A Guaymas-Tucson corridor could serve as a **critical regional asset for local producers** in the region
- Mexican government is deepening the Guaymas port this year **from 36 feet to 42 feet**.
- $200 million is being put into a **new coastal highway** connecting Guaymas to western Arizona.
- Port could move about **300,000 containers per year**

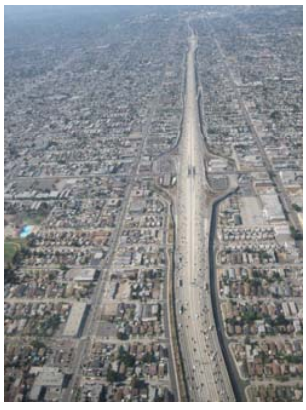


San Luis POE Expansion

- San Luis Rio Colorado (SLRC) is strategically located in the northwest corner of the state of Sonora where four states converge**: Arizona, California, Baja California and Sonora**
- An average of **1,641 vehicles** a day cross the San Luis Rio Colorado International Bridge
- **Promise to build, operate, and maintain a second border crossing in San Luis Rio Colorado for the exclusive use of commercial vehicles**
- Under **Mexico's 2007-2012 national development plan**, the Mexican government will develop infrastructure on the Mexican side for the new port of entry
- GSA has funded the **design and construction of the new SL II commercial port of entry**, with an estimated cost of $42 million
- The Arizona Department of Transportation has expanded the CANAMEX corridor in Arizona to include **a new four lane route linking the SL II port of entry to Interstate Highway 8**
- The U.S. side of the border crossing is already under construction and expected to **initiate operations in October 2009**
- **$8 million have been funded for the redesign of the existing port of entry adding four new passenger vehicle lanes for a total of ten lanes**

Economic Stimulus Recovery Projects

- $64 billion in projects are being suggested to bolster U.S. transportation infrastructure and support a national economic recovery
- Arizona, Nevada, Idaho, Utah and Montana have submitted **532 projects**
- Combined projects have an estimated cost of $13.3 Billion
- Estimates indicate that, if advanced, these projects will support **over 500,000 jobs** in the US CANAMEX region.




CANAMEX
CORRIDOR COALITION
THE SAFE, SMART AND SECURE (3S) CORRIDOR
NAFTA TRADE, ASIAN TRADE, & JOBS LINKED TO TRADE
CANAMEX CORRIDOR
* Note: Asian Exports entering through the ports of Los Angeles and/or Long Beach
KEY FACTS
• The Canada and CANAMEX trade relationship supports 309,000 US jobs
• The U.S. CANAMEX states combined have over 2 million jobs linked to trade.
• US farm & food exports to Mexico exceeded $11.5 billion in 2007
• Bilateral agricultural trade between US and Mexico hs increased from $7.3 billion in 1994 to $20.1 billion in 2006
• US exports to Canada reached $11.9 billion in 2006
• US exports to Mexico totaled $120 billion
Sources: BST Associates Trade Impact Study, Alberta International/Intergovernmental Relations, Trade for America
ASU North American Center for Transborder Studies
ARIZONA STATE UNIVERSITY
Alberta
Canada
Asia Trade* Exports $4.26 Bil Imports $4.98 Bil
Canada Trade $73.8 Bil
Mexico Trade $1.4 Bil $730 Mil
Coutts, AB
Asia Trade* Exports $198 Mil Imports 510 Mil
Canada Trade $587 Mil $2.87 Bil
Mexico Trade $42 Mil
Jobs 108,935
Sweetgrass, MT
Montana
Asia Trade* Exports $2.5 Bil Imports 830 Mil
Canada Trade $609 Mil $534 Mil
Mexico Trade $138 Mil $26 Mil
Jobs 836,679
Idaho
Asia Trade* Exports $593 Mil Imports $3.6 Bil
Canada Trade $798 Mil $717 Mil
Mexico Trade $178 Mil $70 Mil
Jobs 253,953
Nevada
Asia Trade* Exports $416 Mil Imports 1.4 Bil
Canada Trade $947 Mil $1.3 Bil
Mexico Trade $122 Mil $308 Mil
Jobs 259,724
Utah
United States
Asia Trade* Exports $3.5 Bil Imports $4 Bil
Canada Trade $2.1 Bil $1.5 Bil
Mexico Trade $5.2 Bil $4.2 Bil
Jobs 552,924
Arizona
Nogales, AZ
Nogales, SON
Sonora
Sinaloa
Mexico
Nayarit
Jalisco
Mexico State
Mexico City
2
3
4
15
93
10
19

CANAMEX CORRIDOR COALITION
THE SAFE, SMART AND SECURE (3S) CORRIDOR

PER-CAPITA INCOME & GROSS DOMESTIC PRODUCT

CANAMEX CORRIDOR

CANAMEX TRADE-SHED

- Combined CANAMEX member states population: 51,412,820
- Highest PCI: Nevada
- Lowest PCI: Sinaloa
- Average Income: $20,538 USD
- Fastest-growing US States (2007, annual)
  - Population: Nevada (2.9%)
  - Economic Growth: Utah (5.5%)
- Alberta's current 12.6% economic growth per year is the fastest and strongest in Canadian history
- Idaho's 2006 economic growth rate of 7.4% was the largest in the US
- Guadalajara has the 2nd strongest economic grwoth potential of any major North American city

Sources: BST Associates; FDI Magazine, Alberta International/Intergovernmental Relations, Trade for America

ASU North American Center for Transborder Studies
ARIZONA STATE UNIVERSITY

CANAMEX CORRIDOR COALITION

THE SAFE, SMART AND SECURE (S³) CORRIDOR

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Sources:

- Alberta International/Intergovernmental Relations Office
- BST Associates Trade Impact Study
- Foreign Affairs and International Trade Canada
- International Trade Administration– US Department of Commerce
- Pro-Mexico Trade and Investment
- Trade for America Coalition

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ARIZONA STATE UNIVERSITY

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North American Center for Transborder Studies

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MARICOPA ASSOCIATION of GOVERNMENTS

PAG Pima Association of Governments

CAAG