

Global Crossroads

Planning & Infrastructure for the
California-Baja California Border Region



by Lawrence A. Herzog
A Publication of the Trans-Border Institute

GLOBAL CROSSROADS

Planning & Infrastructure for the
California-Baja California Border Region

Lawrence A. Herzog



University Readers™

San Diego, CA

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Foreword

THE CALIFORNIA-MEXICO BORDER is the most important global connection that either state possesses. Mexico is California's largest export market, and most of California's trade with Mexico is concentrated in Baja California. Baja California likewise depends critically on trade with the United States, and the California market is the primary consumer of its exports. In recent years, however, two overwhelming factors—security and economic crises—have posed major challenges that undermine cross-border trade and collaboration, in general, between the two states. These challenges, however, present extraordinary opportunities for both California and Baja California to examine the cross-border ties that bind them, and work together to strengthen their global competitiveness.

This report, authored by Dr. Lawrence A. Herzog from San Diego State University, identifies the tremendous importance of the bilateral ties between California and Baja California, and the need for greater efforts and investments to realize their true potential. While trade and commerce between the two states has exploded over the last 15 years, the trade infrastructure of the two Californias has not advanced significantly since the start of the North American Free Trade Agreement (NAFTA). Over time, cross-border trade flows have fallen short due to a failure to invest adequately in expanding the necessary infrastructure to maximize volume and efficiency. Even worse, beginning well before 9/11, extra security provisions at the border have stymied the vast majority of legitimate cross-border trade and travel in order to control a minute fraction of illicit cross-border activity.

This report provides a clear picture of the current deficiencies in the infrastructure and planning for cross-border trade between California and Baja California. Yet, more importantly this report identifies concrete recommendations and calls on the leaders and stakeholders of both states to help make our shared border a “global crossroads” that will provide tremendous opportunities for the economies of both states.

The Trans-Border Institute (TBI) was founded at the University of San Diego in 1994, at the outset of NAFTA, with the purpose of bringing greater attention to and advancing U.S.-Mexico relations and the border region. Throughout the NAFTA era, TBI has worked to provide information and analysis and promote dialogue and cooperation on a wide range of issues,

including trade and economic development, rule of law and security, immigration, education and cultural exchange, and environmental sustainability. In keeping with these efforts, TBI is pleased to present this report as a means to promote greater cross-border collaboration in advancing the shared economic and policy goals of both California and Baja California. While studies such as this one provide the necessary facts and figures for making more effective policy, there is a critical need to promote dialogue and coordination among policy-makers and stakeholders in order to advance the vision of a more prosperous relationship between California and Baja California.

Dr. David A. Shirk
Director, Trans-Border Institute
University of San Diego

Summary

CALIFORNIA AND BAJA California share the most dynamic portion of the U.S.-Mexico border economy and have tremendous potential to transform their shared border region into an unparalleled “global crossroads.”

The border area serves as a giant regional conduit for multi-billion dollar exchange. More than 90% of all goods move by land between California and Baja California. But, this mega-network of cross-border flows is faced with a crisis—a transport system (highway, rail, and ports of entry) that cannot adequately absorb the massive volume of people, vehicles, and goods moving north and south over the international boundary. This has led to well documented traffic congestion, delays, and the perception of uncertainty. According to a San Diego Association of Governments analysis of 2005 trade figures, delays in truck crossings at the Otay Mesa and Tecate border crossings alone cost the U.S. and Mexico bi-national economy an estimated \$6 billion and more than 51,000 jobs.

Hence, Mexico’s contributions to California’s economy—while valued at \$60–65 billion per year in imports and exports—are hindered by the troubled state of cross-border infrastructure. The California-Baja California border region needs a comprehensive planning approach and a bi-national knowledge base that can bring together stakeholders from all sectors and both sides of the border. A proposed California-Mexico Master Plan may help consolidate the vast array of agencies and border planning efforts on both sides of the border. State officials, however, will still need to address the existing funding deficits for border infrastructure, which will surely be exacerbated by the 2008–2009 budget crisis.

Border planning and infrastructure must adapt to the region’s geography and the links to the global economy. The southern border highway system should evolve toward a more north-south pattern; ports of entry (POE’s) need to be expanded, and POE highway connectors enhanced. Rail infrastructure must be upgraded, and seaports better linked to land-flow patterns. Large-scale growth poles being created in Baja California—especially the future port at Punta Colonet, and the microchip production center at Silicon Border in Mexicali—need to be incorporated into California’s border master plan.

Finally, the border's congestion and inadequate infrastructure are exacerbated by the post-9/11 shift in federal government priorities toward national security along the border. California and Baja California must work together to better monitor and analyze the supply chain delays and other barriers that hinder California-Mexico economic cooperation and integration. This information will serve in federal-state cooperation in planning infrastructure along the border.

Introduction

SINCE THE SIGNING of the North American Free Trade Agreement (NAFTA) in 1993, California's economic linkages with Mexico have continued to grow. The state exports nearly \$20 billion annually to Mexico; the majority of those exports remain within the northern Mexican border region. Meanwhile California imports over \$45 billion per year from Mexico (Shatz and Lopez-Calva, 2004). Some of California's cross-border economic integration takes the form of merchandise exports. It should be noted that measuring merchandise exports requires the use of a kind of data that, as the U.S. Census makes clear, is not always able to distinguish who the "exporter of record" is and where that exporter is located. For example, some of southern California's booming exports are recorded when goods in the "maquiladora" (assembly) sector pass through the region, either coming or going.¹ Whether these goods are actually produced in California, or destined for markets there is not always clear from the data (Feinberg, 2001).

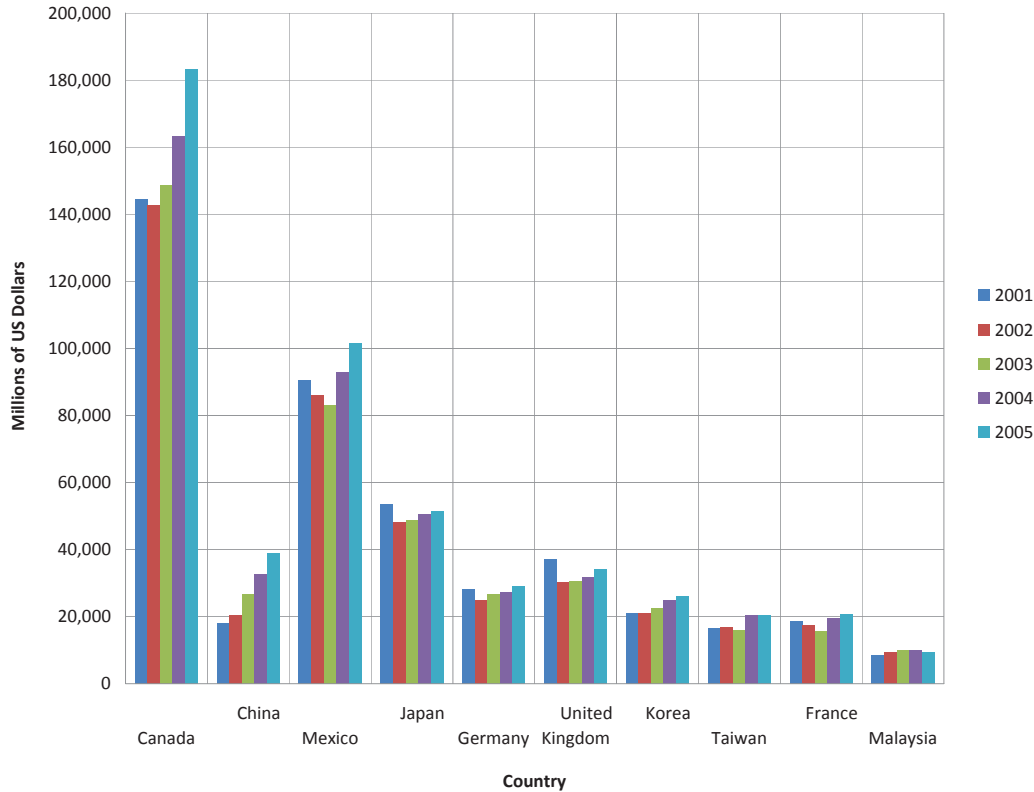
Nevertheless, the overall magnitude of California-Baja California economic integration is impressive. Exports to Mexico have steadily increased over the last decade and a

half; imports have more than doubled during the same period. Since the early 1990's and the passage of NAFTA, the region has also seen impressive levels of cross-border growth in the retail/tourism sector. For example, in San Diego County alone, Mexican visitors spent \$2.8 billion a year, by recent estimates (SANDAG, 2006).

The steady upward trend in California-Baja California cross-border flows is mirrored by the strength of the larger bilateral economic relationship between the United States and Mexico over the last decade. By 2005, Mexico had become the second most important trading partner with the United States (Figure 1).² California, in turn, is the second most important state in the U.S. (after Texas) in terms of trade with Mexico, with over \$41 billion in trans-border surface trade value in 2005 (Figure 2).³

The maquiladora sector is the critical engine that drives economic integration along the California-Baja California border, and thus partly defines the future of infrastructure strategy in this region. Before globalization, cross-border commerce was assumed to be managed with free trade agreements, currency market decisions, trade and fiscal policies made in the national capitals, or

Figure 1 U.S. Exports of Domestic Merchandise, 2001–2005



Source: U.S. International Trade Commission, Mexico–U.S. Trade data.

corporate sourcing decisions made in the private sector. But, in an era of globalization, state and regional governments must take the lead in crafting cross-border infrastructure policy (Lowenthal, 2009). Regions must reinvent themselves as multimodal transportation centers speeding the flow of people, goods, information and finance throughout the world economy. In particular, rapidly urbanizing regions that build world-class transportation infrastructure strengthen their competitive

advantage in the global economy and fortify themselves against competing regions (Herzog and Erie, 2002). The urbanizing California-Baja California border region fits this new class of entrepreneurial regions. But it must plan and manage infrastructure in a way that fully embraces the trans-boundary geographic and global economic realities of the border zone.

The border zone—southern California and northern Baja California—is the primary regional “conduit” for the California-Mexico

economic exchange. The most tangible measure of this conduit function is the immense network of flows—people, vehicles and merchandise—between Mexico and California. For example, 35 million vehicles cross the California border from Mexico each year; they carry between 65 and 70 million passengers. Meanwhile two million trucks carry nearly 30 billion dollars of merchandise. These flows are forecast to double by the year 2020 (CALTRANS, 2006). This zone also houses a steady stream of legal cross border flows of labor into the state.⁴

Despite the burgeoning of cross-border trade between California and Mexico, the future of the California-Mexico economy will increasingly be mediated by the quality, scale, and efficiency of transport and ports of entry. This report seeks to synthesize and explore policies and plans for border infrastructure in light of the current obstacles facing cross-border infrastructure. Those obstacles include:

- a. Traffic congestion and border delays generated by greater volume of cross-border flows of people, vehicles, and products;
- b. Inadequate regional transport infrastructure (port facilities, highways, rail, etc.) necessary to house the larger flows that accompany rising California-Baja California economic integration;
- c. Delays and uncertainties in the processing of cross-border

movements, exacerbated by post-9/11 federal homeland security policy;

- d. Lack of a comprehensive regional infrastructure policy for the California-Baja California border region;
- e. Absence of a policy and planning mechanism at the state (and regional) levels that fully integrates Baja California developments and plans into infrastructure decisions on the California side of the border.

The costs of delays, inefficient processing, overzealous Homeland Security policies or inadequately planned highway networks and ports of entry to the California-Baja California border economy are difficult to accurately

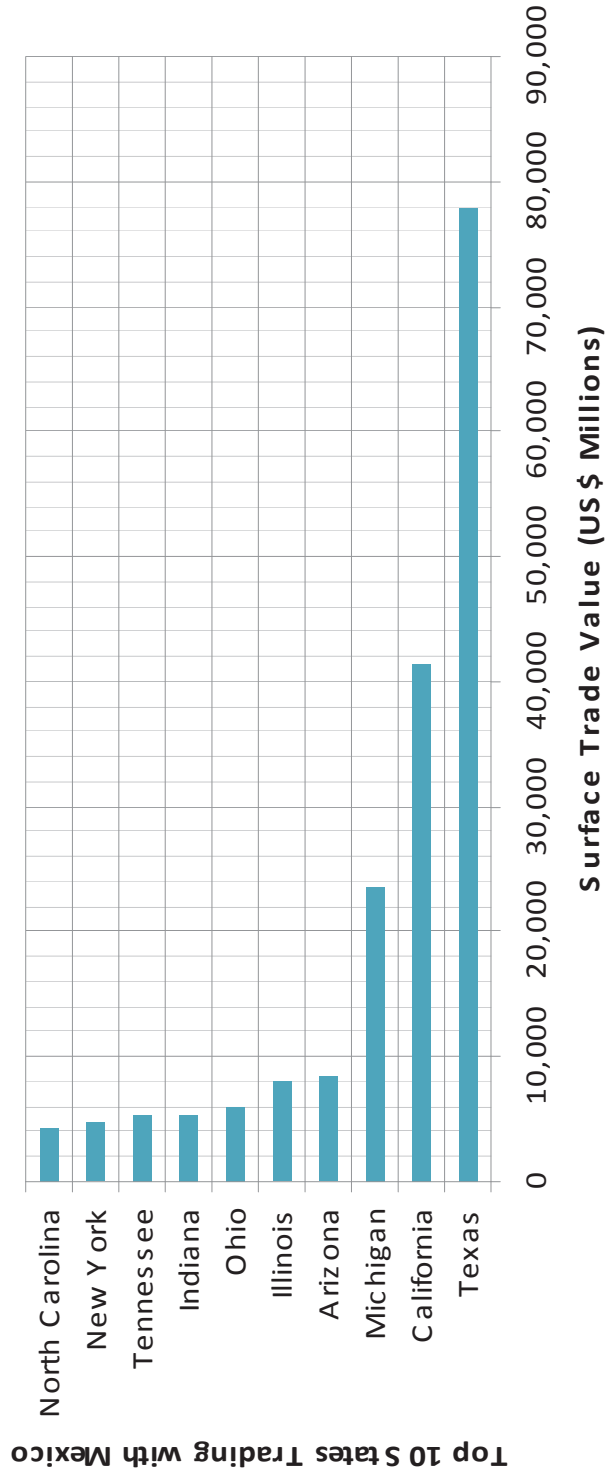
assess, due to the complexity of flows along international borders.

However, at least some of the costs are literal and estimates can be projected, though even they are, at best, rough estimates.

There is certainly no doubt that the infrastructure flaws are severely damaging the state economies of both California and Baja California. According to a San Diego Association of Governments

35 million vehicles cross the California border from Mexico each year; they carry between 65 and 70 million passengers.

Figure 2 Top 10 States Trading with Mexico, by Surface Modes of Transportation in 2005



Source: BTS Transborder Surface Freight Dataset.

(SANDAG) study of border delays that is discussed later in this report, delays in truck crossings at the Otay Mesa and Tecate ports of entry cost the California economy an estimated \$716 million in annual output and more than 3,600 jobs. The impact is even greater in Baja California, which experiences an estimated loss of \$1.317 billion in annual output and 6,929 jobs due to the truck crossing delays in Otay Mesa and Tecate. Yet to focus only at the state level misses the point, since both California and Baja California are vital trade conduits for both Mexico and the United States. At the national level, the impacts of border delays amount to more than \$6 billion dollars in lost revenue—and over 51,000 lost jobs—in both countries. However one might debate its exactness, the multi-billion dollar figure hints at the gargantuan scale of the problem. The figure is expected to more than double in the next 10 years if no major changes in infrastructure are made (SANDAG, 2006).

This report analyzes the dimensions of the border infrastructure crisis along the California-Mexico boundary in the context of a region that has increasingly globalized in the last decade, and requires an infrastructure more fully designed for its global and bi-cultural character. It then explores the nature of existing policy-making and decision structures. It suggests some key elements of an improved transport and infrastructure network in the cross-border region. Finally, it

reviews the challenges facing planners and decision-makers in crafting infrastructure policy in the future. The methodology is anchored by a critical analysis of archival sources, including formal plans, agency reports and consulting studies, academic papers and studies, as well as media reports. Selected anecdotal interviews with experts and policy makers on both sides of the border were carried out to corroborate secondary documents when necessary.

The California-Baja California Infrastructure Crisis

THE CALIFORNIA-BAJA CALIFORNIA borderlands network of highways, rail transit, and ports of entry (POE) is an infrastructure in crisis. The infrastructure crisis has eight critical dimensions:

1. Economic Growth/ Demographic Change

Demographic expansion and economic development are producing cross-border flows of goods, people, and vehicles at levels that existing infrastructure simply cannot absorb. An estimated six million people live along the 150 mile border California shares with the Mexican state of Baja California (see Table 1).⁵ By 2030, 9 or 10 million people will reside in the two California counties (San Diego, Imperial) and five Mexican municipalities (Tijuana, Rosarito, Tecate, Ensenada, Mexicali) along this border.⁶

This demographic explosion around the California-Baja California border is interwoven with the expansion of the cross-border economy. The exchange of goods across the land border is, in turn, profoundly influenced by the galvanizing role of the maquiladora sector, which relies on assembly production for export.

Maquiladora factories, also called “maquilas,” are the third largest source of foreign revenue in Mexico, generating a value-added estimated at \$20 billion per year, with more than three fourths of that embedded along the northern border. In 1978, there were 178 maquilas in Baja California;

Table 1 Population of California-Baja California Border Counties/Municipalities

	<u>2006</u>
San Diego	2,941,454
Imperial	160,301
	<u>2005</u>
Tijuana	1,410,687
Rosarito	73,305
Ensenada	413,481
Tecate	91,034
Mexicali	855,962
Total Baja	2,844,469
Total CALIF/ BAJA Border	5,946,224

Source: U.S.: U.S. Census Bureau, Census of Population and Housing, Population Estimates, 2006. Mexico: INEGI (Instituto Nacional de Estadística, Geografía y Información), Censo de Población y Vivienda, Informática, Vivienda, 2005.

Table 2 California Exports To Mexico (In Thousands \$U.S.)

<u>State</u>	<u>2001</u>	<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>
U.S. Total	101,509,075	97,530,613	97,457,420	110,775,285	120,048,914	134,167,083
California	16,343,059	16,076,279	14,871,836	17,239,379	17,702,502	19,632,985
California % of U.S. Total	16.1%	16.5%	15.3%	15.6%	14.7%	14.6%

Source: Office of Trade and Industry Information (OT11). Manufacturing and Services, International Trade Administration, U.S. Department of Commerce.

by 2006, the number was 900, a 400% increase (CALTRANS, 2006).

Demographic expansion and economic development are producing cross-border flows of goods, people, and vehicles at levels that existing infrastructure simply cannot absorb.

The assembly industry generates multiplier effects to the tune of billions of dollars across sectors and on both sides of the California-Baja California border. Multiplier effects include numerous “backward and forward”

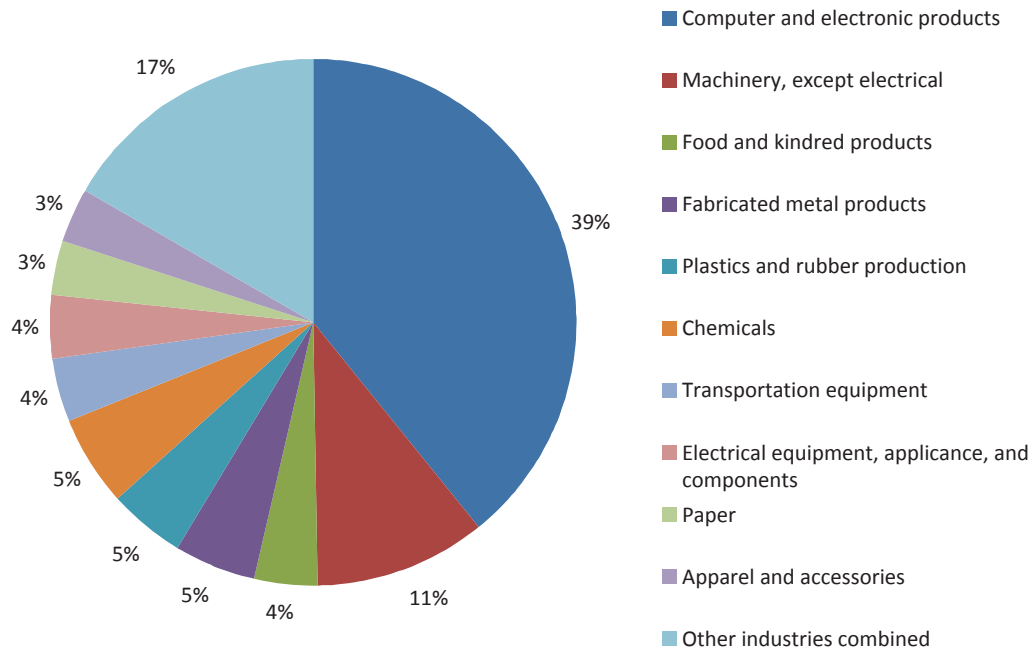
linkage activities, from real estate, financing, and insurance to retail,

equipment repair, food production, and cleaning services.⁷ Beyond trade, Mexico’s impact on California includes remittances sent by workers back to Mexico, Mexican-owned residential real estate, and foreign direct investment.⁸

California exports to Mexico (Table 2) grew from \$16.3 billion in 2001 to \$19.6 billion in 2006. Following 9/11 and tighter security at the border, exports dipped for two years, but by 2004, they began to surge once again.

More than two thirds of California’s exports (some 70%) go to Baja California (Tomas Rivera Institute, 2005). The leading export commodities from California to Mexico are computers, electronics, and machinery, which account for about 50%

Figure 3 California Exports to Mexico by Sector (2002)



Source: U.S. Census Bureau’s Foreign Trade Division.

of all California products exported to Mexico (see Figure 3). These are also, as mentioned, the main sectors of the border maquiladora economy. The maquiladora sector, along with retail trade and tourism, embodies the increasing globalization of the California-Baja California border economy and, as such, is tied to larger global economic trends.⁹

The cumulative effect of larger populations on either side of the border, and a surge in the volume of goods in transit north and south of the California-Baja California border has left existing facilities overwhelmed. In the words of the landmark 2006 study of border wait times, California

border infrastructure was “sized for a much smaller and radically less security-conscious economy” (SANDAG, 2006). California has only 6 border crossings to absorb 34–40 million passenger vehicles, 2 million trucks, and 18–20 million pedestrian crossings per year (US Department of Transportation, 2006). Cross-border flow increases, over the last decade, have ranged from 37% growth in truck crossings to 25% in passenger vehicles (U.S. Department of Transportation, 2006). At the same time, comparatively modest changes in border infrastructure were made in response. For example, no large-scale initiative has been made to expand rail

infrastructure along the California-Baja California border. Less than one percent of all the rail-based trade between the U.S. and Mexico flows through California (Haveman and Hummels, 2004). Further, as noted below, north-south highway expansion, though badly needed, is by no means guaranteed under current budget conditions.

2. The Economic and Environmental Costs of Border Delays

Longer wait times at the border have clear costs—both economic and environmental. Attempts to measure the economic costs of California-Baja California border delays follow from previous efforts to chart the costs of border wait times along the Canada-U.S. border.¹⁰ Studies in the northern border region focused on lost productivity, industry competitiveness, and loss of revenue. They calculated losses ranging from \$7.5 to \$13.5 billion/year due to delays in trucks carrying merchandise trade.

The economic costs along the California-Baja California border were measured in SANDAG'S 2006 study of cross-border wait times. That study found delays at the San Ysidro, Otay Mesa, and Tecate crossings experienced on two levels: loss of cross-border personal travel and in cross-border freight delays. SANDAG's economic model analyzed more than 3,600 surveys of border crossers and deduced that over eight

million trips into San Diego are lost annually with a corresponding loss of an estimated \$2.5 billion in potential revenues in the San Diego region, mainly in the retail sector. The study also estimated that Baja California loses more than 2 million trips per year, resulting in a loss of approximately \$120 million in revenues and \$100 to \$230 million in total output. Delays in getting trucks carrying freight across the California-Baja California border, due to nearly two hours of processing time, significantly impede productivity, competitiveness, and regional/national business. The SANDAG model projected a San Diego County-wide annual impact of nearly one half billion dollars in lost revenue. In Baja California, the projected annual impact was significantly higher, with a projected annual loss of \$1.317 billion in lost output. This does not include long-term impacts of relocation of industries away from the border region due to the problems of moving freight. Overall, the study found that more than a one hour wait time at the border was considered "excessive" and would decrease company profits. During the time of the study, waiting times for the sample of 120 companies were between two and three hours. This left many companies experiencing psychological uncertainty about the border economy, as well as real losses in dollars, whose overall net value was nearly \$6 billion in 2005, as mentioned previously.

Increased delays along the border also have environmental impacts, especially in the area of truck emissions. Heavy duty trucks utilize diesel fuel, and are the main vehicles that move freight back and forth across the California-Baja California border. Studies have shown that idling trucks burn greater amounts of diesel fuel, leaving many toxic contaminants in the air, including carbon monoxide, nitrous oxides, sulphur dioxide, and particulate matter. These emissions have been linked with diseases and health problems like asthma, heart conditions, and cancer. The Environmental Protection Agency has recognized this problem along the Mexican border (U.S. Environmental Protection Agency, 2007).

3. Inadequate Highway Trade Infrastructure

Southern California's low density urban structure means its surface transportation is essentially highway-oriented. California's \$60–65 billion trade relationship with Mexico is currently transacted almost entirely by truck/road transport. About 98% of all trade through California's ports of entry occurs by truck. In 2004, some 1.4 million trucks crossed at the Otay Mesa crossing in southeastern San Diego County and another .6 million at Calexico East. Truck crossings are likely to increase to nearly six million trucks by 2030 (CALTRANS, 2006).

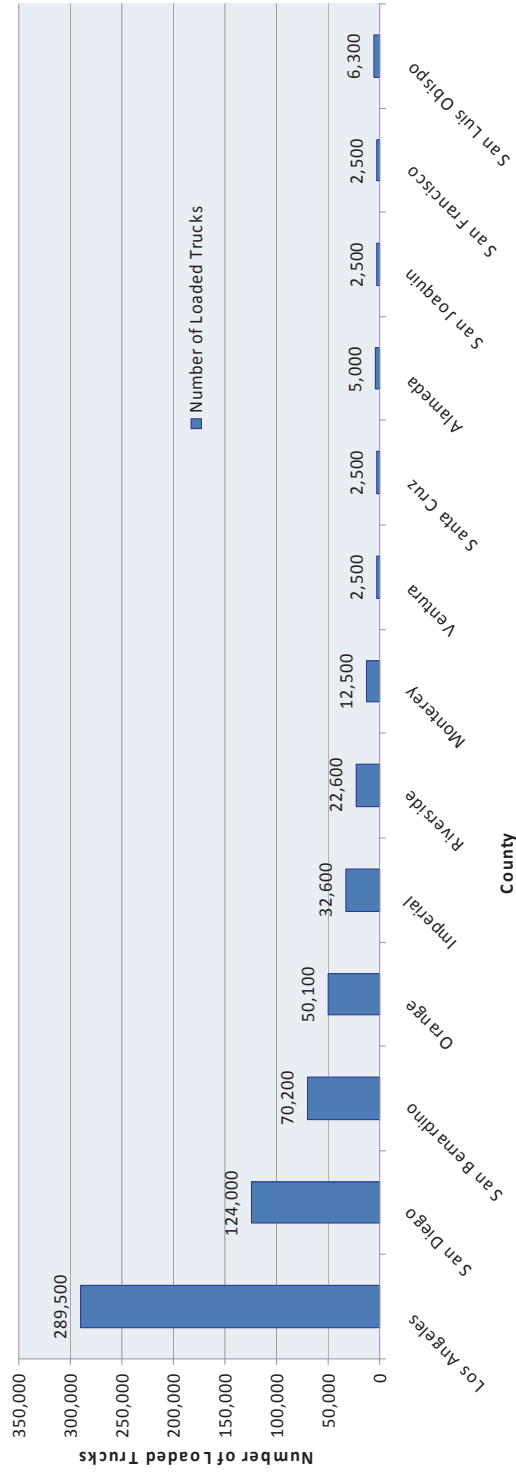
These trucks carry \$30 billion in freight, with about 60% of the freight crossing from Mexico into California destined to one of California's counties. A recent survey of truck destinations shows that the vast majority of loaded trucks crossing over the Mexican

border into California go to Los Angeles, San Diego, San Bernardino, Orange, Imperial, and Riverside counties—in short to the major markets of southern California (See Figure 4). This suggests that north-south highway corridors connecting southern California with Baja California will continue to receive larger shares of vehicles moving south-north. However, as this report notes further on, highway infrastructure in southern California has historically favored east-west, rather than north-south, flows.

Closer to the border itself, truck crossings are causing congestion at both the ports of entry and along the highways that link to the POE's. Recognizing this, the U.S. Department of Transportation's 2004 Border Infrastructure Needs Assessment (BINS) report for the State of California calculated a demand for 103 new border zone highway construction projects worth

Increased delays along the border also have environmental impacts, especially in the area of truck emissions.

Figure 4 California-Baja California Border: Annual Distribution of Loaded Trucks (To/From California) by County, 2003



Source: 2003 Commercial Vehicle Border Crossing Survey, Caltrans.

\$12.9 billion needed by 2030. Of that amount, only 22 projects at a cost of \$2.6 billion were identified as fully funded. This left a deficit in border highway infrastructure of 81 projects, and a financial vacuum of \$10.3 billion in unfunded highway needs (Sourcepoint, 2004).

4. Poorly Developed Rail Linkages

California rail infrastructure linkages with Mexico are underdeveloped. The movement of goods between Baja California and California is dominated by truck transit. While two million trucks enter California from Mexico, only 18,000 rail containers come in. Texas, by contrast, receives 240,000 fully loaded rail containers per year (mainly through Laredo), and even Arizona’s port of Nogales is a more important rail facilitator than any in California. While it might be argued that Texas and Arizona are more positioned in the center of the “NAFTA corridor” of goods flowing from central Mexico into the heartland of the U.S. market, this underestimates the strategic importance of the California land gateway to the major cities and ports on the west coast (Vancouver, Seattle, San Francisco/Oakland, Los Angeles), and to the larger possibilities of linking by land those ports to global trade corridors in the Pacific Rim.

The bias toward highway rather than rail funding is illustrated in the 2004 BINS assessment report. \$12.9 billion was proposed for cross-border

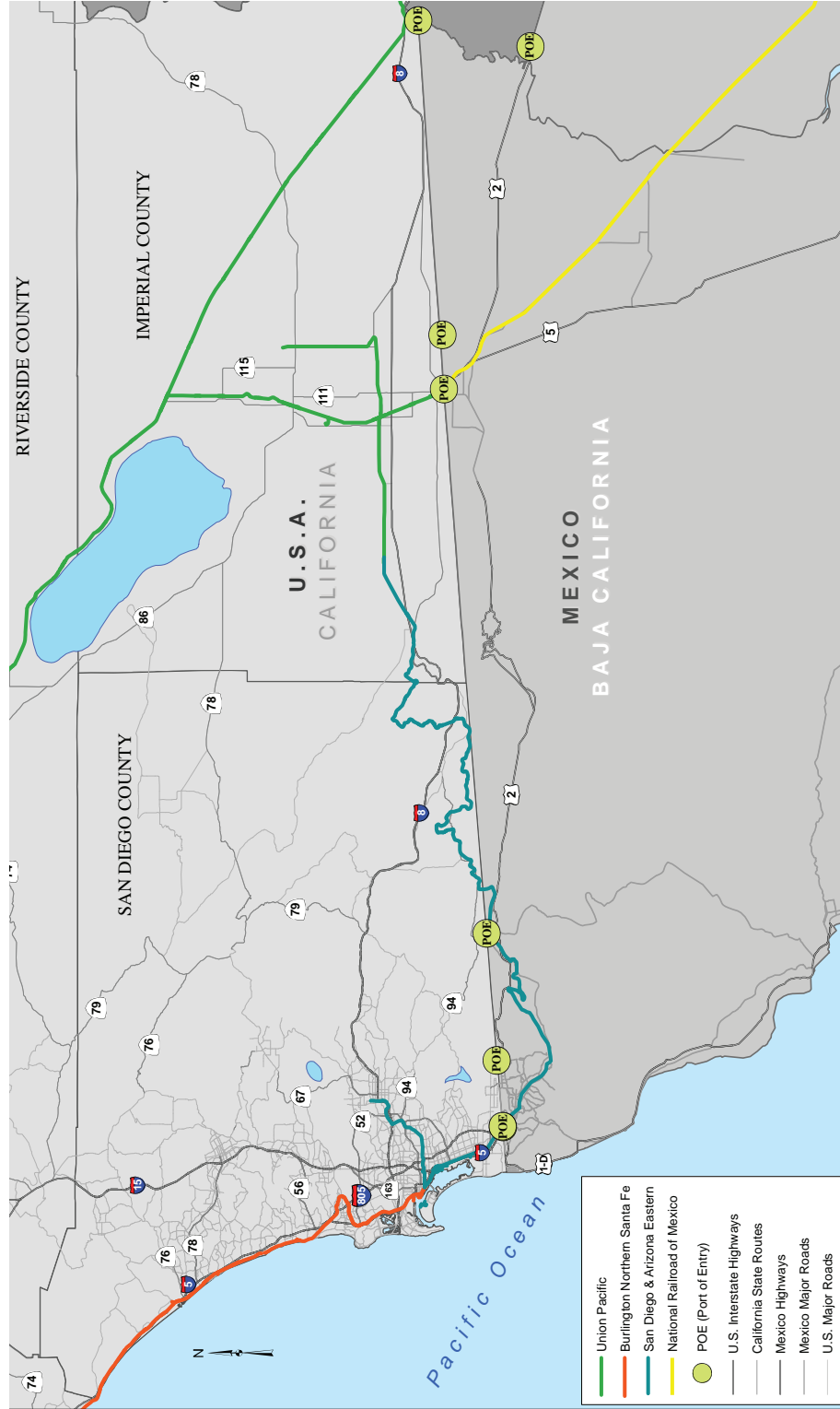
highway infrastructure improvements through 2030, yet only \$923 million was proposed for border rail upgrades in the same time period. Of those border rail upgrades, three out of seven proposed projects were unfunded, leaving more than a \$100 million deficit for rail transport (Sourcepoint, 2004).

The advantage of rail crossings is that they are more fixed in space and become central infrastructure hubs that attract ancillary activities—like warehousing and manufacturing—which would benefit both sides of the border. This creates more positive economic spillover effects and can generate local catalysts for economic growth. Truck crossings, on the other hand, are more spread out and footloose, and therefore less appealing in the long term since they do not create geographically concentrated economic growth pole effects (Haveman and Hummel, 2004).

The problems with California-Baja California rail infrastructure are manifest by the current geography of railroads in the California-Baja California border region (Figure 5).

While two million trucks enter California from Mexico, only 18,000 rail containers come in. Texas, by contrast, receives 240,000 fully loaded rail containers per year.

Figure 5 Railways in the California Border Region



At present, the rail network is defined by a corridor of rail linkages running from Mexicali-Calexico through southern Imperial County, crossing the border at Tecate, and then traveling across the mountains south of the border, finally reentering California near San Ysidro, and then linking to the coastal rail line that runs from San Diego to Los Angeles. This rail system is composed of a series of separate railway entities [Union Pacific, San Diego and Arizona Eastern, Burlington Northern Santa Fe (Figure 5)]. The National Railroad of Mexico link begins in the State of Sonora, crosses into Baja and then into California at the Calexico-Mexicali port of entry. From there, it links to a series of different sub-systems referred to in the aggregate as the San Diego and Imperial Valley line (SDIV).

This system is strained by several factors. First, it is a fragmented system with too many separate companies trying to connect into a single cross-border line. Second, it is a line that crosses back and forth from the U.S. to Mexico and back into the U.S. Third, there are geographic and topographic barriers—canyons, mountains and gorges—that make the line expensive to upgrade.

5. Lost Opportunities for Land Gateways in Cross-Border Trade: California vs. Texas

Another problem with California-Baja California's border infrastructure

is that it is not fully realizing its potential as a national gateway for U.S.-Mexico trade. While California has a vital \$60–65 billion economic relationship with Mexico, and also with Latin America, its land gateways have not played as large a role in handling global merchandise trade as they might. Nationally, the most important land ports for North American trade are either on the northern border with Canada, mainly Michigan, (over \$150 billion worth of merchandise) and the New York border (\$70 billion), or along the Texas border (\$140 billion).

California's two largest land ports for handling trade goods combined for only about \$29 billion, out of \$541 billion in international trade for the entire U.S.¹¹

California's historic ties with Mexico, its robust economy, and its large Mexican and Latino immigrant population would appear to give it a natural advantage in cross-border trade with Mexico. Recent data suggest that these advantages have not reaped corresponding benefits for the state. California lags substantially behind Texas in U.S.-Mexico trade and cross-border flows.

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Data on cross-border flows of commercial trucks from 2000–2003 (Table 3) reveal that each year nearly three times as many trucks (2.8 million/year) crossed at the Texas border, as opposed to the California border (about 1 million/year in the same time period); both states have seen significant increases since then.¹² California has only two significant

Less than 1% of all goods traded by land with Mexico cross the California border by rail; meanwhile about 90% of all rail trade with Mexico crosses the Texas border, mostly through the Laredo gateway.

truck crossing ports of entry—Otay Mesa and the new crossing at Calexico East. Texas, on the other hand, has substantial truck crossing facilities at 4 ports of entry. Though Texas has a longer border, and is geographically better situated to move goods directly into

U.S. markets, California's border infrastructure, given the size of the state's economy, still seems proportionally weaker than it should be.

When one tracks the flow of trade goods moving by rail, an even more pronounced contrast emerges (see Table 4). Less than 1% of all goods traded by land with Mexico cross the California border by rail; meanwhile about 90% of all rail trade with

Mexico crosses the Texas border, mostly through the Laredo gateway.

Several elements explain the current pattern of Texas domination of cross-border trade. As mentioned, the Texas border is geographically positioned to facilitate the cross-border flow of goods toward the Eastern U.S. and the Midwest. Texas lies directly along the "NAFTA corridor," a line which runs through Mexico's industrial center and north, across Texas, and north into the center of the United States. California's location on the western edge of North America puts it at a distinct continental geographic disadvantage—in terms of the location of markets for Mexico and U.S. trade goods.

A second important factor lies in the current dominance of Houston as port of embarkation for Mexican exports to Asia. California does not presently have a major port that handles the Mexico/Asia export sector. This could substantially change in the future with the development of a major export port at Punta Colonet, south of Ensenada, discussed in a later section of this report. The expected construction of a new deep water port at Punta Colonet over the next five years could dramatically restructure the flow of Mexican goods through U.S. land borders, favoring California over Texas. Still another important factor is that most of the incoming California trade merchandise from Mexico arrives by truck. In 2003, (see Table 4) the state of California

**Table 3 Incoming Truck Crossings, U.S.-Mexican Border
(Arizona, California, New Mexico and Texas), 2000–2003**

<u>Port Name</u>	<u>2000</u>	<u>2001</u>	<u>2002</u>	<u>2003</u>
Arizona, Total	344,265	336,090	311,907	313,250
Douglas, AZ	33,594	31,520	24,362	26,122
Lukeville, AZ	3,840	4,357	1,552	821
Naco, AZ	9,137	8,949	4,078	3,643
Nogales, AZ	254,694	249,237	242,237	243,365
Sasabe, AZ	2,652	1,995	2,007	1,324
San Luis, AZ	40,348	40,032	37,671	37,975
California Total	1,031,546	1,027,815	1,067,411	1,019,908
Andrade, CA	1,517	1,767	2,075	2,253
Calexico, CA	U	U	U	U
Calexico East, CA	278,811	256,715	276,390	261,140
Otay Mesa/San Ysidro, CA	688,340	708,446	731,291	697,152
Tecate, CA	62,878	60,887	57,655	59,363
New Mexico, Total	36,491	32,216	32,603	33,263
Columbus, NM	4,545	4,396	4,652	4,589
Santa Teresa, NM	31,946	29,830	27,951	28,674
Texas, Total	3,113,277	2,906,838	2,014,672	2,871,624
Brownsville, TX	299,238	251,613	248,869	229,389
Del Rio, TX	61,228	59,942	72,039	65,609
Eagle Pass, TX	106,892	87,658	89,856	88,272
El Paso, TX	720,406	660,583	705,199	659,614
Fabens, TX	214	108	NA	NA
Hidalgo, TX	274,150	368,395	290,282	406,064
Laredo, TX	1,493,073	1,403,914	1,441,653	1,354,229
Presidio, TX	8,734	7,104	6,605	5,720
Progreso, TX	12,001	19,844	23,886	19,571
Rio Grande City, TX	24,065	25,724	26,330	35,523
Roma, TX	13,276	11,953	9,953	7,633
U.S.–Mexico Border Total	4,525,579	4,304,959	4,426,593	4,238,045

Source: Office of Trade and Industry Information (OT11). Manufacturing and Services, International Trade Administration, U.S. Department of Commerce.

**Table 4 Incoming Rail Container (Full) Crossings, U.S.–Mexican Border
(Arizona, California, New Mexico and Texas), 2000–2003**

<u>Port Name</u>	<u>2000</u>	<u>2001</u>	<u>2002</u>	<u>2003</u>
Arizona, Total	25,249	35,716	31,789	24,602
Douglas, AZ	NA	NA	NA	NA
Lukeville, AZ	NA	NA	NA	NA
Naco, AZ	NA	NA	NA	NA
Nogales, AZ	25,249	35,716	31,789	24,602
Sasabe, AZ	NA	NA	NA	NA
San Luis, AZ	NA	NA	NA	NA
California Total	1,565	2,243	2,104	1,193
Andrade, CA	NA	NA	NA	NA
Calexico, CA	U	30	U	U
Calexico East, CA	1,398	908	460	950
Otay Mesa/San Ysidro, CA	167	2	9	11
Tecate, CA	NA	1,303	1,635	232
New Mexico, Total	NA	NA	NA	NA
Columbus, NM	NA	NA	NA	NA
Santa Teresa, NM	NA	NA	NA	NA
Texas, Total	239,421	228,613	235,657	240,674
Brownsville, TX	13,363	7,560	7,838	9,992
Del Rio, TX	NA	NA	NA	NA
Eagle Pass, TX	40,898	16,237	15,390	11,996
El Paso, TX	10,721	17,337	18,364	21,002
Fabens, TX	NA	NA	NA	NA
Hidalgo, TX	NA	NA	NA	NA
Laredo, TX	174,439	187,479	194,065	197,684
Presidio, TX	NA	NA	NA	NA
Progreso, TX	NA	NA	NA	NA
Rio Grande City, TX	NA	NA	NA	NA
Roma, TX	NA	NA	NA	NA
U.S.–Mexico Border Total	266,235	266,572	269,550	266,469

Source: U.S. Department of Transportation, Bureau of Transportation Statistics.

handled only 1193 full container rail crossings; in that same year, Arizona had 24,606 container crossings (at Nogales), while Texas had 240,674 (at Laredo, El Paso, Eagle Pass).

**6. Other Lost Opportunities:
Southern California vs. Other
West Coast Regions**

The southern California cross-border region also lags behind other west coast regions both in infrastructure capacity and expansion plans. Building upon already extensive port, rail and airport facilities, other trade centers are engaged in massive expansion programs. From 1996–2000, the Los Angeles region spent \$4.3 billion, the Bay Area \$3.2 billion and Seattle/Tacoma \$1.5 billion on port, rail, and airport development to increase Pacific Rim trade. By contrast, the San Diego/Tijuana border region’s capital spending on such projects was less than \$400 million (Herzog and Erie, 2002).

Regional infrastructure planning needs to be more closely linked to cross-border development priorities. Not until 2004, did any systematic studies of regional infrastructure needs along the border appear. Since then two important works finally began to address this problem. They include the bi-national Border Infrastructure Needs Assessment Study (BINS) (Sourcepoint, 2004) and the California-Baja California Border Report (CALTRANS, 2006).

These are discussed in more detail later in this report.

For the maquiladora economy at the border, component parts from Asia are trucked in from the Los Angeles/Long Beach port complex. Finished products are then trucked back across the border to destinations within a 500 mile radius, e.g. San Diego, Los Angeles, the Bay Area, Phoenix, and Las Vegas. As mentioned above, nearly 90 percent of the northbound freight that originates in Mexico is carried by trucks. Obviously, land border crossings will continue to play a key role in the southern border region’s economy.¹³

Regional infrastructure planning needs to be more closely linked to cross-border development priorities.

**7. Ports of Entry:
Quantity and Quality**

California currently has six ports of entry into Mexico (see Figure 6). They include San Ysidro (24 northbound vehicle gates, 6 southbound gates), Otay Mesa (12 northbound, 2 southbound gates), Tecate (2 northbound, 2 southbound gates), Calexico (4 northbound, 2 southbound gates), Calexico East (8 northbound, 2 southbound gates), and Andrade (1 northbound, 1 southbound gate).

The two landmark infrastructure reports on this region have both emphasized that these facilities can handle neither the current volume nor future forecasts of flows of people, vehicles and goods across the California-Baja California border. The CALTRANS comprehensive 2006 border report points to increased wait times and congestion for both passenger and commercial vehicles as the central policy issue facing transport infrastructure along the California-Baja California border. As mentioned earlier, it cites forecasts showing that flows will double in the next decade or so. To remedy this, \$1.6 billion in transportation upgrades is called for

Increasing wait times and congestion have led to loss of income, jobs and a climate of uncertainty about California-Baja California trade in the future.

in the report, including expanded north/south and east/west highways in San Diego and Imperial County, improved and remodeled port of entry facilities, including added truck routes, and at least

two new POE's at Jacumba and Otay Mesa East. The study also outlined \$514 million needed for transport infrastructure improvements around the ports of entry on the Mexican side, including remodeled ports of entry and better road connections

to the POE's at Tijuana, Mexicali, Tecate and Algodones (CALTRANS, 2006). The earlier BINS report also concluded that "current transportation infrastructure was not designed to handle the large NAFTA traffic volume." It proposed building several new ports of entry (Sourcepoint, 2004).

There are not enough gates or inspectors for handling commercial trucks, passenger vehicles, bicycles, and pedestrians. Increasing wait times and congestion have led to loss of income, jobs and a climate of uncertainty about California-Baja California trade in the future. In their future remodeled forms, all of the ports of entry, especially the largest facilities—at San Ysidro/Tijuana, Otay Mesa/Mesa de Otay, and Calexico-Mexicali—also need to factor in the tradeoffs between larger flows, and the changing politics of homeland security.

8. The Friction of Homeland Security

No region in North America was more impacted by the events of September 11, 2001 than the U.S.-Mexico border region. Prior to the World Trade Center tragedy, the buzzwords of the U.S.-Mexico border were "global market." The California-Baja California border region was in a boom mode in the 1990's, building on the growing NAFTA-driven economic connections. Along its most urbanized

sector—the San Diego/Baja border—government and private interests were teaming to launch a set of ambitious construction projects aimed at creating stronger cross-border ties to Baja California. Trans-border highways, rail systems, and even airports were on tap for the new millennium. State and local planning agencies were altering their master plans to support building infrastructure needed to assure the huge foreign trade revenues forecast for the region.¹⁴

September 11, 2001 stopped much of this optimism in its tracks for the next several years, and one can argue the subsequent shift in border zone federal policy remains in place. Instead of new highways and border gates, a “wall” of heightened security wedged itself between California and Mexico. The formation of the Department of Homeland Security (DHS) as a cabinet level agency, consolidating the efforts of immigration, customs, border inspection, transportation security, the border patrol, and maritime security, marked a watershed moment in 2001–2002. It signaled the emergence of “security” as the primary objective in the management and organization of the border zone, and the myriad facilities within its jurisdiction.¹⁵

DHS acknowledges the role of infrastructure and the use of technology in making border crossings more efficient.¹⁶ However its primary impact has been to inject “national security” as the operating federal policy “paradigm” for the U.S.-Mexico border.

This stands in marked contrast to the previous decade of the 1990’s, where “economic development” had become the overarching theme in U.S.-Mexico relations and the border. On many levels, the formation of a cabinet level security agency like DHS has created a serious obstacle to the social and economic circulation system along the U.S.-Mexico border. From a policy-making perspective, then, DHS must be viewed as an indirect, but potentially formidable drain on California’s future economic growth.

Several micro-level examples along the California-Baja California border illustrate the conflict between security and the economic needs of border crossers in the region:

i. Bicycle lanes and pedestrian walkways

In the spring of 2002, DHS (through INS and Customs) announced the closing of the bicycle lane at the San Ysidro, California crossing. The bicycle lane had been adopted as a

On many levels, the formation of a cabinet level security agency like DHS has created a serious obstacle to the social and economic circulation system along the U.S.–Mexico border.

healthy community response to the daily post-September 11 logjam of vehicles and pedestrians at the port of entry. INS claimed that the bicycle lane was dangerous. Critics argued that the federal agencies had done no studies to look for alternatives that would allow an autonomous bike lane to exist. Rep. Bob Filner (D-San Diego) told the press “Why close out the only option without an alternative?” He went on to say: “The INS is like a bunch of Keystone Kops. They have no idea what they are doing and no notion of what the community wants” (Herzog, 2002).

The bicycle lane was eventually restored by INS, but it was moved inside the U.S. customs building, thus occupying space used by pedestrians. In 2006, the special bicycle lane was eliminated entirely. The government claimed it was closing the bicycle lane because people were renting run-down bikes at the border for a few minutes, just to save time. Cyclists now have to wait in line with pedestrians.

A second change in border crossing policy at the local level occurred in 2007, when Customs and Border Protection announced that it would close the main pedestrian bridge at San Ysidro, where over 20,000 pedestrians cross per day. This will mean that those pedestrians will be forced to walk almost one mile more, and probably impede the flows of cars, buses, and taxis in the already congested San Ysidro crossing zone.

Both of these cases illustrate an essential problem with DHS policy-making: concerns over security from the perspective of Washington, D.C. are overshadowing the daily journeys to work, shop, or visit friends and family by boundary crossers who occupy the life spaces of the border zone.

ii. The border fence project

A proposed DHS “Border Fence Project” planned for some five miles of the boundary in San Diego offers another example of the conflict between border security and economic/social reality. In 2003, several design plans for a future fence along the western boundary of the San Diego/Tijuana border were presented to DHS. DHS selected the “triple fence” option, a version that would insert a militarized zone in a preserved ecological sanctuary. A triple fence would be heavily lit at night with an invasive, oversized paved road running through the center. It would create a federal security corridor, patrolled by jeeps, vans, and other heavy vehicles, in the heart of rare marshlands and sand dunes, and near the gathering places of some of North America’s most diverse wildlife, particularly migratory birds. This project was rejected by the State of California’s Coastal Commission because it would “do more harm than is necessary to the environment” (Rodgers, 2003).

iii. Port of entry plans and policies

In 2003–2004 DHS created “U.S. Visit,” a new federal strategy to screen not only incoming visitors to the U.S., but all people leaving the United States at different ports of entry. The idea was to monitor both incoming and outgoing flows of people, to better control the nation’s borders. For San Ysidro, this would mean the creation of a southbound checkpoint facility for screening outgoing cars and pedestrians. Such a facility would quickly strain traffic circulation at the San Ysidro-Tijuana border. A security check in that location would generate daily waiting lines up to a mile long, creating local bottlenecks within San Ysidro and increasing air pollution. The heavily Latino community of San Ysidro would be burdened with another planning crisis.

This is one example of a range of land use and design changes that were never sufficiently aired within the community (Casa Familiar, 2004). Yet another example lies in the proposed realignment of the freeway around the border crossing. Four final options were offered for the port of entry (POE) expansion land use plan. Three of the options favored moving San Ysidro’s southbound entrance to the west, so that it would connect with a future development site on the Mexican side called El Chaparral. Interviews revealed that El Chaparral is a big development site involving several federal agencies in Mexico, and a number of wealthy

and powerful private interests. The Mexican government is set on having the southbound U.S. highway enter Mexico in the El Chaparral zone. The San Ysidro community vigorously opposes the three options that favor moving facilities to the west; San Ysidro favors keeping the infrastructure where it currently is, and simply expanding existing facilities and spaces. Further, the final approved POE design is extremely unfriendly to pedestrians. Under the proposed plan, pedestrians reentering the U.S. from Tijuana at the San Ysidro crossing would be required to walk more than one mile through a series of checkpoints and screening facilities, until they finally arrive at San Ysidro on the U.S. side (Wei, 2007).

DEVELOPING A CROSS-BORDER INFRASTRUCTURE STRATEGY

California and Baja California need a comprehensive cross-border approach to infrastructure. It should incorporate three central elements: stakeholders, planning processes, and the region’s bi-national connection.

a. Stakeholders

The first step in developing a cross-border infrastructure strategy is to identify and better understand who the stakeholders are. Table 5 offers a working breakdown of the principal stakeholders in California-Baja California cross-border infrastructure

Table 5 California-Mexico Border Infrastructure: *Stakeholders List*United States*LOCAL*

- SANDAG
- City of San Diego
- City of Chula Vista
- County of San Diego
- Metropolitan Transit System (MTS)
- San Diego County Regional Airport Authority
- San Diego County Water Authority
- City of Tecate
- City of Calexico
- County of Imperial
- IVAG (Imperial Valley Association of Governments)

STATE

- California Transportation Commission
- Caltrans
- California Environment Protection Agency
- California Department of Fish & Game
- California Highway Patrol

FEDERAL

- U.S. Customs and Border Protection
- U.S. General Services Administration
- International Boundary and Water Commission
- Bureau of Land Management
- Federal Highway Administration
- Federal Highway Administration
- U.S. Fish and Wildlife Service
- Department of Homeland Security (DHS)

NON-GOVERNMENTAL ORGANIZATIONS

- Chambers of Commerce-Economic Development Corporations
- Academia
- Las Californias Binational Conservation Initiative
- Other

México*LOCAL*

- Instituto Municipal del Planeación (IMPlan), Tijuana
- Ayuntamiento de Tijuana
- Comité de Planeación y Desarrollo Municipal (COPLADEM)
- (IMIP) Instituto Municipal de Planeación, Mexicali
- Ayuntamiento de Mexicali
- Ayuntamiento de Tecate

ESTATAL

- Fideicomisos (trusts)
- Secretaria de Infraestructura y Desarrollo Urbano (SIDUE)
- Secretaria de Protección al Ambiente
- Comisión Estatal de Servicios Públicos (CESPT) Tijuana, Mexicali, Tecate

FEDERAL

- Aduana/Secretaria de Gobernación
- Consulado General de México
- Instituto de Administración y Avalúos de Bienes Nacionales (INDAABIN)
- Comisión Internacional de Límites y Aguas (CILA)
- Secretaría de Comunicaciones y Transportes (SCT)
- Aeropuerto Internacional de Tijuana
- Secretaria de Medio Ambiente y Recursos Naturales (SEMARNAT)
- Procuraduría General de la República

ORGANIZACIONES NO

- GUBERNAMENTALES*
- (ONGs)–COMUNIDAD
- Cámaras de Comercio
- Academia
- Pronatura
- Otros

decision-making, broken out by different levels of government for the U.S. and Mexico. The cross-border decision-making process is complex, and cuts across different layers of government and categories of infrastructure. Several important points can be made about cross-border decision-making.

First, stakeholders fall into discrete groups: Transportation (U.S. Department of Transportation, CALTRANS, California Transportation Commission, and Mexican counterparts), Environment (EPA, U.S. Fish and Wildlife, etc., and Mexican counterparts), Airports (San Diego County Regional Airport Authority, etc.), ports of entry (GSA, Mexican counterpart), Law Enforcement and Security (DHS, Customs, California Highway patrol, etc.), Regional Government (SANGAG, IVAG, IMIP, etc.), and Local government (cities, counties). Decision-making sometimes becomes fragmented within these specialized sub-areas. However, because there is also considerable overlap in these decision areas, an important component of the infrastructure decision-making process is the formation of working groups, which allows for the consolidation of state, regional and international agencies around specific projects, such as highways, ports of entry, and environmental issues. Some examples of “working groups” include: The U.S.-Mexico Joint Working Committee, the U.S.-Mexico Bi-national Bridges and Border Crossings Group, the

U.S.-Mexico Bi-national Commission Working Group on Homeland Security and Border Cooperation, and the Policy Advisory Committee for the California-Baja California Master Plan. These efforts at consolidation tend to lack replicable rules; instead guidelines are created as the groups unfold. This inductive approach has the advantage of adapting to the evolution of issues in each decision area. Policy-making, however, may not be easily converted to a permanent structure of guidelines since policies evolve incrementally.

Probably, the most striking element of stakeholder dynamics is that decision-making is cross-national. This is, by far, the greatest challenge to California-Baja California border infrastructure planning and management. A number of challenges face stakeholders working in a bi-cultural context.

First, there are significant differences in the political organization of U.S. vs. Mexican infrastructure decision-making. Mexico has historically been a nation where power is centralized at the federal and state levels, and where local governments are weak and lack control over the funding of highways, rail, airports, etc. This pattern continues south of the border, even though efforts to decentralize over the last two decades have begun to open the door for change. By contrast, local governments in the U.S. have greater jurisdictional power over land use, urban planning and environmental

decisions, and considerably larger shares of local revenues for planning and policy-making, and even for building infrastructure (local tax revenues for redevelopment, for example).

A second difference between Mexico and the U.S. is that “planning”—both urban and regional—has historically

The process of planning, funding and managing border infrastructure in this region is a complex web of planning processes and policy-making avenues that cut across federal, state, and regional/local agencies on both sides of the border.

been more directly influenced by politics in Mexico than in the U.S. In Mexico, governors and mayors have traditionally had complete political control over planning authorities, including the appointment of directors of planning offices. Historically, local and regional plans tended to be vague about

specific projects, so political officials were free to control funding of developments. This pattern has been significantly modified by nationwide efforts to depoliticize planning since the early 1990’s, including the creation of politically independent planning authorities for the first time. Such authorities exist in the two large

California-Baja California border cities, Tijuana (the new IMPLAN office) and Mexicali (the IMIP office). However, since these are new projects, they remain works in progress and thus are not entirely free of political pressure.¹⁷

A third important consideration lies in the role of privatization. Privatization of public facilities and infrastructure (airports, ports, etc.) has been a powerful force in Mexico since laws were passed in the 1990’s making this process legal. For example, the 1993 Law of Maritime Navigation and Commerce authorized the national Secretary for Trade and Transportation (SCT) to issue private concessions to permit private ownership of airports and ports, with up to 49% foreign ownership. This has led to the privatization of many ports and airports throughout Mexico, including the Port of Ensenada, and the Tijuana International Airport. While they have many privatized functions (commercial concessions, etc.), U.S. airports are still mainly controlled by public entities. But, in Mexico, privatization permeates the management of infrastructure. This could be an important factor in cross-border decision-making for the future.

b. Existing Planning Processes for California-Baja California Border Infrastructure

The process of planning, funding and managing border infrastructure in

Table 6 California-Mexico Border Corridor Data, 2000

	<u>A San Diego-Tijuana-Tecate</u>	<u>B Imperial-Mexicali</u>
Highways		
Average Annual Daily Traffic (AADT)	719,972	92,755
Highway Length [in miles]	292.40	377.80
LOS [A=1 to F3 = 9]	3.922	1.330
Capacity at Peak Hour	42,177	23,871
Land Port of Entry Border Crossing		
Number trucks	910,694	117,326
Total volume [tons]	3,162,134	407,383
Value of goods Millions \$	\$14,121	\$1,819
# passenger vehicles & buses	26,566,907	3,422,661
Airports		
Total volume [tons]	94,168	12,132
Maritime Ports		
Total volume [tons]	1,803,950	232,406
Total number TEUs		
Railroads Border Crossing at POE		
Number rail cars	202	246
Total volume [tons]	9,676	78,632
Total Number TEUs	3,874	5,779
Value of goods Millions \$	\$1.0	\$22.8
Total AADT in Two Corridors	Share of AADT Among Corridors	
812,728	88.6%	11.4%

Notes: POE, Airport & Maritime port data are assigned to Corridors based on AADT distribution.

Source: Binational Border Transportation Infrastructure Needs Assessment Study (BINS), Sourcepoint, 2004.

this region is a complex web of planning processes and policy-making avenues that cut across federal, state, and regional/local agencies on both sides of the border. What follows is a synthesis of some of the key processes as they have evolved:

1. Federal level cross-border cooperation.

In 1994, the Mexican and U.S. national governments signed a Memorandum of Understanding to create a U.S.-Mexico Joint Working Committee (JWC) through the U.S.

Department of Transportation and Mexico's Secretary of Transport and Communications. The idea was to bring together both nations and their supporting transport and border crossing agencies (the U.S. Department of State, General Services Administration, California Department of Transportation, etc.) to plan and organize future highway and port of entry strategies. This effort led to the U.S.-Mexico Border Partnership Action Plan, which, in turn, evolved toward the creation of a Smart Border Action Plan in 2002, which has 22 points of agreement about making border crossings more efficient (U.S. Department of State, 2002).

2. Federal level funding and planning of highways.

In the early 2000's, The U.S. Department of Transportation (DOT) created a planning process for funding U.S.-Mexico border roads. A key mechanism was the bi-national Border Infrastructure Needs Assessment Study or BINS, completed in 2004. This study identified key transport corridors in the border region, based on quantifiable traffic flow data, including "average annual daily traffic" (AADT). Based on this data (see Table 6), the U.S. DOT, working with CALTRANS, identified a set of funding priorities and indicated shortfalls in funding. This important study created a mechanism for projecting travel

patterns and thus for crafting funding strategies. In 2005, the U.S. Congress passed the Safe, Affordable, Flexible, Efficient Transportation Equity Act (SAFETEA), which authorizes monies for transport infrastructure in various regions, including the border region. An initiative called the CBI or Cross Border Initiative also allows for some funds to specifically support projects in Mexico.

3. International border security/operations.

The Department of Homeland Security (DHS) and U.S. Department of State bring together members of the U.S.-Mexico Bridge and Border Crossing Group to "create a border region that is modern, safe and efficient." The Bridge and Border Crossing Group also includes corresponding Mexican agencies, including the Secretary of Foreign Relations, and works to streamline border crossing security at the ports of entry. Other programs that seek to combine security with border crossing efficiency include:

- Fast and Secure Trade (FAST), which screens and tracks goods entering and leaving the U.S., thus speeding up the flow of commercial vehicles across the border;
- Secure Electronic Network for Travelers Rapid Inspection (SENTRI)—an automated

Table 7 Future Border Crossing Projects, California-Baja California

<u>Location</u>	<u>Status</u>
Andrade/Algodones	New crossing for POV's (Privately owned vehicles), unfunded
Calexico/West Mexicali	funded FY 2009
Calexico/Mexicali Silicon Border project	private funding, uncertain
Tecate crossing	funded
Otay Mesa II crossing	funded: projected for 2010–2013
San Ysidro/El Chaparral Expansion	funded: Phase I 2009–2112 Phase II 2014

dedicated computer lane using an Automated Vehicle Identification technology, which allows security checks but with a high level of efficiency, thus reducing congestion.

SENTRI is the world’s first automated dedicated commuter lane. In theory it reduces congestion by allowing agents of the Bureau of Customs and Border Protection to speed up border crossing inspections—via pools of low risk, pre-enrolled crossers at ports of entry. The system identifies travelers who pose little risk to border security, verifies their low risk status through onsite electronic record checks, and screens approved participants and their vehicles each and every time they enter the United States from Mexico. SENTRI was first implemented at the Otay Mesa, California port of entry on November 1, 1995. SENTRI Dedicated Commuter Lanes also exist at San Ysidro.

- “U.S. Visit” is a new program which will track entries and exits to the U.S. along the international border.
- Border Release Advanced Screening and Selectivity (BRASS) program is another specialized new program which tracks the entry and exit of people into the U.S.

4. Planning ports of entry.

The General Services Administration (GSA) is charged with funding and managing port of entry facilities. The U.S.-Mexico Bi-national Bridges and Border Crossing Group works with GSA on border crossing projects from a security and flow management perspective (see section on Cross-border operations below). Table 7 lists 6 new or expanded ports of entry that are under discussion. These projects are coordinated with CALTRANS and with Mexican

companion agencies—the Secretaría de Comunicaciones y Transportes (SCT) and the INDAABIN (Institute for Administration and Management of National Goods). Some of the ports of entry will be privatized, and thus funding and management will fall to the hands of private managers. For example, the Calexico-Mexicali crossing at the Silicon Border project would be managed by a consortium of companies manufacturing and marketing computer chips.

5. Border Governors' Declarations.

Each year, the Governors from the border states in the U.S. and Mexico meet to discuss key issues facing their administrations. One role of this process is to challenge decision-making coming out of the national capitals. For example, in 2007, the XXV Border Governors Conference produced a Joint Declaration which called for a Border Master Plan (discussed below), and made commitments to promoting economic development and regional competitiveness along the border, while challenging the U.S. Department of Homeland Security's policy of building more border fences, which is seen as contributing to bottlenecks and more delays along the border (Border Governors, 2007).

6. State analysis, funding and construction of highways: California Transportation Commission/CALTRANS.

Drawing from the BINS study generated by the U.S. Department of Transportation, the federal SAFETEA transport funding mechanism, and other statewide priorities, the California Transportation Commission created the "Trade Corridors Improvement Fund" program, which allocates monies for highways and rail projects in four major categories:

- LA/Inland Empire (approximately \$1.5–1.7 billion);
- San Francisco/Bay/ Central Valley Corridor (\$640–680 million);
- San Diego/International Border Corridor (\$250–400 million);
- Other regions (\$60–80 million).

Clearly, the international border corridor ranks only third in the state for "trade corridors" money. In addition, CALTRANS infrastructure planning decisions are guided by two critical policy reports generated by the agency:

- a. The CALTRANS Bottleneck Study (2004). This report grew out of the U.S.-Mexico Border Partnership Action Plan (created by the U.S.-Mexico Joint Working Group), which encouraged

prioritizing infrastructure projects along the border and taking steps to relieve congestion and delays. The 2004 Bottleneck Study focused on developing a methodology for improving transportation projects to and from the ports of entry, as well as traffic management around border crossings. Using the two main POE's in San Diego-Tijuana (San Ysidro/Puerta Mexico, Tijuana and Otay Mesa/Mesa de Otay) as case studies, the report tested the methodology—it identified improvements—from road structure, numbers of lanes, turning radii for trucks and vehicles to new programs like SENTRI and High Occupancy Vehicle lanes.

b. The California-Baja California Border Report (2006).

Building on the findings of the Bottleneck Study, the 2006 California-Baja California Border Report is the primary comprehensive study of Californian and Mexican infrastructure in the border region. It catalogues existing and proposed needs for the border region's highways, rail projects and ports of entry in both California and Baja California. The study

systematically catalogues all of the major infrastructure projects in the border region—both existing and projected. It further analyzes which projects are funded and which are not, and gives detailed budget breakdowns on funding. This landmark study provides a template for transport projects in the future, and is an important guiding force for the Border Master Plan, a work in progress (see discussion below).

7. Joint state-regional infrastructure planning.

The California Department of Transportation (CALTRANS), working closely with the San Diego Association of Governments (SANDAG), has produced most of the “state of the art” plans and studies that either guide or directly influence decision-making for highways and rail construction along the California-Baja California border. These include:

c. Survey and Analysis of Trade and Goods Movement Between California and Baja California, 2003 (CALTRANS/SANDAG).

This analysis of bi-national commerce analyzed cross-border shipping patterns using a survey of 120

- sample companies, and a 27 question survey instrument. It found waiting times for trucks to be excessive (2–3 hours) and recommended major improvements for cross-border trucking facilities, especially at Otay Mesa. It also recommended more road infrastructure improvements, dedicated lanes, more staff and better technology, and a need to know the costs of delays. The last recommendation resulted in the 2006 study of the “Economic Impacts of Wait Times,” as follows.
- d. Economic Impacts of Wait Times at the San Diego-Baja California Border, 2006 (CALTRANS/SANDAG). This is another landmark study, the first major policy study of the economic costs of border delays for the California-Baja California border. Building on methodologies used by previous researchers in studying the costs of delays on the Canada-U.S. border, this study used a sophisticated economic model of the cost of delays for personal trips and freight movements. It found significant structural weaknesses in “infrastructure capacity,” claiming that delays would cost the
- state an estimated U.S.\$6 billion in gross output and over 50,000 jobs. Further, it found in surveys that nearly 60% of border crossers would be willing to pay a \$3 toll to cross at a new port of entry (Otay Mesa East) if it would provide faster access across the border. It also suggested that trucking delays interrupt the cycle of back and forth movements of vehicles involved in the maquiladora (assembly plant) sector along the border, thus disturbing the manufacturing and delivery routines of the maquiladora industry.
- e. Otay Mesa/Mesa de Otay Bi-national Corridor Strategic Plan, 2007 (SANDAG, COBRO—Committee on Bi-national Regional Opportunities). This plan grew out of the SANDAG Regional Comprehensive Plan, which called for a partnership with Mexico to address bi-national planning issues. The plan describes transportation, economic development, housing and environmental issues within the Otay Mesa/Mesa de Otay study area. It then provides an institutional framework for decision-making in the

sub-region, and a “Strategic Plan Work Program,” or set of proposed initiatives needed to improve circulation in the corridor.

- f. Goods Movement Action Plan/ 2030: San Diego Regional Transportation Plan, 2007 (SANDAG/ Borders Committee).
The Goods Movement Action Plan offers a detailed breakdown of prioritized projects and revenue scenarios for the San Diego/ border region in the areas of maritime, rail, border crossing, air cargo, pipeline, and highway infrastructure.
- g. Borders Element, San Diego Regional Comprehensive Plan, 2004 (SANDAG/ Borders Committee).
The Borders Element in the Regional Comprehensive Plan establishes a framework for bi-national planning across a set of regional issues, including transportation.
- h. California-Baja California Border Master Plan, 2008 in progress (SANDAG, CALTRANS, U.S.-Mexico Joint Working Committee on Transport Planning, SIDUE—Secretary of Infrastructure and State Urban Development, Mexico).

The idea of the Border Master Plan is to create a structure for comprehensive bi-national transportation planning, and then get stakeholders on both sides of the border working jointly to implement the plan. The plan has two objectives: a) it will generate a list of prioritized port of entry and transportation projects, and b) it will suggest operational improvements that will seek to integrate federal, state, and local input. The strategy of the plan is to calculate future demand for transportation based on a wide array of land use, employment, travel, and housing needs data. Demand data will then be translated into an analysis of infrastructure needs, followed by the generation of a project priority list. The prioritization of infrastructure needs will be determined by an appointed Policy Advisory Committee (PAC), composed of government and quasi-government stakeholders.

It should be noted that, as one catalogues the breadth of planning processes at the federal, state, and local levels, the need to work across levels of government is paramount. As mentioned, the creation of working

groups partly solves this problem. The California-Baja California Master Plan may, in fact, achieve a synthesis of many different plans and approaches into a single policy process that will have the effect of consolidating the multiple efforts documented above. Whether the Policy Advisory

Large-scale, capital-intensive mega-infrastructure schemes planned in Baja California seek to tap the Mexican state's privileged location.

Committee (PAC) will have sufficient jurisdictional power to enforce the recommendations in the plan remains to be seen. Further, whether the plan can adequately ensure better cross-border coordi-

nation of planning efforts also remains an unanswered question. And finally, and perhaps most critically, whether funding will be available to implement policy recommendations, in the current climate of budget shortages, is a huge uncertainty.

c. The Bi-national Connection

Beyond understanding stakeholders and key border planning approaches, a third crucial dimension necessary in crafting a cross-border infrastructure strategy is the recognition of the inherent links of California's border zone with Baja California. Baja

California's cross-border connection to California is shaped by geography, settlement history, and politics, all of which impact present and future investments in transportation and trade infrastructure.

Although the regions are linked, there are also some differences between the settlement structures of the two states. Unlike its neighbor to the north, Baja California's urbanized population is not skewed toward the coastal zone, but rather, distributed more evenly across the northern edge of the state, where it touches the California border. The Tijuana-Rosarito-Ensenada corridor has the largest share of the urban population (some 1.5 million), but Mexicali's population (officially 855,962, but probably well over one million), plus population in the east desert, and Tecate's growth in the middle of the peninsula, display a markedly different pattern than just north of the border, where the San Diego-Orange County-LA County urbanized coastal corridor (over 10 million population) completely overshadows the desert populations east of the mountains.

Baja's pattern of human settlement more evenly spread across the peninsula is partly explained by the growth of the inland state capital, Mexicali. Mexicali's urban development tapped its rich agricultural resource base which fueled large-scale economic growth in the early 20th century. This was later backed by American capital. By the 1950's, it became the state

capital when the Baja territory was officially recognized as the twenty ninth state of the Mexican republic (Meade, 1985). The Mexican government's decisions on transportation and cross-border regional development infrastructure are partly tied to Baja's traditional regional power structure as well as the government's interest in building a global trade infrastructure.

With California-Baja California cross-border flows on the upswing, it will be important for policy makers to understand regional growth trends (including new infrastructure) that will mediate flows from the Mexican (northern Baja California) side of the border. The northern border region continues to be one of Mexico's most promising economic development zones. Baja California is the wealthiest of the northern frontier states, and close to the richest and largest U.S. market (southern California). Large-scale, capital-intensive mega-infrastructure schemes planned in Baja California seek to tap the Mexican state's privileged location. Taken together, the new Baja projects could have a significant impact on the management of the region's border crossing zones. They include: highway infrastructure, ports, rail linkages, and new growth poles, including a science park in Mexicali and a manufacturing corridor along the Tijuana-Tecate highway. These are discussed in greater detail in the next section of this report.

FUTURE POLICY STRATEGIES FOR CALIFORNIA-BAJA CALIFORNIA BORDER INFRASTRUCTURE

While there a variety of planning processes underway, a well designed California-Baja California border infrastructure network will require a number of critical policy strategies in the future. These include:

1. Restructure Highway Infrastructure

a. Shift Orientation from east-west to north-south.

As noted, one of the main foci of border plans has been to identify and prioritize investment in trade "corridors". The principal north-south highway "trade corridors" for California-Baja California (see Figure 6) are: a) the coastal route, from San Ysidro along I-5 to Orange County/LA County; b) the inland route along I-15 through northern San Diego County into Riverside and San Bernardino Counties (east of Orange County); and c) the desert route from SR 111, SR 86 to I-10. The principal east-west connectors are: a) SR 94/125; b) I-8; and c) SR 905.¹⁸ The southern sierra mountain chain running inland from Santa Barbara all the way to the Mexican border poses a natural geographic barrier that limits east-west freeway connections.

Ironically, the regional orientation of the freeway infrastructure in southern California, and especially San Diego County is east-west, rather

Figure 6 Highway Networks in the Cross-Border Region



than north-south. For example, in the San Diego region there are 7 major east-west flow corridors (SR 905/11, SR 54, SR 94, I-8, SR 52, SR 56, SR 78), while there are only two major north south corridors (I-5/805 and I-15), and a third under construction (SR 125). Clearly, existing highway infrastructure is more oriented toward moving residents to work, shop, school, or to recreational destinations than it is in getting trade cargo from origin to destination. This pattern may be slowly changing, however. For example, the San Diego Association of Governments has discussed amending its regional transportation plan to create cargo trucking lanes on major north-south freeways. Still, there is a tension on highways between the traditional coastal-inland connectivity, and the emerging north-south trade flow.

b. Adapt to higher volumes: new highways and truck crossings

A critical infrastructure need for southern California is highway infrastructure set up to handle the expected tripling of truck crossings by 2030. Along the immediate California border, transportation plan upgrades to highway trade infrastructure include SR 905, SR 125, and special truck routes at and around the Otay Mesa crossing facility; SR 11 and a future crossing at Otay Mesa East (which would free up the Otay Mesa crossing for greater truck flows); a better

truck inspection facility at Tecate; SR 111 recently completed in Imperial County; SR 7 and SR 115 to enhance truck flows in Calexico East crossing; a new truck crossing inspection facility in Winterhaven, Imperial County; and a possible new border crossing at Jacumba-Jacume, near Tecate (CALTRANS, 2006). The Jacumba crossing is important, since it would relieve flows from the growing Tecate region, whose population is projected to expand to 184,000 by 2020 (nearly double its current population). Tecate's growth can be traced to a number of factors. First, the location of the Ford Tacoma truck assembly operations on the Tijuana-Tecate corridor has spurred growth in the maquiladora sector in Tecate. Second, Tecate is an attractive manufacturing employment site, due to its pristine natural setting, lower land costs, and higher quality of life than either Mexicali or Tijuana. This quality of life factor also contributes to projections of future growth in tourism, and in cross-border commerce.

Clearly, existing highway infrastructure is more oriented toward moving residents to work, shop, school, or to recreational destinations than it is in getting trade cargo from origin to destination.

c. Expand truck-only lanes

Commercial truck expansion raises several policy concerns, however. First, is it enough to build wider highways or new state freeways, which then compete with other users for space? Or, should regional transportation planning agencies consider building “truck only lanes” to facilitate the greater flow of trucks? One recent study of California-Baja California truck flows in San Diego County found that the flow was not large enough to warrant the investment in creating separate trucking lanes (SANDAG, 2003). Transportation planners generally assume that truck-only lanes become cost effective if 30% or more of the traffic volume along a given corridor is commercial truck traffic. In San Diego County, studies in 2003 found the flows to be much lower, only about 15% in peak areas.

d. Resolve the Mexican trucker question

Another important question is: will Mexican truckers be able to cross the border and continue to their destinations in the U.S., or will Mexican trucks have to be off-loaded onto U.S. owned trucks at the border, or within a 25-mile buffer zone, and then have the goods taken to their final destination by U.S. trucks? Mexico has lobbied with the U.S. government to allow its trucks to travel on U.S. highways, as part of the NAFTA

agreement. The Bush administration supported this policy in 2006–2007. In the spring of 2007, the U.S. Congress delivered a setback to that strategy by voting to delay full access to Mexican trucks on U.S. highways (CNN, 2007). U.S. lawmakers claim they are concerned about the safety of Mexican trucks on U.S. highways, since they do not undergo the same inspections as California trucks do. They also claim to be concerned about the environmental impacts of unregulated Mexican trucks and their possible use for smuggling illegal drugs. Mexican truckers also face political competition from the U.S. Teamsters Union which has long fought to keep outside truckers from competing with U.S. truckers. However, by late summer 2007, the U. S. Department of Transportation granted final approval for Mexican trucks to have full travel rights on U.S. highways. This landmark decision marked the first time, since the signing of NAFTA, that Mexican trucks would be able to travel beyond the 25 mile buffer zone established in 1982. U.S. trucks would also now have equal access within Mexico. In the initial one year “pilot program” stage, 100 Mexican companies were allowed to send their trucks anywhere in the United States. Equally, 100 U.S. firms were given the same privilege in Mexico (Krawzak, 2007). However, in March 2009 the pilot program was cancelled after the United States Congress and President Obama declined funding

for the program. Mexico retaliated by introducing tariffs on a number of different agricultural and manufactured goods. And in June of 2009, a Mexican trade association representing Mexican truckers filed a \$6 billion lawsuit against the U.S. government for damages incurred as a result of the cancelled pilot program. As such, the trucking situation remains embroiled in a contentious dispute between Mexican truckers and the U.S. government, leaving a high degree of uncertainty around its future.

e. Expand north-south highways to accommodate cross-border consumers (including tourists)

Aside from moving goods by truck, highways also facilitate the flow of cross-border consumers participating in retail trade and tourism. Nearly 90 million people cross the border each year, either in passenger vehicles or on foot (see Tables 8 and 9). With some 6 million people living along the border, (a figure that will reach about 10 million by 2030), the flow of consumers is a vital layer of cross-border trade, both in the retail and tourism sectors.

By far, the largest flow of passengers occurs at the Tijuana/San Ysidro crossing, with over 40 million people a year travelling north from Mexico (and presumably a similar number returning south into Baja California at some later point). This puts a huge strain on the port of entry, and

on highways and other mobility sources (bus, rail, etc.) to support this burgeoning flow of people. Indeed, as mentioned, congestion at the San Ysidro and other California ports of entry is hurting cross-border trade, since businesses may choose not to invest or participate in California-Baja California trade ventures, if they believe their trade flow will suffer too many delays at the border.

San Ysidro, in particular, is a port of entry in desperate need of revitalization. In 2006, 17 million cars passed through its 24 northbound vehicle gates. Over 110,000 travelers per day are processed. It is the busiest land border in the U.S. Wait times can reach 2 ½ to 3 hours. CALTRANS and the General Services Administration are working on a \$125 million plan to expand and reconfigure the port of entry, and redesign its connection to adjacent highways. The final completion date is targeted at 2012.

Tourists spent \$88.1 billion in California in 2005; international visitors represent 16% of that amount, or about \$14 billion. Using these figures, we can project that Mexican

With some 6 million people living along the border, (a figure that will reach about 10 million by 2030), the flow of consumers is a vital layer of cross-border trade, both in the retail and tourism sectors.

Table 8 Incoming Passenger Crossings in Personal Vehicles, U.S.–Mexican Border (Arizona, California, New Mexico and Texas), 2000–2003

<u>Port Name</u>	<u>2000</u>	<u>2001</u>	<u>2002</u>	<u>2003</u>
Arizona, Total	26,856,458	23,726,701	26,895,469	24,424,403
Douglas, AZ	6,193,596	5,203,890	7,797,492	5,007,082
Lukeville, AZ	1,125,638	1,283,988	1,292,155	1,195,838
Naco, AZ	881,911	818,797	927,393	1,629,654
Nogales, AZ	11,501,672	9,876,703	8,888,684	9,643,835
Sasabe, AZ	85,530	97,148	109,775	111,450
San Luis, AZ	7,068,111	6,446,175	7,879,970	6,836,544
California Total	74,569,309	67,410,517	68,180,103	70,757,903
Andrade, CA	1,808,452	1,412,177	1,544,438	1,477,979
Calexico, CA	20,094,460	15,007,725	12,106,876	10,144,416
Calexico East, CA	7,600,859	7,420,103	6,889,681	6,155,005
Otay Mesa/San Ysidro, CA	10,659,498	8,405,047	9,109,341	11,019,106
San Ysidro	31,025,343	33,003,554	36,171,884	39,180,519
Tecate, CA	3,380,697	2,161,911	2,357,883	2,780,878
New Mexico, Total	1,582,972	1,354,477	1,687,047	1,620,337
Columbus, NM	1,414,791	896,272	915,379	1,014,385
Santa Teresa, NM	168,181	458,205	771,668	605,952
Texas, Total	136,785,813	116,614,151	102,258,073	96,894,839
Brownsville, TX	19,693,130	16,951,901	15,820,595	15,673,205
Del Rio, TX	5,866,666	4,425,005	4,734,574	4,440,813
Eagle Pass, TX	8,594,198	8,506,655	9,187,598	8,285,854
El Paso, TX	48,420,274	39,200,481	26,363,164	26,317,018
Fabens, TX	2,116,881	1,892,674	1,790,575	1,383,547
Hidalgo, TX	21,947,731	17,713,609	17,613,527	15,587,611
Laredo, TX	17,877,845	17,282,264	15,915,545	15,208,606
Presidio, TX	1,900,683	1,822,312	1,775,433	1,684,610
Progreso, TX	3,321,066	3,019,075	3,019,260	2,805,267
Rio Grande City, TX	2,383,033	2,156,164	2,591,589	2,471,812
Roma, TX	4,664,306	3,644,011	3,527,213	3,306,496
U.S.–Mexico Border Total	239,794,552	209,105,846	199,020,692	193,697,482

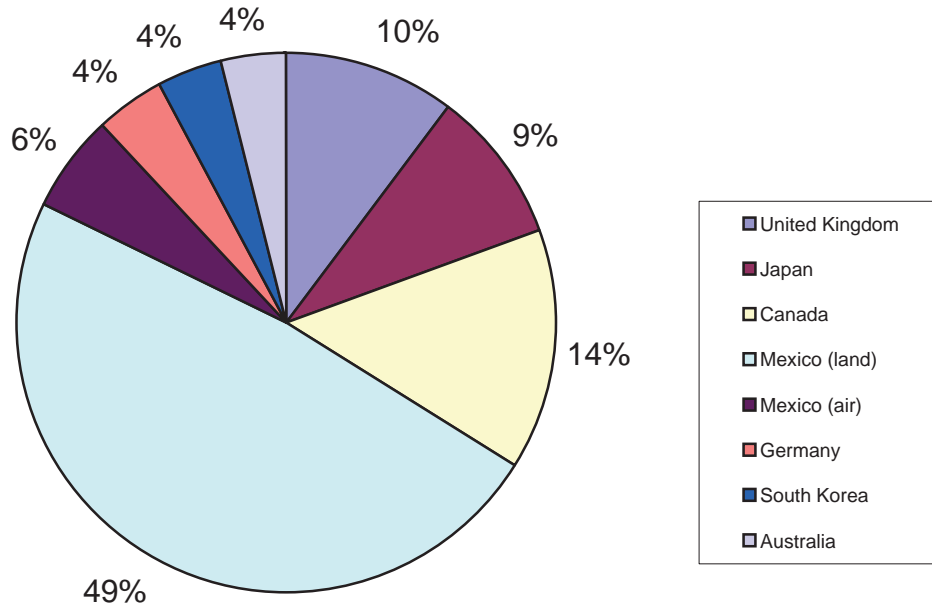
Source: U.S. DOT, BTS based on data from U.S. Customs Service, Mission Support Services, Office of Field Operations, Operations Management Database.

Table 9 Incoming Pedestrian Crossings in Personal Vehicles, U.S.–Mexican Border (Arizona, California, New Mexico and Texas), 2000–2003

<u>Port Name</u>	<u>2000</u>	<u>2001</u>	<u>2002</u>	<u>2003</u>
Arizona, Total	8,390,803	8,994,847	9,682,233	9,154,958
Douglas, AZ	682,872	728,585	648,989	776,258
Lukeville, AZ	109,800	126,268	78,336	89,694
Naco, AZ	92,617	92,554	72,628	77,518
Nogales, AZ	4,677,819	4,874,738	5,911,866	5,583,533
Sasabe, AZ	3,133	2,443	2,136	2,048
San Luis, AZ	2,824,562	3,170,259	2,968,278	2,625,907
California Total	18,596,679	21,699,797	18,628,200	18,193,283
Andrade, CA	1,762,700	1,779,392	1,703,862	1,747,369
Calexico, CA	8,352,324	7,119,785	6,894,820	6,230,123
Calexico East, CA	2,293	2,538	2,398	1,586
Otay Mesa/San Ysidro, CA	648,756	1,002,971	1,684,117	1,467,171
San Ysidro	7,542,450	11,435,946	7,903,483	8,302,110
Tecate, CA	288,156	359,165	439,520	444,924
New Mexico, Total	191,351	185,814	264,165	259,312
Columbus, NM	187,709	182,025	250,968	242,448
Santa Teresa, NM	3,642	3,789	13,197	16,864
Texas, Total	19,910,809	20,620,863	21,703,683	21,056,220
Brownsville, TX	3,017,533	3,176,131	3,204,848	2,920,355
Del Rio, TX	265,252	258,102	167,153	132,216
Eagle Pass, TX	920,114	864,105	691,904	698,602
El Paso, TX	5,825,155	7,201,100	9,301,395	8,899,168
Fabens, TX	23,813	32,208	33,723	25,311
Hidalgo, TX	2,575,622	2,325,812	1,958,914	2,138,232
Laredo, TX	5,492,769	5,060,947	4,648,046	4,577,725
Presidio, TX	16,019	24,240	34,065	25,187
Progreso, TX	1,193,590	1,278,671	1,288,506	1,275,881
Rio Grande City, TX	86,225	88,089	129,752	121,149
Roma, TX	494,717	311,458	245,377	242,394
U.S.–Mexico Border Total	47,089,642	51,501,321	50,278,281	48,663,773

Source: U.S. DOT, BTS based on data from U.S. Customs Service, Mission Support Services, Office of Field Operations, Operations Management Database.

Figure 7 Visitors to California 2005, by Foreign Origin



Source: California Fast Facts 2006, California Travel and Tourism Commission and Business, Transportation and Housing Agency. Division of Tourism.

visitors to California spend about \$6 billion per year.¹⁹ Mexican tourists (who arrive by land and air) are by far the largest category of international visitors to California (see Figure 7). Of Mexican visitors crossing by land, expenditures vary considerably across modes of travel, with automobile travel far exceeding average expenditures of visitors over all other modes of land travel.²⁰

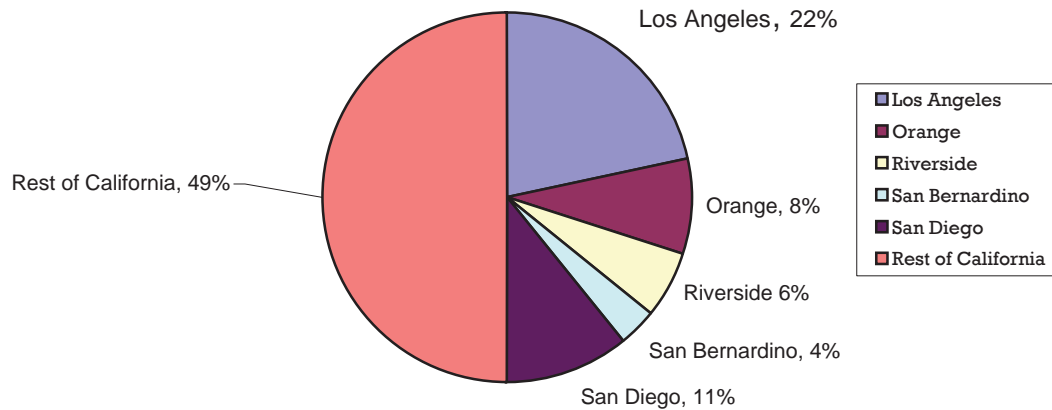
Of the \$88.1 billion spent by travelers in California, more than half of that total is spent in southern California counties. For example, the most visited theme park attractions are mainly in southern California.²¹ One

can therefore surmise that at least half (and very likely more than half) of all Mexican visitor expenditures occur in counties on or near the California-Baja California border (Figure 8). This is an additional pressure on highway infrastructure along the border and needs to be factored into future allocations of funding and planning strategies for state transportation.

f. cross-border highway connections to the larger southern California region

One additional challenge facing cross-border infrastructure is molding

Figure 8 Travel Spending by County, 2004



Source: California Fast Facts 2006, California Travel and Tourism Commission and Business, Transportation and Housing Agency. Division of Tourism.

connections between the immediate border counties (San Diego, Imperial) and the counties to the north—Orange, Los Angeles, San Bernardino, Riverside. Evidence suggests that while in the past these counties carried out regional planning somewhat independently, there is much more coordination in inter-county transit infrastructure planning.

Indeed, the major transit agencies—SANDAG, SCAG (Southern California Association of Governments) and Western Riverside Council of Governments (WRCOG) all recognize that overlaps must be addressed in the form of shared commuters, trade, and environmental impacts that link all southern California populations. Both SCAG and SANDAG share the policy goal of planning for mobility in the form

of enhanced flows and searching for alternative transit options. The Inter-Regional Partnership (IRP) is a state funded program (through the California Department of Housing and Community Development) that allows officials from the three regional transit entities to work together to deal with traffic congestion resulting from jobs/housing mixes that cross county borders.

Inter-county transit planning has been implemented between San Diego and Riverside counties. Some 114,000 daily highway trips from Riverside County are made into the San Diego region, with that number expected to double by 2020. An estimated 30,000 Riverside County residents commute daily to jobs in San Diego County. Congestion along the I-15 corridor is a major policy concern for the region,

and indirectly could be an impediment to cross-border flows, given the importance of I-15 as a major trade corridor, both for goods and retail consumer flows. As mentioned, San Diego regional transport plans now call for I-15 to be a major transport corridor for trade cargo.

Meanwhile, the flow of trucks and passenger vehicles along the coastal corridor continues to grow. For example, traffic flow data in San Diego County suggest that traffic volume at the northern end of the county (near the Orange and Riverside County lines) in both major corridors (I-5 and I-15) is among the highest in the region, between 150,000 and 200,000 average weekly vehicles (SANDAG, 2007). This mirrors the data on truck and passenger vehicle flows across the border. In the California BINS (Border Infrastructure Needs Assessment Study) Corridor Summary data, (see Table 6) the flow across the San Diego-Tijuana-Tecate corridor far exceeds the flow at the Imperial-Mexicali Corridor. In the year 2000, the average annual daily traffic (AADT) for the San Diego-Tijuana-Tecate corridor was 719,972, while the average for Imperial-Mexicali was 92,755. Projecting ahead, for the year 2020, the average daily traffic count rises to over one million vehicles/day, while at the Imperial-Mexicali corridor, the number is 186,000 per day, only one fifth the size at the San Diego corridor. We know from other origin-destination studies (see Figure

4) that much of that flow moves north into Los Angeles and other coastal counties, travelling along the I-5 or I-15 freeways.

g. Upgrade and plan for highways in Baja

Figure 6 illustrates existing highway corridors in Baja. They largely mirror the California side of the border, with the primary corridors flowing from Tijuana north toward southern California, and from Mexicali north toward Imperial County and toward the Los Angeles Inland Empire (Riverside County). It is noteworthy that at present only one major east-west highway links Tijuana and Mexicali, the two economic centers of northern Baja.

How and which of the transit corridors (coastal, inland) is upgraded by the Mexican government will have an impact in California. In any case, highway infrastructure in Baja needs to better accommodate trucking flows. Trucks often have to navigate through arterials, side streets, and neighborhoods. Wide, open pathways feeding into truck corridor highways are needed. For example, the roads around the Mesa de Otay crossing in Tijuana are poorly designed for truck movements, as they flow through residential or commercial zones. Highways connecting large cities also need to be improved—including the Mexicali-Tecate-Tijuana corridor. Two other critical highway connector

projects are the “Tijuana 2000,” a highway corridor which connects Tijuana and Rosarito.²² Currently, the poor road condition for truck travel in Baja often motivates Mexican truckers to use the interstate system just north of the border in the U.S., and, as mentioned, the movements of Mexican trucks was strictly regulated in California. Indeed, since 1982, Mexican trucks crossing the U.S. border have been required to stop within a 20 mile border “buffer zone” and transfer their loads to U.S. truckers, who then complete the delivery at destinations within the United States.

Another issue facing Baja and its connection to California is the question of intermodal facilities. Cross-border connections will need better sites for moving from one mode to another. With modern intermodal centers, goods can be quickly and efficiently off loaded from train to truck or vice versa. The question that remains is: where should the intermodal facility be located, and how would it be managed?

2. Changing Rail Infrastructure Policy

As mentioned earlier, the rail connection between California and Baja California is an underutilized connector for the cross-border economy. On the U.S. side, the line from Calexico is run by the Union Pacific Corporation—goods from Mexico move west across the desert terrain

of southern Imperial Valley. As the rail line enters the southern end of the San Bernardino and Santa Rosa mountains, there is a transition to a separate rail line owned by the Carrizo Gorge Railway (CGR). After some years of dormancy, in 2001, the CGR reinitiated operations—and can now carry single stack rail cargo. Railcars from the Union Pacific “Desert Line” can load and unload containers at the Seeley junction and then move west. The CGR line then connects at the Tecate border into the San Diego & Arizona Eastern (SD&AE) line which travels south of the border, between Tecate and Tijuana, reenters near San Ysidro, California, then travels north toward downtown San Diego, where it then connects into the Burlington Northern Santa Fe line, and moves north towards Los Angeles.

In May 2002, the Metropolitan Transit Development Board of San Diego signed an agreement with the Carrizo Gorge Railway company, ceding to them the authority to repair, operate, and maintain their portion of the Desert Line. The Desert Line stills needs to be further upgraded to serve as a major artery for Mexico-California trade. Repairs to tunnels, trestles and tracks are

Cross-border connections will need better sites for moving from one mode to another.

needed to fully incorporate the rail line into a U.S.-Mexico freight exchange corridor. For example, track alignment and tunnel clearance need upgrading to accommodate modern freight vehicles—such as those that carry double stack containers and automobiles. Also, additional storage yards would be needed at the Port of San Diego and at San Ysidro for increased freight movements through the SD&AE line.

The Desert Line currently ships liquefied petroleum gas, lumber, beverages, paper, grain and sand.

The rail line could ultimately link maritime port facilities in San Diego and Ensenada to other cities in the region—like Mexicali, Tecate and Tijuana.

These and other products such as bulk commodities need upgraded rail cars and a modern intermodal transit facility to gather and distribute truck and rail shipments from one system to another. The

U.S. Department of Transportation has already allocated \$43 million through the Transportation and Efficiency Act (TEA) for upgrading the Desert Line of the Carrizo Gorge Railway system. TEA monies are specifically earmarked for, among other things, improvements along the international border that enhance international trade. The total cost of

upgrades, however, will probably be over \$100 million (SANDAG, 2004).

When the 70 mile Desert Line of the San Diego & Arizona Eastern Railway line hooks up to the 62 mile coastal network of the Burlington Northern Santa Fe line, an important alternative Mexico-California trade corridor is added. The rail line could ultimately link maritime port facilities in San Diego and Ensenada to other cities in the region—like Mexicali, Tecate and Tijuana. It could also link to the Naval Port facilities in San Diego. It would attract jobs, rail-oriented industry, and international shipping businesses. Furthermore, it might reduce some of the congestion on highways in the region. There is also the possibility of a new rail linkage into this superstructure—from Baja California—a rail line linking either Ensenada or a new port to the south at Punta Colonet with Tecate (see Figure 9), and then into the U.S. rail system. This connection is discussed later in this report.

3. New and Modified Ports of Entry

Existing ports of entry need to be remodeled. The connection between ports of entry and surrounding land uses needs to be better understood to ensure that ports of entry serve local and regional needs. Highway connections to the ports of entry (POE) need to be expanded and improved. Finally, more ports of entry

are needed to handle the increasing volume of flows.

The POE buildings are overseen by the General Services Agency (GSA), a federal level agency based in Washington, D.C. GSA is charged with managing all government buildings. Its generic role as facility landlord and manager tends to discourage a management approach based on regional skills and knowledge of local urban/regional issues. This means that GSA administrators, especially working from off-site locations, do not have any particular expertise in international border questions, or in regional needs for the California-Border zone. The users of the POE's are mainly federal government agencies involved in monitoring the border—all housed within the Department of Homeland Security. These agencies' policy frameworks are defined in Washington, D.C. and not necessarily tuned into the needs of the California border region.

Clearly, the design and micro-regional organization of transit infrastructure in and around the six ports of entry along the California-Baja California border will be critical on two levels in the future: first, it will functionally better manage the flow of trucks, vehicles and people across the boundary; second, if new configurations and management approaches are successful in decreasing delays, it will open the door to reluctant investors and economic actors whose participation in the California-Baja

California trade relationship will boost economic development on both sides of the border.

State and regional agencies are responding to this challenge in several ways. Generally, the philosophy of the major regional transportation planning agencies in southern California is pitched toward enhancing mobility using a wide array of policy tools, from adding freeway lanes and creating specialized corridors to alternative transit systems looped through the freeway networks. Some planning approaches that will make POE's work better include:

- a. the projected widening of existing corridors, including I-5, I-805, and I-15;
- b. the installation of High Occupancy Vehicle (HOV) and carpool lanes on these and other corridors;
- c. the remodeling of the ports of entry;
- d. the improvement of roads leading to POE's, especially in Imperial County;

These agencies' policy frameworks are defined in Washington, D.C. and not necessarily tuned into the needs of the California border region.

- e. the planning of new ports of entry at Otay Mesa East, Calexico West, and Jacumba, etc.;
- f. the continuation of the SENTRI program as an important tool in facilitating cross-border flows.

4. Integrate Seaports into the Border Region

California has four major seaports—Los Angeles, Long Beach (these are sometimes called the Twin Ports, since they lie in close proximity around San Pedro/Los Angeles Bay), Oakland and Port Hueneme. Approximately 42% of all U.S. containers used in international trade move through these ports (Haveman and Hummels, 2004). Yet hardly any of the flow of goods through these ports is connected to Mexico. Instead most of it goes to China and Japan. As mentioned earlier, almost all (about 92%) of the trade merchandise exchanged between California and Mexico moves by truck rather than through the state's seaports. Some \$20 billion in trade goods move by truck at Otay Mesa/Mesa de Otay Port of Entry, while about \$8.4 billion in merchandise crosses by truck at the Calexico/Mexicali land port (Haveman and Hummels, 2004).

California has two shipping connections to Baja California: containers destined for the maquiladora sector coming from Asia often arrive at the ports of Long Beach and Los Angeles, and then move by land

to Tijuana. Secondly, containers of industrial goods like automobiles are shipped either through San Pedro (LA) or San Diego. California and Baja California ports are also expanding to attract increased trade with ports in the Pacific Rim. Joint trade ventures will require multiple modal transit connections that allow goods to be moved to destinations within the California-Baja California region or outside of it. Thus, the entire system of improved transit—roads, land ports of entry, railways, and air cargo facilities—impacts the success of port ventures (Keyser, 2000).

To date, Baja's ports have not played a significant role in cross-border trade. Ensenada only recently modernized its port. It mainly serves goods used in Baja's maquiladora industry or delivery of agricultural products. Its small size, relative to other major ports on the West coast of North America (LA, Long Beach, etc.), and the lack of a rail connection limit its long-term role in large-scale flows of goods. Even though it has been redeveloped, it is considered a somewhat obsolete port by international trade experts. In the long-term the Mexican government expects the Port of Ensenada to serve cruise ships and yachting, when it builds the megaport at Punta Colonet (Greenberg, 2004). Ensenada's port cannot really be expanded any further, since the city has grown to its edges, and there is no available land for further significant port expansion.

The development of a mega-port facility at Punta Colonet could dramatically reshape the role of Baja ports in California-Baja California trade and in the entire geography of the region's cross-border flows. A planned mega-port facility at Punta Colonet (80 miles south of Ensenada) would be one of Mexico's largest public infrastructure projects ever built. The initial capital outlay of \$5 billion to build the 11,000 acre port facility, supporting roads and other infrastructure, would induce a projected \$22 billion in regional multiplier effects. This would lead to the construction of a new coastal port city whose population might reach an estimated 250,000 (Lindquist, 2006). The port could eventually be large enough to handle some 6 million TEU's (twenty foot units) of cargo annually, placing it on a par with the major port facilities at Long Beach and Los Angeles. The port's primary function would be to move imported goods to the interior of the United States. The Mexican government is also considering building an energy production complex at nearby Punta Santo Tomas to support the new port city. The energy complex would include a natural liquefied gas power plant, a second power plant, and a desalination facility.

Changing developments in regional shipping patterns have made it possible for Mexico to contemplate building a global mega-port at Punta Colonet. First, many global shipping companies

have become frustrated by backlogs at major west coast ports, especially Long Beach and Los Angeles. These include Nippon Yusen, K.K., Japan's largest shipping line; Maersk SeaLand, the largest cargo carrier on the planet; Neptune Orient Lines; and Marine Terminal Corporation, one of the largest terminal operating companies on the west coast. One of the bigger global players in the port development story and one of Hong Kong's oldest trading companies, Hutchison Whampoa, Ltd., is seriously involved at Punta Colonet and would very likely be the terminal manager for the mega-port (Lindquist, 2005).

These ports are troubled by a combination of labor unrest, terminal and freeway congestion and higher fees. Meanwhile incoming cargo from Asia continues to strain west coast ports.²³ For example, Asian cargo has been increasing at a rate of 15% per year, with nearly 60% of cargo coming from China. By 2020, Asian cargo will double in volume. Experts predict that just to ship Asian goods into the U.S. interior a port the

The development of a mega-port facility at Punta Colonet could dramatically reshape the role of Baja ports in California-Baja California trade and in the entire geography of the region's cross-border flows.

Figure 9 Punta Colonet Mega-port, Showing Possible Future Rail Line to Yuma or Mexicali



Source: Baldwin and Crotty, 2005.

size of Seattle is needed right away. As a result, U.S. importers have instructed shipping lines to look for alternate ways to transport Asian cargo to the U.S.; a Mexican port sits high on the list of possible solutions to the bottlenecks in LA and other port facilities. Reportedly even corporate giants like Walmart and Costco are looking at Mexico as a possible conduit for getting faster delivery of goods destined for U.S. markets.

The construction of a mega-port in Baja faces several obstacles. Billions of dollars would have to be raised to finance supporting infrastructure for the port. The harbor would need to

be dredged for giant container ships, a breakwater completed, roads built, and housing and public buildings erected. The port would likely need an airport specializing in cargo and a regional rail connection.

Punta Colonet's impact would be greatly enhanced by a planned rail connection that could easily enter into the U.S. rail system, either at Tecate, or more likely at Yuma, Arizona (Figure 9), where it could then connect to rail systems in California's Inland Empire, thus avoiding the LA/Long Beach ports entirely. A well designed rail connector could significantly impact the management

of cross-border flows of goods. One option would be to build a 180-mile rail connection to Mexicali, which could then link up with the rest of Mexico and the United States by rail or highway. Another option would be to simply expand highway capacity through Tijuana and into the U.S. inter-city highway network, or across the peninsula to Mexicali, and then on to points east and north.

Another significant challenge to building the mega-port is the question of property rights. There are competing claims to the Punta Colonet zone, including land and mineral rights under the coastal waters. This has already influenced one of the more promising rail projects. In the spring of 2007, the Union Pacific Corporation announced that it would not bid on the rail connection. Union Pacific claimed it was concerned about land disputes arising over the Mexican government plan to build the deep water port at Punta Colonet. A business interest group is claiming that it has mineral rights on the ocean floor, therefore challenging the government right to build a port over that site. This dispute has caused some investors to back off and wait (Lindquist, 2007).

Another complicating factor is the port of Lázaro Cárdenas on Mexico's Pacific Coast. It is expected that Lázaro Cárdenas, recently expanded, could increase its capacity to almost the size of LA/Long Beach in the next five years. Since major global players

like Hutchison are already involved in Lázaro Cárdenas, some experts wonder whether this facility might also be used to facilitate shipment of imported goods to the interior of the United States. In fact, another competing port is in Panama City, which is building a one billion dollar mega-port at the Pacific Ocean entrance to the Panama Canal to serve as an import shipping port alternative to overcrowded Los Angeles/Long Beach.

Punta Colonet's impact would be greatly enhanced by a planned rail connection that could easily enter into the U.S. rail system ...

5. Acknowledge the Importance of Major Growth Poles in Baja California and Their Potential Impact on the Border Region's Infrastructure

Two other important growth centers in Baja may impact the future of cross-border flows of goods, as well as the kind of infrastructure improvements made to accommodate those flows.

Tijuana-Tecate Corridor

The Tijuana-Tecate corridor is planned as a new industrial zone of northern Baja California. It might eventually be served by a "jobs train," a rail system that could move inputs

and outputs from the sub-region to major cities and ports on both sides of the border. A direct rail connection to a major industrial corridor in the eastern Tijuana/Tecate zone would enhance industrial growth, especially in the district near the Toyota Tacoma factory which currently builds 180,000 truck beds and 30,000 full trucks per year. Figures are projected to grow as high as 200,000 truck beds and 50,000 pick ups per year (Dibble, 2004).

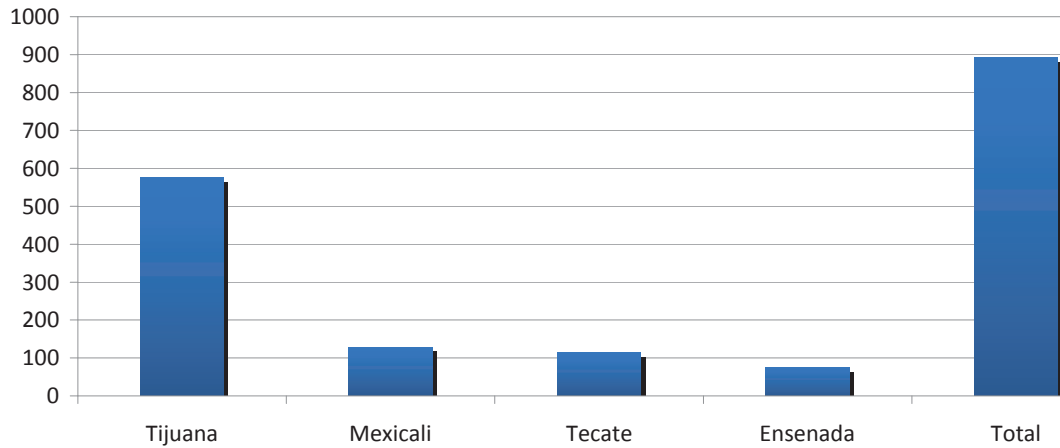
Silicon Border/Mexicali Science Park

The “Silicon Border” project is a 10,000 acre science park, with U.S. and Mexican private sector support. The idea is to build one of the premier computer chip (semi-conductor) production zones in the world in the capital of Baja California—Mexicali. Interestingly, this project was initiated by U.S. entrepreneurs. The chairman of the project, D.J. Hill, claims that “Asia has not just taken manufacturing, but technology too, and a lot of people recognize that we need to do something about this” (Jordan, 2004). Mexicali is well suited as a transit point into the interior of the U.S., and would be within reach of the new port at Colonet. It is the only city on the California-Baja California border that has relatively good access to water, owing to the fact that it is closer to the region’s primary water source, the Colorado River. Mexicali recently built two new electric generating

power plants, and is also close to one of the region’s major sources of geothermal energy. A new border crossing would likely be built to support the science park. Meanwhile, the Mexican government has offered a ten year tax free status to all semi-conductor companies who relocate to the Silicon Border complex.

This billion dollar project sees itself as a rival to the current Asian dominance of semi-conductor manufacturing. The world-wide market for silicon chips has a value of some \$215 billion, with one half of the production currently in Asia. U.S. entrepreneurs behind the project believe that since the hub of research and development started in the Silicon Valley of California, it would make sense to have a major production center in the nearest inexpensive labor region to California, the Mexican border. Further, U.S. companies are concerned about protection of Intellectual Property (IP) in the principal silicon chip production sites in China. They believe a facility in Mexico, near the border, designed with U.S. cooperation, and managed jointly by U.S. and Mexican interests, would be a place they could feel more secure about. More importantly, it could signal a major shift in Baja California’s maquiladora sector, from “low-end” assembly to more sophisticated “high-tech” maquila operations. In addition, it would create more regional symmetry in the distribution of maquiladoras, which is currently

Figure 10 Maquiladoras in Baja California by Metropolitan Area, 2004



Source: Instituto Nacional de Estadística Geografía e Informática (INEGI).

more heavily concentrated in Tijuana (see Figure 10).

To date, the Silicon Border project has not moved significantly forward, beyond the planning stages. However, it now has linkages to the Autonomous University of Baja California and CETYS business training programs, which are important institutional connections for this essentially private sector project. However, several obstacles stand in the way of making the Silicon Border project a reality. To create a 10,000 acre compound, the project team will need to get access to all property rights, a complicated issue in a border city, where land rights are often disputed by interest groups, especially ejidos, or rural communes. Over the last decade, most, but not all the land needed for the project has been privatized. A second obstacle is the lack of a major airport near the site, although

a regional facility, the Mexicali International Airport does lie 12 miles away. However, it is not a global trade airport. The nearest port is far away, some 3½ hours by land in Ensenada. Everything at the Silicon Border would have to be shipped by truck, unless a rail connection to the port was built, as discussed above for the Punta Colonet project. Finally, some have questioned whether a Mexican border city can become a south of the border “Silicon Valley”. Are the cumulative effects of border smuggling, drug wars, and corruption too much to overcome? One business executive who frequently works in Mexico, when asked about this project, stated: “If there’s a Silicon Valley in Mexico, it’s in Guadalajara. The border cities are still the Wild West. Look at what’s going on in Nuevo Laredo with the drug lords” (Baldwin and Crotty, 2005).

6. Plan for a Cross-border Airport Terminal at the Tijuana/San Diego Border.

The San Diego Regional Airport Authority is currently studying the feasibility of building a cross-border airport terminal at Otay Mesa, across the boundary from the Tijuana airport. This project is supported

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by local non-governmental agencies like the San Diego Chamber of Commerce. The advantage of this kind of infrastructure is it creates a mechanism for cross-border cooperation in the use of a Mexican facility by California residents. It

could also attract more investment to the immediate border zone, and be tied into border region mass transportation (rail) in the future.

CONCLUSION AND POLICY CHALLENGES

Globalization—the integration of the state economy with trans-national markets—will increasingly define the future of the California-Baja California border region. Mexico

may be the state's most important international trade partner. Its proximity and increasingly stable economy portend a greater role in California's globalizing future. Unlike all other foreign trade partners, the success of California's trade with Mexico will be defined by land-based infrastructure. With a 20% increase in exports to our southern neighbor since 2001, border infrastructure policy decisions merit greater attention.

For the California-Baja California border region, globalization is a multifaceted challenge. While global manufacturing (maquiladoras) and NAFTA trade remain the two pillars of the border economy, global security and competition from other globalizing regions (Central America, the U.S. northwest, Texas, etc.) represent potential threats to the booming California-Baja California border economy.

Thus, to strengthen the California-Baja California export sector, the region needs stable and efficient border infrastructure—land ports, roads, and rail. Current infrastructure along the border, however, is in trouble, as this report has documented. Flow volumes exceed the capacity of existing ports of entry, roads, and rail systems to absorb them. Long wait times interrupt business and production cycles, impose huge financial losses and contribute to an atmosphere of uncertainty that is disturbing the cross-border economy, and could cause investors to relocate to other

regions. Meanwhile, Department of Homeland Security policies along the border are, at times, generating overzealous interventions that result in even greater delays and more uncertainty.

The costs of inadequate infrastructure and flawed border security policies is difficult to measure, since the impacts are both direct, and indirect, and hard to pin down precisely. The one major regional projection of losses, the SANDAG 2006 Border Wait Times study cited throughout this report, may serve only as a starting point for understanding the implications of not significantly improving border infrastructure. For example, it has been noted here that one additional cost of inadequate infrastructure may be lost opportunities absorbed by other regions. Along the Mexican border, while Texas may be better positioned in the center of the “NAFTA corridor,” California has many other advantages (trained labor force, technology production, manufacturing centers, etc.) that ought to allow it to enhance its export trade with all of Mexico. Yet its incomplete cross-border infrastructure may be exacerbating its geographic disadvantages.

The ever rising cross-border movement of vehicles, people, and goods remains a land-based phenomenon along the California-Baja California frontier line. An innovative cross-border strategy must articulate how highways, rail systems, and port

of entry development plans will be integrated to support and match up against Mexico’s border transport systems and regional development mega-projects, since the latter could dramatically shift cross-border flow patterns. Another reason to upgrade “cross-border infrastructure” strategy is to help overcome the perception among businesses of long delays and uncertainty.

A more effective cross-border infrastructure strategy for the California-Baja California region will be anchored by three key elements: a) defining and understanding stakeholders; b) building a knowledge base that consolidates existing planning processes; and c) a deeper analysis of California-Baja California connections.

Stakeholders for cross-border infrastructure range from transportation and environmental agencies to port of entry managers and federal security offices on both sides of the border. Because there is overlap among jurisdictions and across the border, mechanisms for cooperation—such as joint working groups—are essential to infrastructure planning. However, cross-border differences must be carefully monitored. Some of those differences are diminished if there is a solid bi-national information base. This report outlines in some detail the array of plans, studies, and planning processes already in place along the border. To date, none of these plans or processes fully integrates the

wide range of stakeholders involved in border decision-making. The most comprehensive study to date, The California-Baja California Report (2006) documents infrastructure needs, and demonstrates huge funding shortfalls for many proposed projects. The proposed California-Baja California Master Plan is an important positive step in creating a working template for infrastructure policy, and a process to involve stakeholders (the Policy Advisory Committee). This kind of joint working group must be sure to reach out to all stakeholders.

Future policy directions to improve cross-border flows include the following points:

1. The regional highway network must be rethought to make north-south connections a bigger priority. Connections between the immediate border zone and destinations to the north (especially the Los Angeles metropolitan region) must be factored into planning, as cross-border flows (tourism, for example) continue to increase.
2. Highway infrastructure must be expanded, especially where freeways link up to ports of entry. The state must resolve the question of Mexican truckers using California highways, and of “truck only” lanes on freeways.
3. Baja California’s highways should be carefully planned to match up with future demand flows into California, and the optimal delivery routes to meet those demands.
4. A California-Baja California rail development plan is needed. Rail is an underutilized transport resource along the California border. The rail development plan will include strategies to embrace the new mega-port south of Ensenada, and major production nodes in the region that could switch from truck to rail transport. Further, the plan needs to address the fragmented state of the current Imperial County-San Diego County line.
5. New ports of entry must be added, and existing ports remodeled to handle larger volumes of cross-border movement. The current number of ports of entry cannot absorb the growing flows of people and goods. New ports of entry should be carefully studied for the two major crossing points (San Diego-Tijuana-Otay; and Calexico-Mexicali), as well as one additional crossing midway between the two urbanized “book ends” of the border.
6. The connection of seaports to the cross-border trade needs to be better articulated.
7. The state needs to work closely with the Mexican government

to plan for the multi-billion dollar regional growth poles at Punta Colonet, Silicon Border (Mexicali), and the Tijuana-Tecate highway corridor.

8. California needs to carefully consider the negative impacts of federal security and monitoring policy on cross-border trade, in particular, on increased wait times, traffic congestion, and the perception of delays among businesses and investors.

NOTES

1. Throughout this report, “*maquila*” or “*maquiladora*” refers to a factory that imports materials and equipment on a duty-free basis for assembly or manufacturing, and then re-exports the assembled product typically back to the originating country. *Maquiladoras* are common along the U.S.-Mexico border, as well as in Latin America. They often house factories assembling products in the electronics, textile, machinery, transportation, furniture, and food sectors. They are foreign-owned, and in the case of Mexico, mainly U.S.-owned; along the California-Mexico border, *maquiladoras* are also owned by Japanese, Korean, Canadian, German, and other foreign entities. It should also be noted that recently, some maquila companies have considered changing their legal status if NAFTA rules cut import duties.
2. In 2006, Mexico was surpassed by China. See Drajem 2006.
3. In 2005, the U.S. exported \$101.7 billion in domestic merchandise to Mexico, while it imported \$169.2 billion. This produced a bi-lateral trade figure of \$270.9 billion. Both exports and imports increased by over 9% between 2004 and 2005. U.S. imports from Mexico were the result of increasing demand for petroleum, diesel, and heating oil from its southern neighbor. See U.S. International Trade Commission, 2006.
4. While a sizeable number of people cross daily and weekly from Baja California to California (very likely between 30,000 and 50,000), it is difficult to determine exact figures for commuter workers, since at least part of this flow consists of Mexicans with resident permits who will not admit to working, as they lack the legally required “resident alien” documents, often referred to as “green cards”. See Herzog, 1990a and Herzog, 1990b.
5. Growth projections are based on past rates of growth on both sides of the border, as well as demographic trends plotted by planning organizations

in the U.S. and Mexico. See San Diego Association of Governments, 2006, and State of Baja California, 2005. Baja statistics are drawn from the national census carried out by the National Institute for Statistics and Geographical Information (INEGI).

6. Population figures in Mexican census for border cities are notoriously underestimated. The government historically has tended to not recognize irregular settlements (*colonias*), and thus not fully count their populations. Further, because Mexico's political power is highly centralized in the national capital, Mexico City, it has traditionally been strategic for the national government to underestimate the size of border municipalities, and thus rationalize not spending the correct proportion of the federal budget on their regional needs. It is therefore difficult to know exactly how inaccurate the official census populations are.
 7. On the Mexican side, the increasing stability of the national economy during the decade of the 1990's has been well documented. By the early 2000's, the country's annual GDP growth rate rested solidly between 4 and 5%, with the highest growth tilting toward the northern border states.
 8. In 2004, Latino workers in California sent \$4.5 billion to Mexico. The real estate economy is a major economic engine in California. One study (Tomas Rivera Policy Institute, 2005) estimates that the Latino population of California owns or pays mortgage on approximately 5% of an estimated 12.2 million housing units (using the 2000 U.S. Census). This projects out to an aggregated value of \$115 billion in Mexican owned real estate in California.
 9. For example, U.S. imports from Mexico reflect escalating energy costs and the growing demand for Mexican crude petroleum.
- Even the temporary downturn brought on by September 11, 2001 did not undo the overall success of the central bank, the Banco de Mexico's management of national monetary and fiscal policy. Mexico's economy grew by 3% in 2005, partly due to the resurgence of the *maquiladora* (assembly) program, which directly resulted in the 9% overall increase in U.S. exports to Mexico. The main sectors exporting to Mexico were transportation equipment, electronic products, and chemicals, all central to the assembly industry, the primary industrial sector that links California and Mexico. See Tomas Rivera Policy Institute, 2005.

- Mexico's moderate economic growth and otherwise stable conditions beginning in 2004–2005 led to an increase in U.S. commitment to the assembly of machinery and electronic goods demanded in the U.S. market—TV receivers, commercial and household appliances, such as flat-screen, high definition TV's.
10. These are reviewed in the SANDAG *Economic Impacts of Wait Times* study, see SANDAG, 2006, pp. 17–21.
 11. These figures are aggregated from the U.S. Department of Transportation, Transborder Surface Freight Data Base for 2002; cited in Haveman and Hummels, 2004. The authors note that California's largest land gateway, Otay Mesa station, ranks sixth nationally, behind major access points to Canada (Detroit, Port Huron, Buffalo) and to Mexico (Laredo and El Paso).
 12. It should be noted this data is several years old. The volume of trucks crossings along the border has rapidly increased since 2004/2005, to about 2 million per year along the California border. Data in this report is from the last aggregated tables available from the U.S. Department of Transportation for the border region.
 13. The San Diego region will add one new port of entry at Otay Mesa East over the next decade; a second port of entry is expected at Jacumba. One of the problems in adding new ports of entry, or modifying existing ones, lies with the administrative complications created by a variety of public sector agencies involved in permitting and approving changes at the regional, state and federal levels. Like the management of border infrastructure more generally, planning the ports of entry needs to be streamlined in the future.
 14. For a description of some of these projects see Herzog, 2000.
 15. DHS oversees some 22 different agencies divided among four areas of concern: border and transport security, science and technology, information analysis and infrastructure protection, and emergency preparedness. Its objectives are to manage the nation's borders and ports of entry, prevent the unlawful entry of illegal persons or goods, and work overseas to detect and prevent illegal smuggling operations.
 16. See Hutchinson, 2003.
 17. An interview with a former Director of one of the new border planning offices confirmed this.
 18. Not all the highways mentioned are shown in Figure 6

19. Mexican visitors in 2005 included 409,000 who arrived by air, and 3.3 million who crossed into the U.S. across the land border. See California Travel and Tourism Commission, 2006.
20. According to one recent source, Mexican visitors crossing the border into California spend approximately \$170 per trip if they enter by car, but only \$80/trip if they arrive by bus, and a mere \$39/trip if they arrive on foot. Those who arrive by plane spend an estimated \$1,000 per trip. See Ghaddar and Brown, 2005.
21. These include Disneyland (14.5 million visitors in 2005), California Adventure (5.8m), Universal Studios (4.7m), Sea World (4.1m), Knott's Berry Farm (3.4m), and the San Diego Zoo (3.1m). See California Travel and Tourism Commission, 2006.
22. The Mexican government has budgeted monies for most of these improvements.
23. For example, Asian cargo has been increasing at a rate of 15% per year, with nearly 60% of cargo coming from China. By 2020, Asian cargo will double in volume. Experts predict that just to ship Asian goods into the U.S. interior a port the size of Seattle is needed right away. See Lindquist, 2005.

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