Revised Executive Summary

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ABSTRACT

In 1994, the U.S. Department of Transportation (DOT) and Mexico's Secretariat of Communications and Transportation (Secretaría de Comunicaciones y Transportes (SCT)) signed a Memorandum of Understanding (MOU) outlining the creation of the Joint Working Committee (JWC). Through the MOU, the JWC was charged with "analyzing, developing, and coordinating border transportation plans and programs reflecting the needs of both countries." JWC consists of representatives from the four U.S. states and the six Mexican states along the international border and representatives from selected federal agencies from both the U.S. and Mexican governments, including the Federal Highway Administration (FHWA) of the U.S. DOT, Mexico's SCT, the U.S. Department of State and Mexico's Secretariat of Foreign Relations (Secretaría de Relaciones Exteriores). In 1998, the JWC completed the Binational Border Transportation Planning & Programming Study (P&P Study). The P&P Study produced an inventory of transportation infrastructure along the U.S.-Mexico border and specified some of the "disconnects" that existed at that time.

The Binational Border Transportation Infrastructure Needs Assessment Study (BINS) follows the JWC's vision of developing and coordinating border transportation plans, and continues the work initiated in the P&P study. The purpose of BINS is to identify major transportation corridors in the border region, to develop a quantitative procedure to evaluate the needs of these corridors, and then, with input from the JWC, to identify transportation projects to meet the needs of the corridors as well as to identify possible funding sources. The BINS project was conducted in close coordination with the BINS Technical Committee, which is comprised of representatives from the ten border states as well as SCT and FHWA, under the guidance of the JWC.

HIGHLIGHTS OF THE BINS PROJECT:

- *Developed a systematic approach for assessing transportation infrastructure needs in the U.S.-Mexico border region. This framework will be useful for future transportation infrastructure assessments and can be enhanced or adapted to reflect the JWC's evolving areas of emphasis.*
- *Identified 42 multimodal transportation corridors within the ten border states.*
- *Created a border-wide database and evaluation tool, that was used to help prioritize each state's transportation corridors, based on multimodal quantifiable criteria for highways, land ports of entry, airports, maritime ports, and railroads.*
- *Identified 311 significant transportation projects (258 in the U.S. and 53 in Mexico). The purpose of compiling transportation project-level information was to summarize funded and unfunded planned infrastructure improvements for the border region.*
- *Identified in the U.S., a shortfall of approximately $10.6 billion dollars (in 2003 constant dollars) for transportation projects, corresponding mainly to highway projects ($10.5 billion dollars).*
- *Identified in Mexico, a shortfall for transportation projects of $9,030 million pesos (in constant 2003 pesos) [or $860 million dollars], which also corresponds mainly to highway projects ($8,878 million pesos) [or $846 million dollars]. Mexican Pesos were converted to US dollars at 1 US $ = 10.5 Mexican pesos.*
- *The section titled Summary of Findings by State illustrates the corridors (organized by priority), provides an example of transportation projects, and identifies funding shortfalls, for each of the ten border states.*
- *Future work of BINS could improve the process of corridor and project identification, such as establishing binational and multistate transportation corridors. Incorporating a broader set of criteria, such as security, environment, and safety elements, could enhance the corridor evaluation process. The integration of the binational geographical information system (BGIS) database with BINS would enhance the display and analysis of transportation corridors and projects.*

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INTRODUCTION

Trade between the United States (U.S.) and Mexico has soared over the past decade. With the signing of the North American Free Trade Agreement (NAFTA) in 1994, the value of trade from 1995-2000 has increased by 17 percent per year. Currently, Mexico is the second largest trading partner of the U.S., behind only Canada. In 2002, trade between the U.S. and Mexico totaled $232 billion dollars.[1]

This explosion of trade between the U.S. and Mexico predominantly moves across the border on trucks, with a smaller portion of goods exchanged by rail, water and air. Two-way truck trade alone more than doubled from about $77 billion dollars in 1994 to about $170 billion dollars in 2000. In 2002, nearly 70 percent of merchandise trade between the U.S. and Mexico was transported by trucks.[2]

While NAFTA has brought economic benefit to the border region as well as to each country, it has also provided infrastructure-related challenges. For both countries to continue to benefit in future years from the shared border, the transportation infrastructure that links the two countries needs to be maintained and expanded to handle future cross-border travel demand. Current transportation infrastructure was not designed to handle the large NAFTA traffic volumes.[3] As a result, the local transportation system is increasingly used by international trade related traffic destined for the interior of the United States or Mexico, compounding existing demands for additional transportation infrastructure from the rise in local traffic. In the U.S., state Departments of Transportation (DOTs) have been mainly responsible for improving the local transportation infrastructure, which provided benefits to the national economy as it serves international goods movement.

The U.S. and Mexico share a 1,278-mile (2,056 kilometers – km) border that extends from the Pacific Ocean on the west coast to the Gulf of Mexico on the southeast coast. A border region of 100 km on either side of the border is shown in Map 1 on the following page. The 100 km, ten-state "Border Region" is the focus of this study. The four U.S. border states are California, Arizona, New Mexico and Texas. The six Mexican border states are Baja California, Sonora, Chihuahua, Coahuila, Nuevo León, and Tamaulipas.

[1] U.S. Bureau of the Census, Foreign Trade Division, 2003.
[2] U.S. Department of Transportation, Bureau of Transportation Statistics, Transborder Surface Freight Data, 2003
[3] Transportation infrastructure in the U.S. and Mexico was not historically built around binational trade and as such is not adequate for the reorientation of traffic around the border. For example, in the U.S., the main transportation arteries run east-west, following the pattern of national development. In Mexico, the principal federal highways run north-south and show a radial pattern around main population centers (Federal District, Guadalajara and Monterrey).

Map 1 – Study Area
U.S.-Mexico: 100 km Border Region

Source: BINS Technical Committee

BACKGROUND

In April 1994, the U.S. Department of Transportation (DOT) and Mexico's Secretariat of Communications and Transportation (Secretaría de Comunicaciones y Transportes (SCT)) signed a Memorandum of Understanding (MOU) outlining the creation of the Joint Working Committee (JWC). Through the MOU, the JWC was charged with "analyzing, developing, and coordinating border transportation plans and programs reflecting the needs of both countries." The MOU also envisioned enhanced communications, coordination, advice, and consensus building among government entities on both sides of the border. The JWC consists of transportation and planning agency representatives from the four U.S. states and the six Mexican states along the international border and representatives from selected federal agencies from both the U.S. and Mexican governments, including the U.S. Department of State (DOS) and Mexico's Secretariat of Foreign Relations (Secretaría de Relaciones Exteriores (SRE)).

In Mexico, the 1995-2000 National Development Plan (Plan Nacional de Desarrollo (PND)) called for the modernization of the federal highways of national importance, which provide a link among state capitals and main maritime and border ports. The 2001-2006 PND continues these efforts with the objective of achieving a transportation infrastructure network that will facilitate Mexico's participation in the globalization process. In addition to investments in highway improvements, railroads, airports and seaports have benefited from both public and private investments.[4]

In the U.S., the Transportation Equity Act for the 21st Century (TEA-21), which became law in 1998, provided some dedicated resources to address additional transportation facilities identified in the

[4] Secretaría de Comunicaciones y Transportes, *Plan Nacional de Desarrollo 1995-2000 and Plan Nacional de Desarrollo 2001-2006*.

National Corridor Planning and Development (NCPD) Program and the Corridor Border Infrastructure (CBI) Program. However, the transportation needs have exceeded the funding capacity of these two programs. The sections authorizing these programs ended with the termination of TEA-21 at the end of the 2003 federal fiscal year.

In 1998, the JWC authorized the Binational Border Transportation Planning & Programming Study[5] or P&P Study. The P&P Study produced an inventory of transportation infrastructure along the U.S.-Mexico border and specified some of the "disconnects" that existed in 1998. However, the P&P Study stopped short of identifying major transportation corridors and assessing their needs.

The JWC recognized that the TEA-21 programs did not provide sufficient funding to satisfy the rapidly expanding border area transportation needs and, with the reauthorization of TEA-21 close at hand, that additional information was required to carry out a transportation corridor analysis and needs assessment for the U.S.-Mexico border region. Initially, the JWC anticipated that the findings from this study would be used during the TEA-21 reauthorization process, and thus authorized the Binational Border Transportation Infrastructure Needs Assessment Study (BINS). As explained in more detail in this Executive Summary, BINS has evolved as a tool to identify and evaluate major transportation corridors and compiled a list of planned transportation projects, based on each state's needs.

STUDY PURPOSE AND OBJECTIVES

The BINS project follows the JWC's vision of developing and coordinating border transportation plans, and continues the work initiated in the P&P study. The purpose of BINS is to identify major transportation corridors on the border region, to develop a quantitative procedure to evaluate the needs of these corridors, and then, with input from the JWC, to identify transportation projects to meet the needs of the corridors as well as to identify possible funding sources.

Specifically, the BINS project has five key objectives:

1. To develop a set of minimum criteria to be used by the JWC to identify major multi-modal transportation corridors.
2. To develop an evaluation process, accepted by the JWC, to analyze major transportation corridors identified in Objective No. 1.
3. To create a border-wide database and evaluation tool to prioritize each state's transportation corridors based on the methodology and process identified in Objective No. 2, which can be used for future assessments.
4. To compile a list of significant transportation projects on the corridors, including each project's description, estimated cost, and anticipated completion date, and to summarize each state funding needs, as well as those for the U.S.-Mexico border, to implement these transportation projects.

[5] Barton-Aschman Associates Inc. & La Empresa S. de R.L., "Binational Border Transportation Planning and Programming Study," April 10, 1998.

5. To investigate traditional and innovative methods to fund border transportation infrastructure needs.

ORGANIZATION OF THE REPORT

The BINS project is documented in three reports that provide increasing levels of detail. First, the Executive Summary highlights the major findings related to border transportation infrastructure needs, strategic transportation corridors and planned projects as well as potential financing options. Second, the BINS report describes the process, methodology and tools developed to evaluate transportation infrastructure needs along the border region and it also presents the results of the analyses in more detail. Finally, the Appendices include the raw data used as input for the various analyses as well as documentation of the study process.

GENERAL CONCLUSIONS

The BINS project completed five main objectives which followed the overall purpose of assessing the transportation infrastructure needs of the U.S.-Mexico border region. It was conducted in close coordination with the BINS Technical Committee, which is comprised of representatives from the ten border states as well as SCT and Federal Highway Administration (FHWA), under the guidance of the JWC.

First, multimodal border transportation corridors were identified. Then, an evaluation process and tool, as well as a borderwide database, were developed to analyze and prioritize those corridors within each border state. Next, transportation projects were identified on each of the selected corridors. Finally, traditional and innovative financing methods for transportation projects were investigated. This work was conducted with ongoing participation from the BINS Technical Committee.

The BINS project provides a systematic approach for assessing transportation infrastructure needs in the U.S.-Mexico border region. Findings from this project will assist transportation officials on both sides of the border to establish planning and programming strategies to achieve common goals for key multi-modal transportation corridors. The framework developed by the BINS project also will be useful for future transportation infrastructure assessments and can be enhanced or adapted to reflect the JWC's evolving areas of emphasis. A summary of findings for each border state is provided in the following section.

In brief, the BINS project identified 42 multimodal transportation corridors within the ten border states, which were selected by the individual state representatives of the BINS Technical Committee based on the needs identified by each state. A border-wide database and evaluation tool, that was used to help prioritize each state's transportation corridors, was created based on multimodal quantifiable criteria for highways, land ports of entry, airports, maritime ports, and railroads.

Also, the BINS project resulted in a list of significant transportation projects on the corridors provided by the BINS Technical Committee according to the needs identified by each state. The purpose of compiling transportation project-level information was both to summarize planned infrastructure improvements for the border region and the unfunded needs identified by the states.

Texas' long-term projects were not included. Arizona submitted projects beyond 2003; however, the expected implementation timeline was not provided.

In the U.S., a shortfall of approximately $10.6 billion dollars (in 2003 constant dollars) for transportation projects was identified and it is mostly related to highway projects ($10.5 billion dollars). Anticipated costs for long-term projects were not submitted by Texas and Arizona. New Mexico submitted cost estimates for long-term highway projects only.

In Mexico, the identified shortfall for transportation projects amounts to $9,030 million pesos (in constant 2003 pesos) and it also corresponds mainly to highway projects ($8,878 million pesos). Future allocation of funding for planned projects should be based on priorities developed through further analyses.

The section titled Summary of Findings by State illustrates the corridors (organized by priority), provides an example of transportation projects, and identifies funding shortfalls, for each of the ten border states.

As noted earlier, the BINS methodology followed a multimodal approach for gathering quantitative data for highway, rail, maritime, airport, port of entry, and intermodal facilities. The evaluation tool relies on this database to prioritize transportation corridors within each border state. The limitations of the evaluation tool derive from the lack of availability of current or projected traffic and trade data for the corridors identified. Several border states were unable to provide complete datasets. Another data limitation encountered was related to information on planned transportation projects. The data provided by the states varied widely in terms of the planning horizon, project description, cost estimates, and project funding availability. For example, some states provided no data on planned long-term projects, anticipated project cost or funding levels. Project descriptions were many times incomplete.

The future enhancement of the transportation infrastructure network along the border region will greatly depend on continuous cooperation and coordination efforts in binational planning. The BINS project has continued to strengthen the foundation of a binational perspective for the improvement of transportation infrastructure, which was started through the P&P study. However, BINS stopped short of looking at the connection between the transportation corridors identified in the U.S. and Mexico or between adjoining states in either country. The remainder of this section identifies recommended enhancements for a potential second phase of the BINS project.

A second phase of BINS could accomplish improvements in the process of corridor and project identification of binational and multistate transportation corridors. The concept of establishing binational corridors would capture the synergy of crossborder trade and travel more fully. It would allow the prioritization of corridors and projects under a new light by providing a better understanding of the mutual economic benefits for both countries. Also, it would point to the positive results of coordinated binational planning and, at the same time, would provide a signal when that coordination is not present. For example, establishing binational corridors and identifying key transportation projects would show whether both countries are planning to implement improvements on transportation facilities or POEs on a similar schedule.

In addition, a second phase of BINS could enhance the corridor evaluation process by incorporating a broader set of criteria. Issues such as security, environment, and safety should be considered as additional elements. Current criteria could be reviewed to determine whether minimum or

maximum thresholds should be established, such as minimum levels of daily traffic on a facility, among others.

Although a binational geographical information system (GIS) database was not available during the development of the BINS project, a second phase of BINS could incorporate its capabilities. Such a system could facilitate the process of corridor data administration and, most importantly, it could assist in locating and analyzing transportation projects on the identified corridors. A binational GIS database could also assist in the production of maps, which are important visual tools for transportation studies and decision making.

Finally, it is recommended that the evaluation of U.S.-Mexico border transportation corridors be updated regularly, building upon the BINS project.

SUMMARY OF FINDINGS BY STATE

Arizona

The BINS Technical Committee representative identified one corridor in Arizona, the CANAMEX Corridor. A map of the Arizona border region and its corridor within 100 km is presented below.

The BINS Technical Committee representative identified 21 transportation projects in Arizona's CANAMEX Corridor through 2020 and all of them are highway projects on I-19. They include reconstruction of an interchange at Valencia and bridge rehabilitation. Of the 21 projects, 13 are considered fully funded, with an estimated cost of $38.8 million dollars (constant 2003 dollars).[6]

Eight of the projects are not fully funded and no cost estimates were provided for them. Funding for these projects represents an unmet need related to border transportation infrastructure in Arizona. However, since no cost estimates were provided for these eight projects, it is not possible to quantify that need.

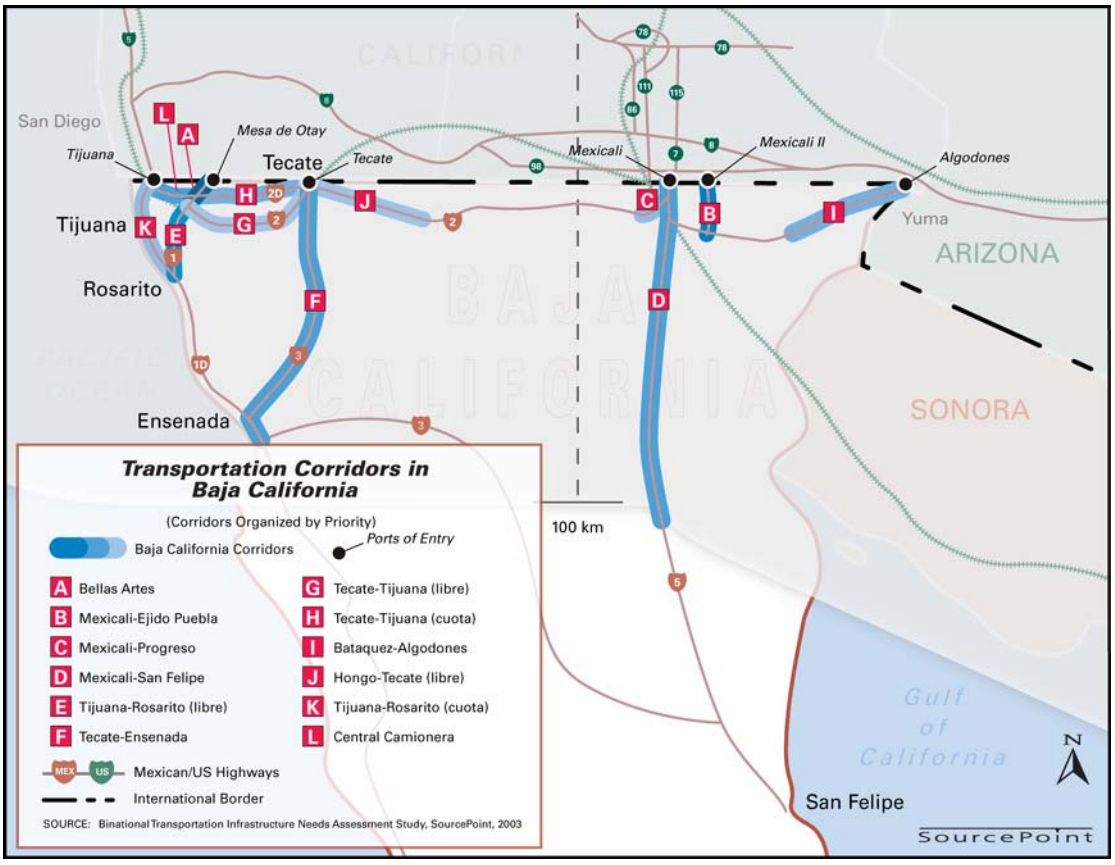
[6] For Arizona, California, and Texas, values were provided in 2001 constant dollars and are inflated to 2003 constant dollars using an inflation factor of 3.2 percent per year. This inflation factor was obtained from the BINS Technical Committee representative.

Baja California

The BINS Technical Committee representative identified 12 corridors in Baja California and named most of them after road junctions. A map of the Baja California border region and its corridors, which are organized by priority, is presented below.

The BINS Technical Committee representative identified 17 transportation projects in Baja California's corridors through 2020 and all of them are highway projects. They include the Tijuana-Rosarito 2000 highway, the Ejido Cuernavaca-La Rosita project in Mexicali, and improvements to the Tecate-Mexicali free highway. Of the 17 projects, which total approximately $4,164 million pesos (constant 2003 pesos), 14 are considered fully funded with an estimated cost of $464 million pesos.

Three highway projects are considered not fully funded and are estimated to cost $3,700 million pesos. Therefore, this amount represents an outstanding funding need related to Baja California's border transportation infrastructure.



California

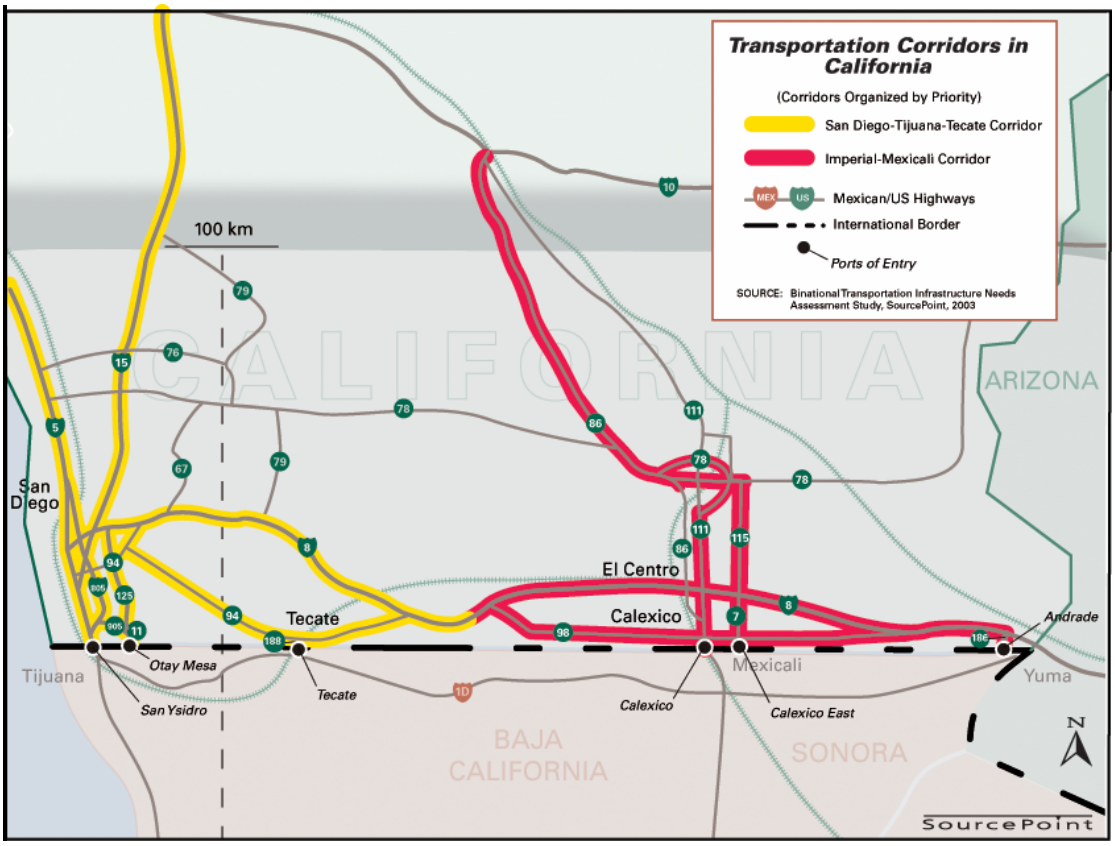
The BINS Technical Committee representative identified two corridors in California, the San Diego-Tijuana-Tecate and the Imperial-Mexicali Corridors. A map of the California border region and its corridors, which are organized by priority, is presented below.

The BINS Technical Committee representative identified 110 transportation projects in California's two corridors through 2030. They include the construction of State Route (SR) 905, improvements to I-5 and I-805, construction of Brawley Bypass expressway, and upgrades to SR 111. Of the 110 projects, 103 are highway projects and seven are railroad projects. Twenty-six projects are considered fully funded and 84 projects are not fully funded.

Of the 103 highway projects, which total approximately $12.9 billion dollars (constant 2003 dollars), 22 projects are considered fully funded and have an estimated cost of approximately $2.6 billion dollars The remaining 81 highway projects are considered not fully funded and are estimated to cost $10.3 billion dollars.

Of the seven railroad projects, which total approximately $923 million dollars (constant 2003 dollars), four projects are considered fully funded at an estimated cost of approximately $811 million dollars while three projects are considered not fully funded and are anticipated to cost $112 million dollars.

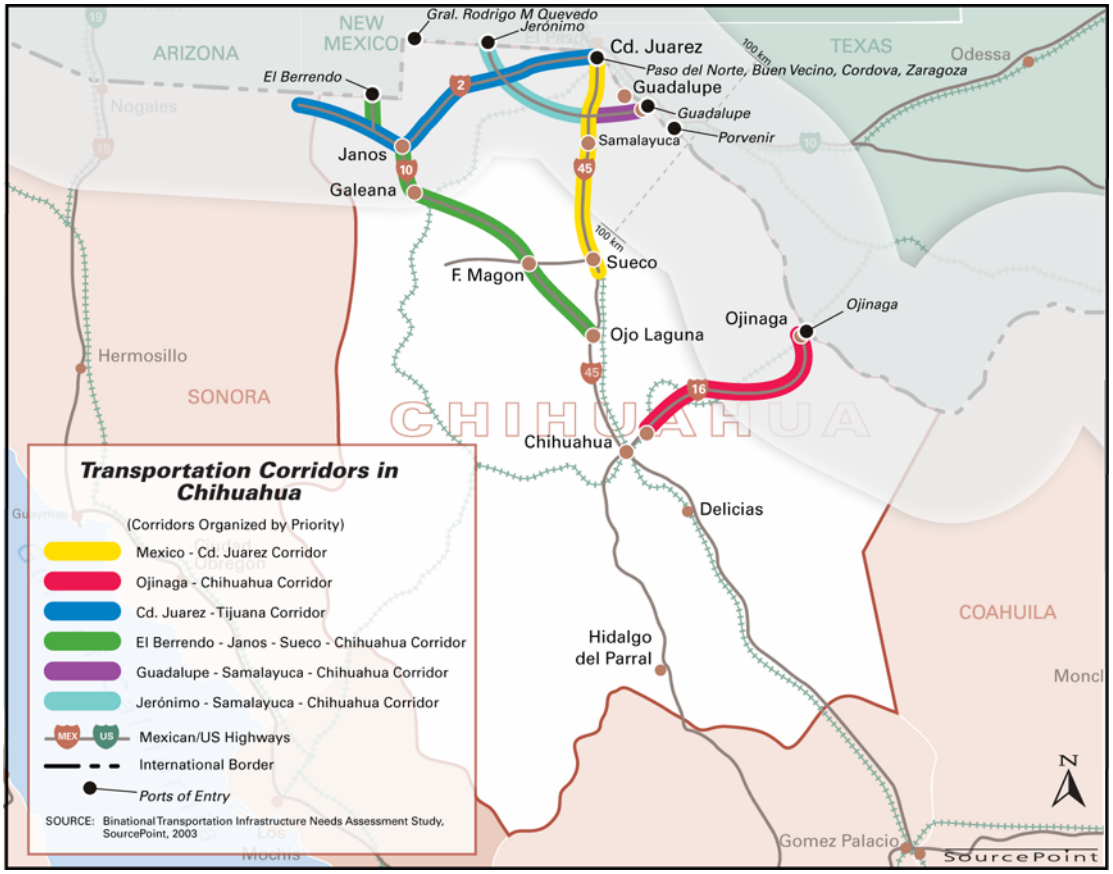
Therefore, California has identified a need of $10.3 billion dollars to fully fund identified highway projects and $112 million dollars to implement rail projects in the state's border transportation system.



Chihuahua

The BINS Technical Committee representative identified six corridors in Chihuahua, which are México-Ciudad Juárez, Ojinaga-Chihuahua, Ciudad Juárez-Tijuana, El Berrendo-Janos-Sueco-Chihuahua, Guadalupe-Samalayuca-Chihuahua and Jerónimo-Samalayuca-Chihuahua Corridors. A map of the Chihuahua border region and its corridors, which are organized by priority, is presented below.

The BINS Technical Committee representative identified four transportation projects in Chihuahua's corridors through 2020 and all of them are highway projects. They include the new Zaragoza-Dr. Porfirio Parra highway, upgrades to the La Mula-Ojinaga highway, and other road rehabilitations. The four highway projects, which are not fully funded, total approximately $503 million pesos (constant 2003 pesos). Therefore, this amount represents the funding needs identified for Chihuahua's border transportation infrastructure.



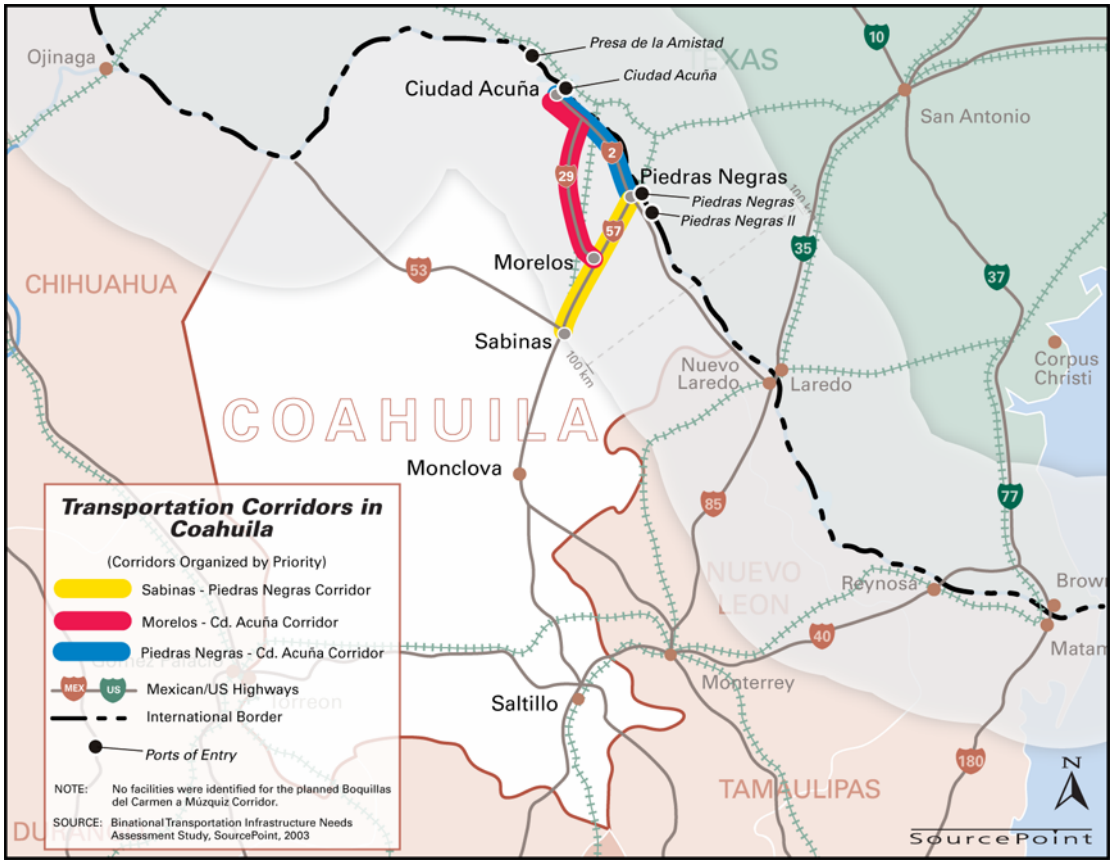
Coahuila

The BINS Technical Committee representative identified four corridors in Coahuila, which are the Piedras Negras-Ciudad (Cd) Acuña Corridor, the Morelos-Cd. Acuña Corridor, the Sabinas-Piedras Negras Corridor and the Boquillas del Carmen a Múzquiz Corridor. A map of the Coahuila border region and its corridors, which are organized by priority, is presented below. Because no facilities were identified for the planned Boquillas del Carmen a Múzquiz Corridor, it is not shown on the map.

The BINS Technical Committee representative identified ten transportation projects in Coahuila's corridors through 2020. Nine of them are highway projects and one of them is an airport project. They include construction of the El Melón-La Linda highway, improvements to the Zaragoza-Ciudad Acuña highway, and runway improvements at the International Airport in Acuña. Of the ten projects, two are considered fully funded, and eight are considered not fully funded.

Of the nine highway projects, which total approximately $1,363 million pesos (constant 2003 pesos), two projects are considered fully funded at an estimated cost of $307 million pesos. Seven highway projects are considered not fully funded and are anticipated to cost approximately $1,056 million pesos. The airport project, which is not fully funded, has an estimated cost of $62 million pesos (constant 2003 pesos).

Therefore, Coahuila has identified a need of $1,056 million pesos to fully fund identified highway projects and $62 million pesos to implement an airport project in the state's border transportation system.



New Mexico

The BINS Technical Committee representative identified three corridors in New Mexico, which are the I-10, the North-South, and the Midwest Corridors. A map of the New Mexico border region and its corridors, which are organized by priority, is presented below.

The BINS Technical Committee representative identified ten transportation projects in New Mexico's corridors through 2020. They include highway widenings, the extension of Sunland Park Drive, construction of a new intermodal center, railroad crossing at Santa Teresa, and extension of the Doña Ana County airport runway. Five of those projects are highway projects, three are airport projects and two are rail related. Of the ten projects, three are considered fully funded and seven are considered not fully funded.

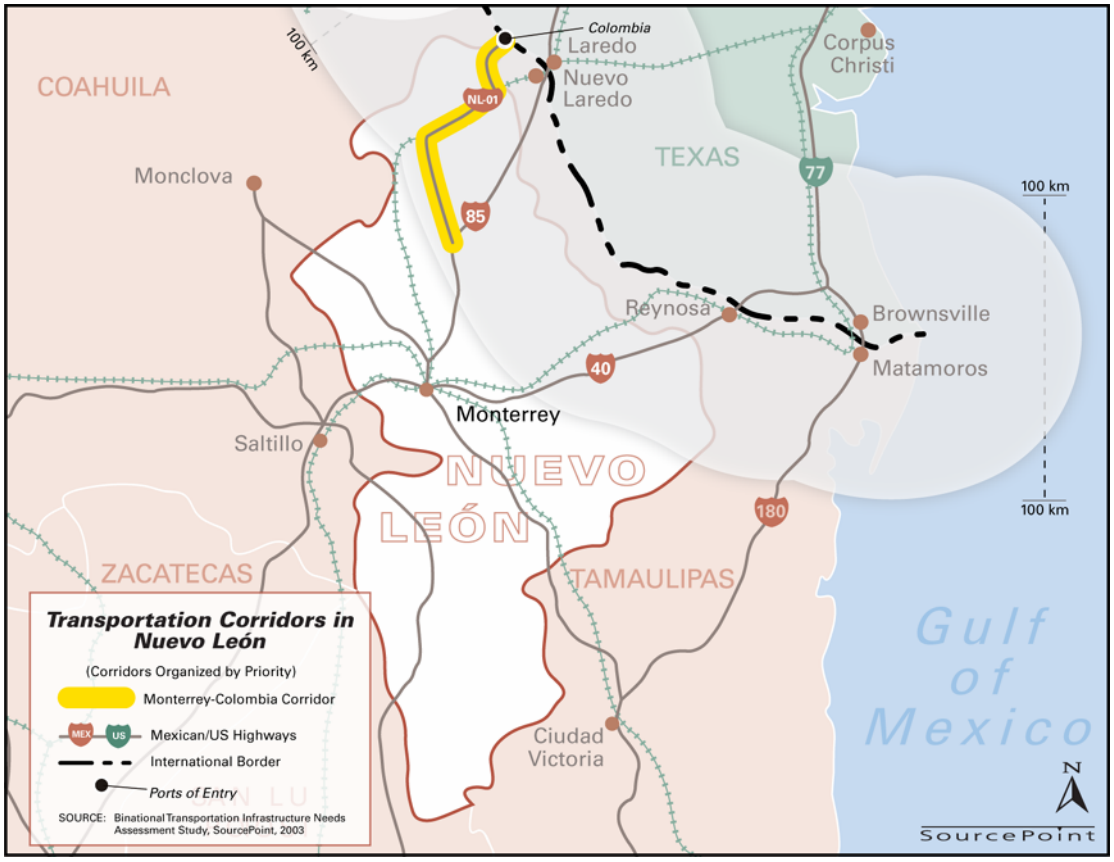
Of the five highway projects, three are considered fully funded and have an estimated cost of $57 million dollars (constant 2003 dollars). The remaining two highway projects are considered not fully funded. No cost estimates were provided for one of these projects. The other project, the Sunland Park Drive Extension, is projected to cost $13 million dollars. Funds for Phase 1 have been programmed for a total of $5 million dollars. The remaining funds for Phase 2 of the Sunland Park Drive Extension have not been identified. Therefore, the unmet funding need identified for New Mexico's border highway infrastructure is $8 million dollars.

Since no cost estimates were provided for any of the airport or rail related projects, the unmet funding need for those infrastructure projects could not be quantified.

Nuevo León

The BINS Technical Committee representative identified one corridor in Nuevo León, the Monterrey-Colombia Corridor. A map of the Nuevo León border region and its corridor within the 100 km limit is presented below.

The BINS Technical Committee representative identified one transportation project in Nuevo León's corridor through 2020. This project involves highway improvements to NL-01 between Ciudad Lampazos and the Colombia POE. It is not fully funded and is estimated to cost approximately $656 million pesos. Therefore, this amount represents the funding needs identified for Nuevo León's border transportation infrastructure.

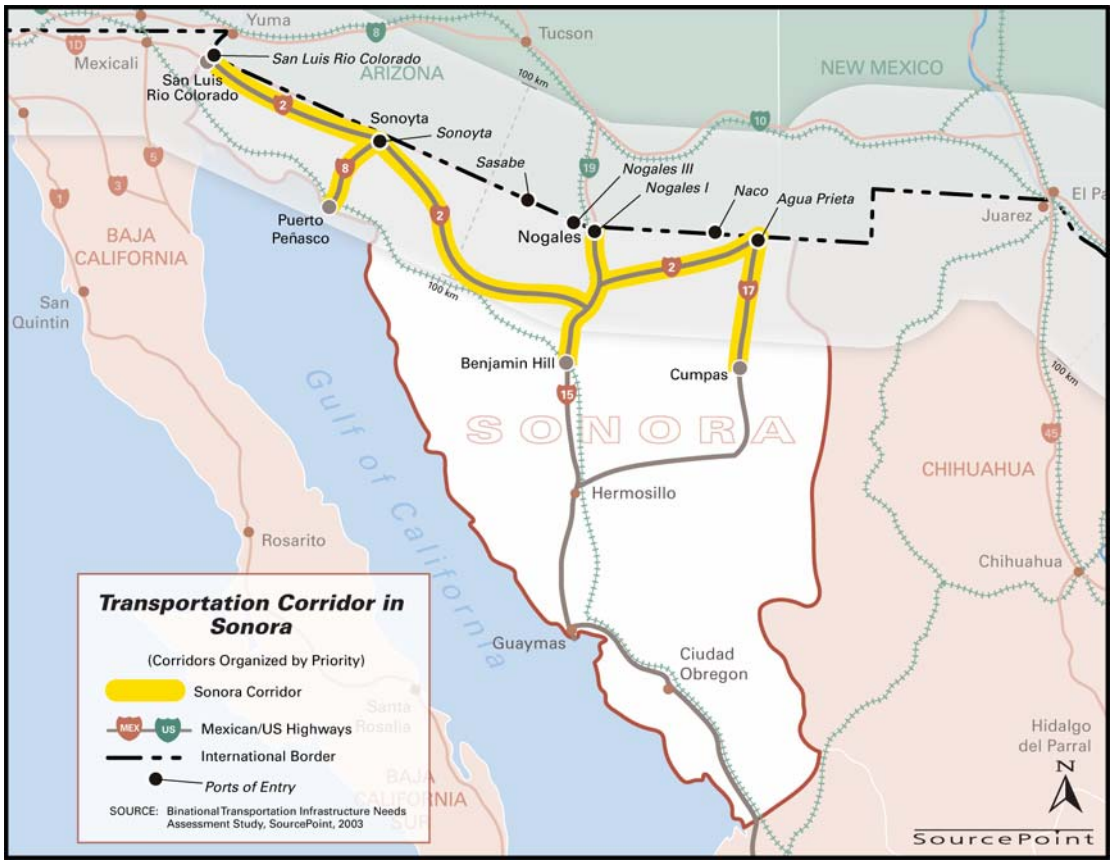


Sonora

The BINS Technical Committee representative did not identify any transportation corridors in Sonora. The SCT identified one corridor in this state and titled it the Sonora Corridor. A map of the Sonora border region and its corridor within the 100 km limit is presented below.

The BINS Technical Committee representative identified four transportation projects through 2020 in the Sonora Corridor. They include improvements to the MX-2 highway, such as modernization of the San Luis Río Colorado southern access, upgrades at Paso por Agua Prieta, and improvements at Imuris-Cananea and Pitiquito-Caborca. All of them are highway projects and are considered fully funded. The total estimated cost is approximately $106.3 million pesos (constant 2003 pesos).

Even though these four highway projects are categorized as fully funded, the BINS Technical Committee representative indicated that the source of the funding is the federal government, and an unknown portion of the total funding still needs to be provided to the state.



Tamaulipas

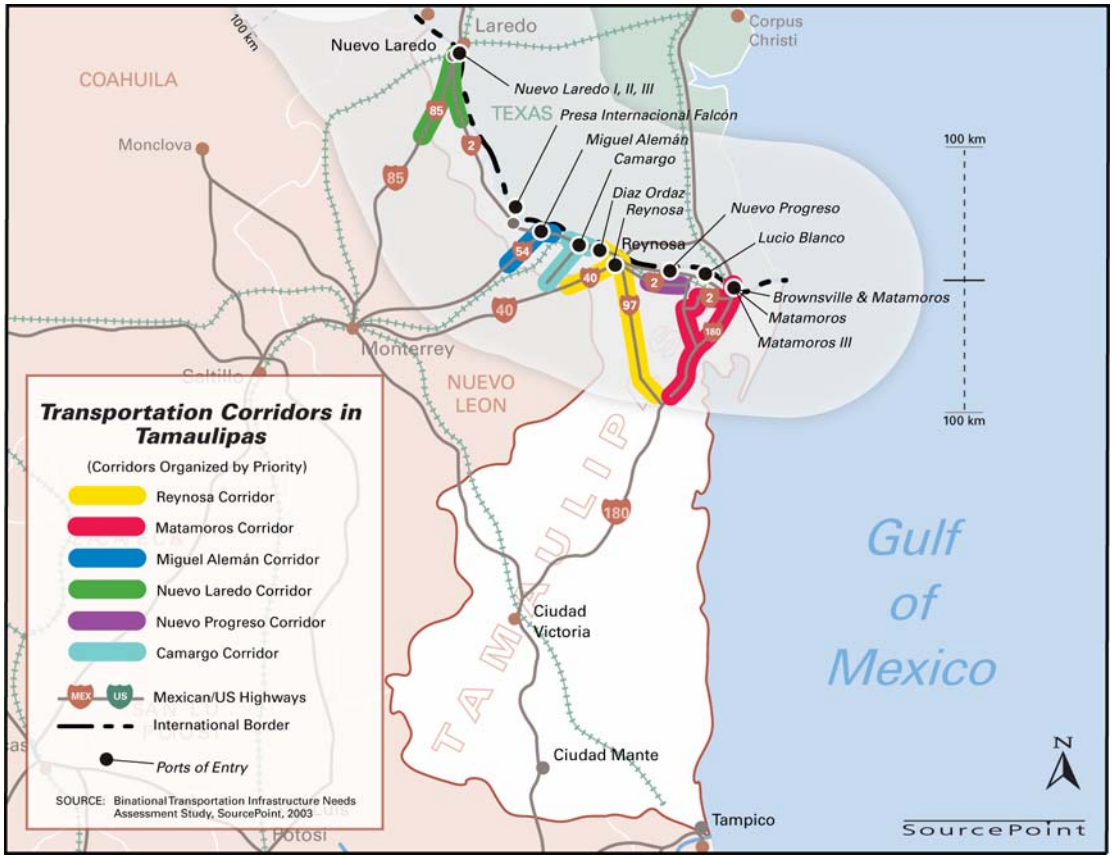
The BINS Technical Committee representative identified six corridors in Tamaulipas. They are the Reynosa Corridor, Matamoros Corridor, Miguel Alemán Corridor, Nuevo Laredo Corridor, Nuevo Progreso Corridor, and Camargo Corridor. A map of the Tamaulipas border region and its corridors, which are organized by priority, is presented below.

The BINS Technical Committee representative identified 17 transportation projects in Tamaulipas' corridors through 2020, of which 16 are highway projects and one is a rail project. They include improvements to the Nuevo Laredo-Reynosa highway and the Tejón-Reynosa roadway, and improvements to the railroad bridge at Matamoros. Of the 17 projects, 5 are fully funded, and 12 are not fully funded.

The 16 highway projects are estimated to cost $3,829 million pesos (constant 2003 pesos). Five of those projects are considered fully funded and are anticipated to cost approximately $866 million pesos. The remaining 11 highway projects are considered not fully funded at an estimated cost of approximately $2,963 million pesos.

The one rail project, which is considered not fully funded, is estimated to cost $90 million pesos (constant 2003 pesos).

Therefore, Tamaulipas has identified a need of $2,963 million pesos to fully fund identified highway projects and $90 million pesos to implement a rail project in the state's border transportation system.



Texas

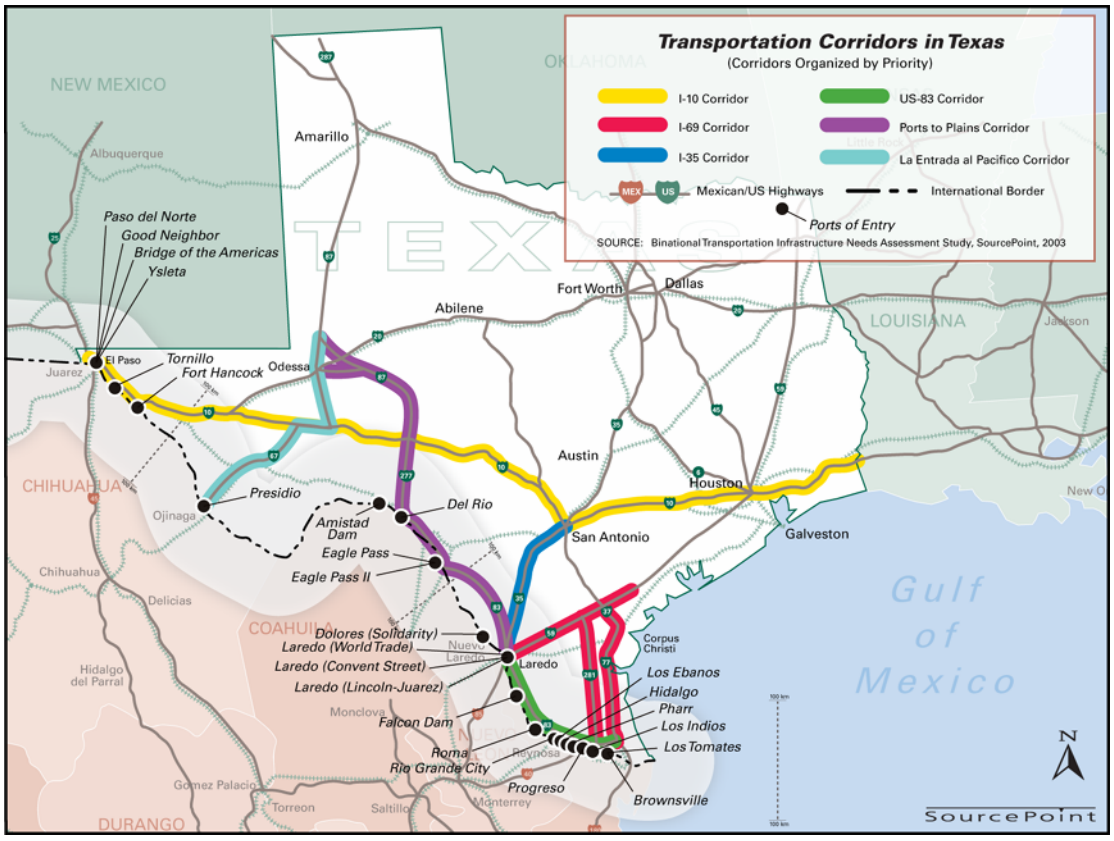
The BINS Technical Committee representative identified six corridors in Texas: the Interstate Highway (IH) 10 Corridor, the IH-35 Corridor, the IH-69 Corridor, the U.S. 83 Corridor, the La Entrada al Pacifico Corridor and the Ports to Plains Corridor. A map of the Texas border region and its corridors, which are organized by priority, is shown below.

The BINS Technical Committee representative identified 117 transportation projects in Texas' corridors through 2005. They include improvements to I-H 10, I-H 35, U.S. 77, modernization of the Del Rio International Airport, and the rehabilitation of the Presidio POE rail crossing. Of the total number of projects, 107 are highway projects, nine are airport projects, and one is a railroad project. With regard to the funding level of these projects, 109 of the 117 projects are considered fully funded, and eight projects are not fully funded.

The total cost of the 107 highway projects is estimated at $1.4 billion dollars (constant 2003 dollars). Of those projects, 99 are considered fully funded and they are anticipated to cost approximately $1.2 billion dollars. Eight projects are considered not fully funded at an estimated cost of approximately $185.6 million dollars.

The nine airport projects are fully funded, with a total cost of approximately $11 million dollars (constant 2003 dollars). The one railroad project, which also is fully funded, has an estimated cost of $1.4 million dollars (constant 2003 dollars).

The projects identified by Texas in the border region reflect only short-term projects through 2005 and do not represent unfunded projects through 2020. Therefore, a funding need of $185.6 million dollars is anticipated through 2005. A quantification of long-term funding needs in Texas over the next two decades could not be conducted.



BORDER TRANSPORTATION INFRASTRUCTURE NEEDS ASSESSMENT

Background

The process of globalization can be seen in the integration of the economic, political, and social character of North America. Driving and guiding the forces of globalization are improvements in transportation and communication technology (i.e. the "death of distance") as well as deliberate policy choices, such as NAFTA.

NAFTA has succeeded in increasing trade among the U.S., Mexico, and Canada. As a result, since the introduction of this agreement, U.S. trade with its two partners has doubled. Annual trade along the U.S.-Mexico border reached $232 billion dollars during 2002.

Along with this increase in trade, problems have arisen because neither the existing transportation corridors nor the ports of entry (POEs) were designed to handle the amount of traffic that they are now attempting to serve. In the U.S., the predominant east-west traffic flows have been shifting to north-south flows. Many of the POEs were built between 1950 and 1970, long before free trade was considered. The result is often long lines, congestion, and unpredictable delays that are estimated to cost private companies and the local, state, and national economies of all three countries millions of dollars every year. In some cases, the linkages between POEs and transportation facilities were not considered. For example, when the Otay Mesa POE in California-Baja California opened it connected to the state's highway system by a four-lane city street that operates at three times its designated capacity.

The success of NAFTA has resulted in increased traffic on North American highways, railroads, as well as at POEs, seaports, and airports. Not surprisingly, the result has been delays and congestion, especially in trans-border corridors.[7] A more efficient transportation system is needed to achieve expected economic benefits from NAFTA.[8]

U.S.-Mexico: Key Economic Partnership

The growth in trade between Mexico and the U.S. has been substantial between 1995 and 2000. Truck imports into the U.S. increased from about $42 billion dollars in 1995 to about $87 billion dollars in 2000 while truck exports to Mexico increased from about $35 billion dollars in 1995 to about $82 billion dollars in 2000.[9] The growth in rail trade has also been significant as rail imports into the U.S. grew from about $8.4 billion dollars in 1995 to about $21 billion dollars in 2000. Rail

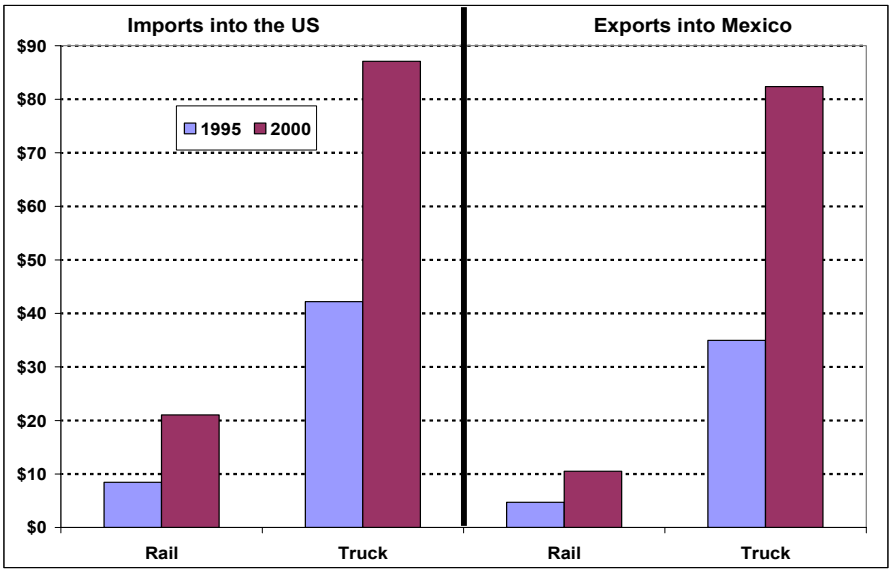
[7] Barton-Aschman Associates, Inc., & La Empresa, S. de R.L. (1998). Binational Border Transportation Planning and Programming Study. Washington, D.C.: U.S. Department of Transportation, Federal Highway Administration.

[8] There are likely other unintended, unforeseen impacts on other policy areas such as security, safety, environmental, and immigration. Although not addressed in this study on transportation infrastructure, these areas could be addressed in future studies.

[9] U.S. BTS web site at http://www.bts.gov/ntda/tbscd/reports.html.

exports to Mexico grew from about $4.7 billion dollars in 1995 to about $10.5 billion dollars in 2000 (see Figure 1). [10]

Figure 1
Surface Trade across the U.S.-Mexico Border
In Billions of Current Dollars



Source: U.S Bureau of Transportation Statistics.

Trucks continue to dominate goods movement across the U.S.-Mexico border. In 2002, total U.S.-Mexico trade by truck reached $161 billion dollars while U.S.-Mexico trade by rail accounted for nearly $31 billion dollars.[12]

U.S.-Mexico Trade: Expected to Continue to Grow

Projections of the dollar value of imports from Mexico into the U.S. between 2000 and 2020[13] indicate that future imports will increase, but at a much slower pace than what occurred between 1995 and 2000. Dollar values of goods imported into the U.S. by trucks are projected to grow about 5.9 percent per year (compound annual growth) while dollar value of goods imported by rail will increase at about 5.7 percent per year. Overall, imports are projected to increase by 5.9 percent per year. The important point to note is that growth rates are positive, but lower than the growth rates from 1995 to 2000.

According to a 1997 study produced by the California Governor's Office of Planning and Research (OPR), trade projections reflect a slowing of growth as we approach 2020, the end of the forecast

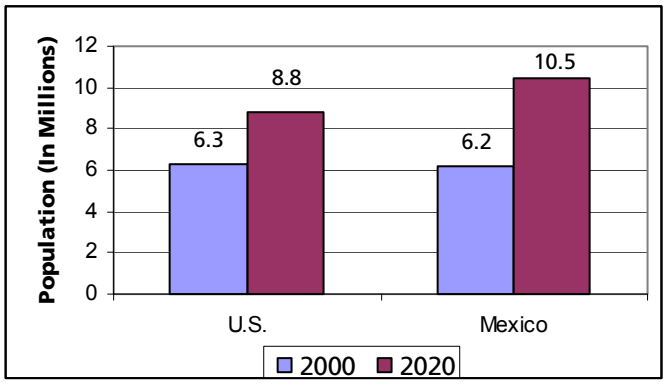
[10] Ibid.
[11] U.S. BTS web site at http://www.bts.gov/ntda/tbscd/reports.html.
[12] The BINS Technical Representative for New Mexico provided dollar projections for New Mexico trade for 2020. Projections for Arizona, California and Texas were derived by applying a growth rate to the 2000 data. The growth rate for each state was obtained from the Office of Freight Management, U.S. Department of Transportation, Federal Highway Administration.

period.[14] The stimulative effects of trade liberalization and the 1994 Mexican peso devaluation (on the import side) are assumed to diminish through the year 2010, at which time additional gains in bilateral trade may largely depend on normal economic growth. OPR's projection of normal annual growth rates are 5.1 percent for exports and 4.6 percent for imports.

Factors Affecting Future Cross-Border Travel Demand

Growth in bilateral trade and population will result in additional travel demand in both the U.S. and Mexican transportation corridors. In 2000, about 12.5 million people lived in the U.S. counties and Mexican municipios along the U.S.-Mexico border.[9] Approximately 6.3 million people (51%) resided in the 25 U.S. border counties and about 6.1 million people (49%) lived in the 35 Mexican border municipios. Population in counties and municipios along the U.S.-Mexico border is projected to increase more than 50 percent between 2000 and 2020, from 12.5 million to 19.3 million residents. About 10.5 million people (54%) would reside in Mexico while 8.8 million (46%) would live in the U.S. Figure 2 illustrates population growth projections.

Figure 2
Projected Growth in Population in Border Counties and Municipios
(2000-2020)



Sources: BINS Technical Committee and Mexican National Population Council (CONAPO).

The projected growth in cross-border truck traffic will continue to outpace population growth and indicates that truck traffic will continue to impose a burden on the local communities that surround the U.S.-Mexico border region. Between 2000 and 2020 the number of cross-border trucks is expected to increase from eight million to 14.4 million trucks annually (3.3% per year).[15]

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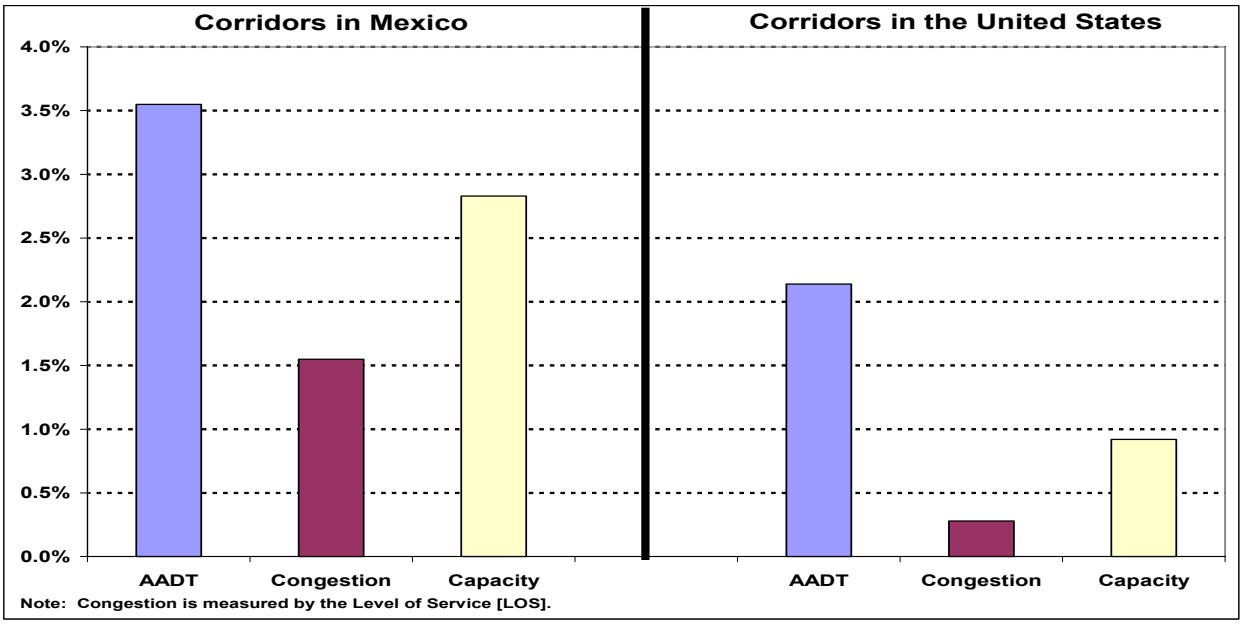
[13] Governor's Office of Planning and Research, The North American Free Trade Agreement: Implications for California, 1993.

[14] All U.S. population data was obtained from the BINS Technical representatives, U.S. State Transportation Departments. For Mexican states, the BINS representatives provided population data for Baja California while population estimates for the remaining states were obtained from the Mexican National Population Counsel (CONAPO). A municipio is equivalent to a county.

[15] The BINS Technical Representative for New Mexico provided 2020 projections for New Mexico truck crossings. Projections for Arizona, California and Texas were computed by multiplying the 2000 data by a growth rate for each state obtained from the Office of Freight Management, U.S. DOT, FHWA. In Mexico, the Baja California BINS Technical Representative provided a 2020 projection of truck crossings. All other

Three indicators were selected to analyze the current and projected performance of the transportation system along the border region: average annual daily traffic (AADT), congestion (measured by the Level of Service or LOS) and highway capacity at peak hours. Projections through 2020 for these three indicators show that AADT will increase, congestion will worsen, and planned improvements in highway capacity will not keep up with projected increases in traffic volumes, based on the data provided by the BINS Technical representatives (see Figure 3). Increased congestion and resulting delays also would cause negative impacts to the environment and the quality of life of border residents.

Figure 3
AADT, Congestion & Highway Capacity, 2000 to 2020
Compound Annual Growth Rates



Source: BINS Technical Committee

In Mexico, between 2000 and 2020, AADT[16] is projected to increase 3.6 percent per year (compound annual rate), while the LOS[17] is projected to worsen from LOS B to LOS C, and highway capacity[18] is expected to increase about 2.8 percent annually.

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projections used a 3.0% compound annual growth rate recommended by the Mexican Secretariat of Communications and Transportation.

[16] The BINS Technical representative for Chihuahua, Coahuila, Nuevo León and Tamaulipas provided 2020 projections of AADT. For Baja California and Sonora, projections were derived by applying a 3.0 percent compound annual growth rate to the 2000 data, as recommended by SCT.

[17] Projections for LOS for 2020 were not provided by Sonora and Coahuila. For Baja California, projections were developed by applying a 3.0 percent compound annual growth rate to the 2000 data, as recommended by SCT.

[18] Highway capacity projections for 2020 were not provided by Sonora, Coahuila and Nuevo Leon. For Baja California, projections were created by applying a 3.0 percent compound annual growth rate to the 2000 data, as recommended by SCT.

Overall, traffic flow would deteriorate in Mexico on the corridors within 100 km of the U.S.-Mexico border. These conclusions are intended to be indicative of all Mexican corridors, but there are no LOS or highway capacity data for five corridors in two of the Mexican states.

The situation is similar in the U.S.: in the 20-year period, AADT is projected to increase, congestion would get worse, and highway capacity at peak hours would increase less than the growth in traffic. AADT[19] is projected to increase 2.1 percent per year (compound annual growth). For four of the five corridors for which data were provided, the LOS[20] is projected to decline while highway capacity at peak hours[21] is projected to expand only 0.9 percent per year.

Overall, travel conditions would deteriorate in the U.S. on the corridors within 100 km of the U.S.-Mexico border. As with Mexico, this analysis is intended to be indicative of the performance of all corridors, but as there are no LOS or capacity data for seven of the 12 corridors in two states – Texas and Arizona – it may not be representative of the performance of all the U.S. corridors. Texas accounts for about 21 percent of the U.S. border region AADT in 2000 and about 24 percent in 2020.

In conclusion, to accommodate the projected growth in trade and population over the next two decades, and its resulting increase in commercial and passenger travel, the transportation system along the border region must be improved.

[19] The BINS Technical representatives for the four states provided 2020 projections of AADT.

[20] LOS data were provided only for California and New Mexico corridors, which represent five of 12 U.S. corridors identified by the BINS Technical Committee.

[21] The highway capacity data were provided only for two states (California and New Mexico BINS Technical representatives).

U.S.-MEXICO: STRATEGIC TRANSPORTATION CORRIDORS

Background

Solving the transportation difficulties occurring along the U.S.-Mexico border involves a binational planning process (multinational if Canada is included) to create an integrated transportation system. In fact, both countries have shown a commitment to approaching transportation planning and border crossings as a system.

The Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) contained provisions that specifically identified the need to create an efficient north-south transportation system. As a result of ISTEA, 21 "trilateral corridors" were identified as being of high priority and a number of studies have identified infrastructure and operational deficiencies near the U.S. borders with Mexico and Canada.

Since ISTEA, other corridors have been added to the priority list. Eight corridors were added in the 1995 National Highway Systems Designation Act, and another 14 were added by the passage of the Transportation Equity Act for the 21st Century (TEA-21) in 1998.

TEA-21 contains two programs specifically targeted toward corridor and border transportation improvements: the NCPD and the CBI Program. The purpose of NCPD is to provide allocations to states and metropolitan planning organizations for coordinated planning, design, and construction of corridors of national significance, economic growth, and international and interregional trade. The purpose of CBI is to improve the safe movement of people and goods at or across the U.S. borders with Mexico and Canada. Allocations for these programs are described in the section titled Financing Options for Border Transportation Infrastructure.

Identification of Major Transportation Corridors in the Border Region

The first objective of the BINS project was to develop a set of minimum criteria to be used by the JWC to identify major multi-modal transportation corridors. In the BINS project, a corridor is defined as a combination of modes that move people, vehicles and goods from one location to another. A transportation corridor, then, is not just one road or rail line, but a combination of modes.

Two minimum criteria were established for a transportation facility to be part of a corridor, as follows:

1. All facilities must lie within 100 km of the U.S.-Mexico border.

2. Highways and railroads must serve an international POE, and airports and maritime ports must be designated as an international POE.

The corridor definition and the minimum criteria for transportation facilities were used throughout the BINS project and both were approved by the JWC.

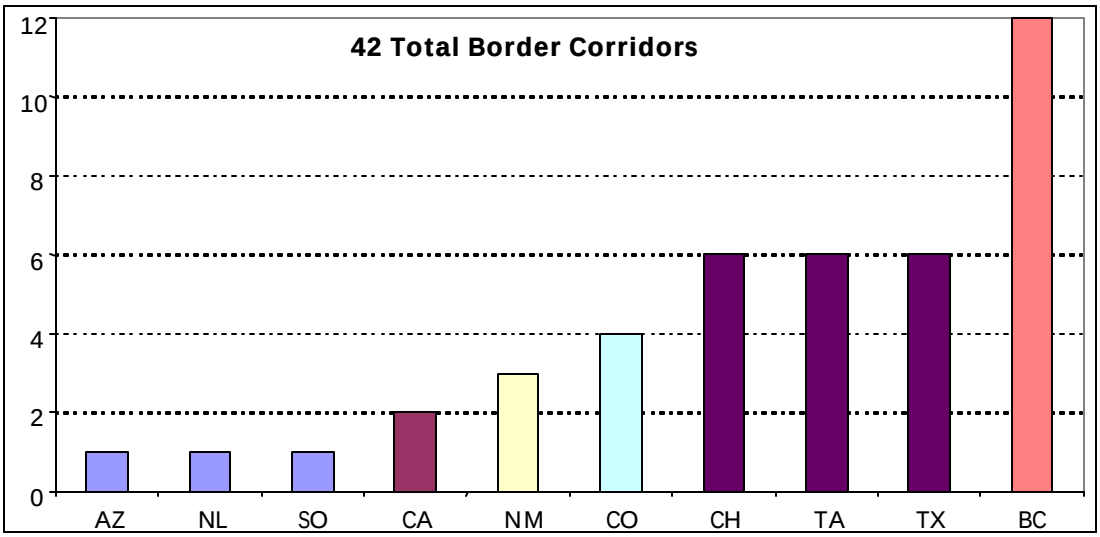
Based on the criteria described above, the BINS Technical Committee members were asked to identify transportation corridors, including highways, railroads, airports, and maritime ports that serve the corridors. Within the ten border states, 42 transportation corridors were identified.

In addition to the many highways that serve international POEs, there are also seven railroads that operate within 100 km of the U.S.-Mexico border and cross the border. Also, there are 22 airports and four maritime ports that are designated as international POEs within 100 km of the U.S.-Mexico border.

The BINS project aimed to be inclusive and allow each state to designate its own corridors as long as they met the minimum criteria established. There was a wide range of corridors identified in each state – from one transportation corridor in Arizona, Nuevo Leon, and Sonora to 12 corridors in Baja California, as shown in Figure 4.

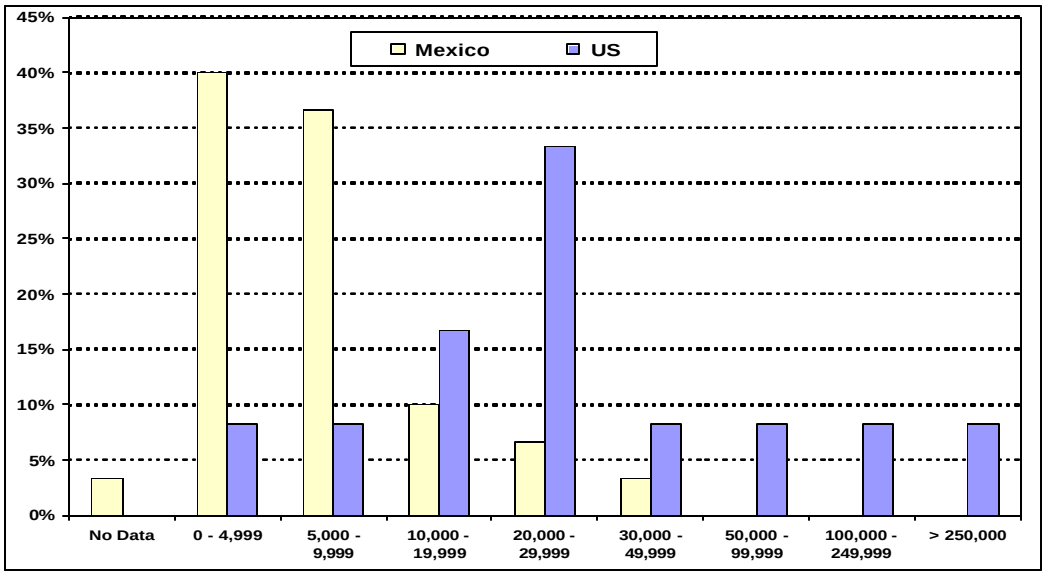
The corridors identified in Mexico are very different from the corridors identified in the U.S. In general, the Mexican corridors tend to be more numerous and smaller in size (AADT and highway mileage) than their U.S. counterparts. Figure 5 illustrates the distribution of corridors by AADT in 2000 by country. Looking forward, the corridors in Mexico are projected to grow at a faster rate than the U.S. corridors, but the U.S. corridors will have the largest traffic volume increases.

Figure 4
Number of Transportation Corridors in Each of U.S.-Mexico Border States



Source: BINS Technical Committee.
Note: AZ = Arizona, BC = Baja California, CA = California, CH = Chihuahua, CO = Coahuila, NM = New Mexico, NL = Nuevo Leon, SO = Sonora, TA = Tamaulipas and TX = Texas.

Figure 5
Distribution of Corridor AADT, By Country, Year 2000



Source: BINS Technical Committee.

Maps of Transportation Corridors in the U.S.-Mexico Border Region, International Bridges and Border Crossings, Seaports and Airports Facilities Serving Transportation Corridors in the Border Region, and Railroads Facilities Serving Transportation Corridors in the Border Region are included at the end of this Executive Summary.

Corridor Evaluation Process

The second objective of the BINS project was to develop an evaluation process, accepted by the JWC, to analyze the identified major transportation corridors. Details can be found in Appendix 8 (under separate cover), which includes the corridor evaluations and highway data.

Once the BINS Technical Committee representatives selected the transportation facilities within the respective corridors using the minimum criteria, the following data were collected for calendar year 2000 and projections for 2020 for each criterion. Calendar year 2000 was selected as the base or historical year because data were available for all states. Projections to calendar year 2020 were chosen to illustrate how the corridors could change over time. The approved quantifiable data elements used in the corridor evaluation are listed below, organized by mode.

- Highways – AADT, highway length, LOS, and highway capacity and volume at peak hours.
- Land Ports of Entry – Number of passenger vehicles and buses, number of trucks, volume and value of goods transported by truck.
- Airports – Volume and value of goods exported and imported at the airport, share of Mexican/U.S. tonnage and value of goods, runway length for each runway at the airport.

- Maritime Ports – Volume and value of goods exported and imported at the maritime port, number of twenty-foot equivalent containers (TEUs) exported and imported, Mexican/U.S. portion of tons/TEUs/value handled at the port, channel depth of the main channel.
- Railroads – Number of rail cars and TEUs, volume and value of goods that cross the U.S.- Mexico border.

To obtain the data for these criteria, five questionnaires were developed in collaboration with the Technical Committee representatives. These questionnaires were in the form of spreadsheets that could be completed electronically. The Technical Committee members were asked to complete the spreadsheets (a set of questionnaires is included in Appendix 7, under separate cover).

Corridor Evaluation Tool

The third objective of the BINS project was to create a border-wide database and evaluation tool to prioritize each state's transportation corridors based on the methodology and process previously described.

The evaluation tool is a spreadsheet that was designed to include formulas and quantifiable data to conduct the corridor evaluations. The same methodology is applied to each state's evaluation process. Spreadsheets for each border state are different based on:

1. The infrastructure in each border state.
2. The number of corridors specified in each border state.

The methodology used for the BINS project required an ordinal ranking system that could be used as a common denominator, allowing indicators measured in different units to be combined together (dollars, miles, number of rail cars, etc.). Further, quantifiable data were used in the evaluation to allow for easy comparisons and to provide a systematic method to evaluate the transportation corridors. The evaluation methodology was approved by the JWC.

The evaluation was conducted by compiling data, allocating the data to corridors and comparing corridors (within a state) to one another. The evaluations are conducted by ordering the data from highest to lowest to determine need. For example, assuming there are three corridors in a state with the following AADT: 157,000 vehicles (Corridor A), 450,000 vehicles (Corridor B), and 30,000 vehicles (Corridor C). Corridor B is listed first because it has the highest AADT (its evaluation result is 1). Corridor A is second (evaluation result is 2), and Corridor C is third (evaluation result is 3). This process was repeated for each criterion for calendar year 2000, and for the projected absolute and percentage change between 2000 and 2020.

Higher values for the indicators represent more traffic (AADT), more congestion (LOS), more trade (dollar value of air, maritime, rail and truck cargo across POEs), more vehicles (number of passenger vehicles, trucks, buses and rail cars across a POE), which point to both the relative importance of the corridor and its infrastructure needs. The highest value is given "first place" or a score of 1, and it represents the highest need.

The evaluation results were summed by mode. For example, there are four indicators for highways – AADT, the highway length, LOS and the highway capacity at peak hours. If a corridor were listed first for each indicator, its highway score would be a four (a score of one for each indicator). This was done for POEs (five indicators), airports (one indicator), maritime ports (two indicators) and railroads (four indicators).

The overall score for each corridor was then calculated by summing the five modal scores. The corridor with the lowest overall score is listed first and has the highest overall need. The Summary of Findings by State illustrates each state's transportation corridors by priority (pages 8 through 17)

Weaknesses and Strengths of the Corridor Evaluation Methodology

Both the U.S. and Mexico have established requirements and guidelines for transportation planning at the federal and state levels. However, despite these guidelines, the availability of transportation data varied significantly among the states. Long-term traffic projections were by far the most difficult to obtain while current highway AADT was not provided in some cases. LOS data were not consistently provided by the states either. Trade projections also were lacking. Selected data from other sources were obtained.

Despite the lack of a complete dataset for some corridors, all corridors were evaluated. Additional corridor characteristics were considered for those corridors where data for more indicators were provided. Missing or incomplete data, as well as new data that may become available, could be incorporated in future phases of the BINS project.

The BINS project has resulted in the development of a systematic and multimodal approach for evaluating transportation infrastructure needs in the U.S.-Mexico border states. This framework also will be useful for future transportation infrastructure assessments and can be updated to reflect the JWC's evolving areas of emphasis. Findings from these assessments will help decision-makers in the implementation of planning and programming strategies to optimize the efficiency of key multimodal transportation corridors.

U.S.-MEXICO: PLANNED TRANSPORTATION PROJECTS ON BORDER CORRIDORS

The fourth objective of the BINS project was to compile a list of significant transportation projects on the corridors based on the projects identified by each state, including the project's description, estimated cost, and anticipated completion date, and to summarize each state's funding needs, as well as those for the U.S.-Mexico border, to implement these transportation projects.

The purpose of compiling transportation project-level information is both to get a sense of the infrastructure improvements planned for the border region and of the unfunded needs identified by the states. Each of the ten states in the BINS project was asked to submit a list of significant projects, on the major transportation corridors, that are planned for the next 20 years.

The project information requested from each state included the following items: the name of the project, county in which the project resides, the project mode (highway, airport, maritime, railroad), a brief description of the project, the year the project is schedule to begin and to be completed, and the cost of the project. Data for the binational geographical information system (GIS) were also requested, such as project's GIS coordinates, date and source of the data, data resolution, coordinate/projection system, description of attributes, documentation of valid values for each attribute, and data limitations.

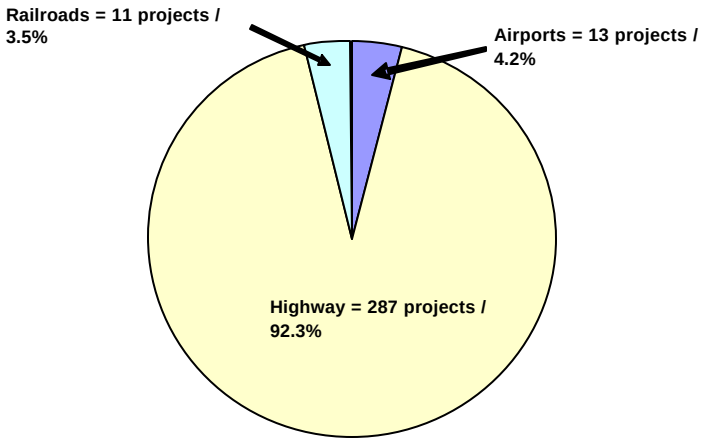
For highway projects, additional information was requested, including highway project location, LOS for the segment before and after project implementation, and current and projected traffic capacity and AADT of the segment before and after project implementation.

To summarize the amount of funding needed by each state to implement the identified transportation projects, the projects were classified into projects that are fully funded and projects that are not fully funded.

Overview of Transportation Projects in the Border Region

A total of 311 transportation related projects were submitted by the BINS Technical representatives from the ten border states. More than 90 percent of the projects are highway and roadway related projects. Figure 6 shows the distribution of projects by mode for the U.S. and Mexico. The summary of each state's project information is shown in the Summary of Findings.

Figure 6
U.S. and Mexico: Transportation Projects by Mode



Source: BINS Technical Committee.

Problems encountered included obtaining cost estimates for projects as well as obtaining long-term projects themselves. Of the 311 projects, cost estimates were not obtained for 14 projects. Of the 287 highway projects, no cost estimates were provided for nine projects.

The total cost of the projects submitted is estimated at approximately $16.3 billion dollars (in constant 2003 dollars).[22] This amount is subject to a significant increase with the inclusion of missing cost estimates of projects submitted and of long-term projects from Texas.

Regarding their level of funding, 176 projects (57%) are anticipated to be fully funded through 2020 while the remaining 135 projects (43%) are not fully funded.

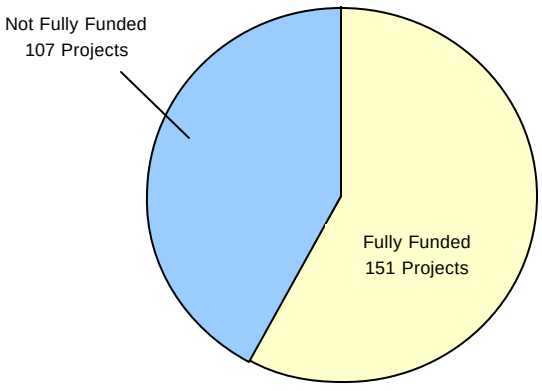
Highway projects represent about 83 percent of the total cost of the projects. Railroad projects account for almost 17 percent of the total cost; however, no cost data were provided for two of the 11 railroad projects. Airports only represent 0.2 percent of the total project cost; however, no cost data were provided for one third of the airport projects.

United States

The BINS Technical Committee representatives for the four U.S. border states identified 258 transportation projects, at an estimated cost of $15.3 billion dollars. A significant share of these projects (41%) is considered not fully funded and represents a need of $10.6 billion dollars. This amount is subject to a significant increase with the inclusion of missing cost estimates of not fully funded projects submitted and of long-term projects from Texas. Nearly all of the identified funding need is related to highway projects or $10.5 billion dollars.

Of the 258 projects, 236 (91%) are highway projects, 12 (5%) are airport projects, and ten (4%) are railroad projects. Regarding their funding level, 151 of the 258 projects are considered fully funded, and 107 projects are not fully funded (see Figure 7). Of the 258 projects, 14 have no cost estimates.

Figure 7
U.S.: Projects by Funding Availability



Source: BINS Technical Committee.

[22] To make this calculation, the costs for projects in Mexico, in 2003 Mexican Pesos, are converted to U.S. dollars using an exchange rate of 1 USD = 10.5 Mexican Pesos. For projects in the U.S., project cost estimates for Arizona, California and Texas are all converted to 2003 constant dollars using adjustments provided by each state's Technical representative.

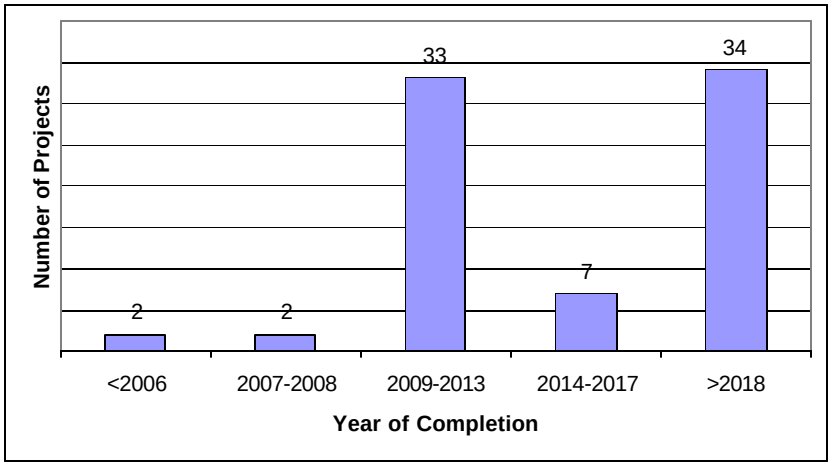
Of the 236 highway projects, 137 (58%) are considered fully funded, and 99 (42%) are not fully funded. Nine highway projects do not have cost estimates. Projects without cost are assumed to be not fully funded.

The anticipated cost of the 137 fully funded highway projects is about $3.9 billion dollars (in constant 2003 dollars). These projects range from a cost of about $448 million dollars (largest) to approximately $36,000 dollars (smallest).

The total cost of the 90 not fully funded projects (with cost data) is about $10.5 billion dollars (in constant 2003 dollars). These projects range from a cost of approximately $900 million dollars (largest) to about $393,000 dollars (smallest).

Of the 236 highway projects, expected completion dates were provided for 78 projects. Figure 8 shows the distribution of projects by implementation date.

Figure 8
U.S. Highway Projects by Year of Completion



Source: BINS Technical Committee.

Of the 12 airport projects, nine are considered fully funded, and three are not fully funded and have no cost estimates. The anticipated cost of the nine fully funded airport projects is about $10.9 million dollars (in constant 2003 dollars).

Of the ten railroad projects, five are considered fully funded, and five are not fully funded. Two projects do not have cost estimates. The anticipated cost of the five fully funded railroad projects is about $812.6 million dollars (in constant 2003 dollars). The total cost of the three not fully funded projects (with cost data) is about $112.5 million dollars (in constant 2003 dollars).

The fully funded projects will help accommodate the projected growth in travel demand in the U.S. corridors over the next two decades. However, there is a significant share of not fully funded highway projects (42%), which represent an identified need of $10.5 billion dollars, and additional resources needed for airport and railroad projects. Also, this amount is subject to a significant increase with the inclusion of missing cost estimates of not fully funded projects submitted and of

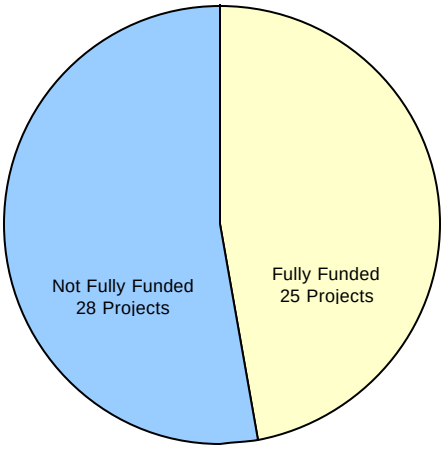
long-term projects from Texas. More funding is needed for the U.S. border states to be able to deliver planned transportation projects to serve future travel and alleviate current or projected congestion on key facilities in the international border region.

Mexico

The BINS Technical Committee representatives for the six Mexican border states identified 53 transportation projects, with an anticipated cost of $10,773 million pesos. However, slightly more than half of the projects (53%) are not fully funded and represent an identified need of $9,030 million pesos. Almost all the funding need identified corresponds to highway projects or $8,878 million pesos.

Of the 53 projects, 51 (96%) are highway projects, one project (2%) is airport related, and one project (2%) is railroad related. Regarding their funding level, 25 of the 53 projects are considered fully funded, and 28 projects are not fully funded (see Figure 9).

Figure 9
Mexico: Projects by Funding Availability



Source: BINS Technical Committee.

Of the 51 highway projects, 25 (49%) are considered fully funded, and 26 (51%) are not fully funded.

The total cost of the 25 fully funded highway projects is estimated at $1,743 million pesos (in constant 2003 pesos). These projects range in cost from about $425 million pesos (largest) to approximately $5 million pesos (smallest).

The total cost of the 26 not fully funded highway projects is about $8,878 million pesos (in constant 2003 pesos). These projects range in cost from approximately $1,500 million pesos (largest) to about $3 million pesos (smallest).

Of the 51 highway projects, scheduled completion dates were provided for 49 of the projects. All projects are anticipated to be implemented before 2010, with 44 of them completed before 2006 and five between 2007 and 2008.

The one airport project is considered not fully funded and has a total cost of about $62 million pesos (in constant 2003 pesos). The one railroad project is considered not fully funded and has a total cost of about $90 million pesos (in constant 2003 pesos).

The fully funded projects will help accommodate the projected growth in travel demand in the Mexican corridors over the next two decades. However, slightly more than half of the highway projects (51%) are not fully funded, which represents a need of $8,878 million pesos, plus additional resources for airport and railroad projects. Only with this funding would Mexico be able to implement planned transportation projects to serve future travel and improve current or projected congestion on major facilities in the international border region.

Data Issues

Not all the transportation project data requested were provided by the states, including complete project description, cost estimates, and project funding availability. Some states submitted planned transportation projects in the short- and medium-term, but not through 2020.

The lack of complete data for planned projects limited the BINS project ability to provide an estimate of long-term funding needs for border transportation infrastructure for some states. Missing data, as well as new information that may become available, could be incorporated in future phases of the BINS project.

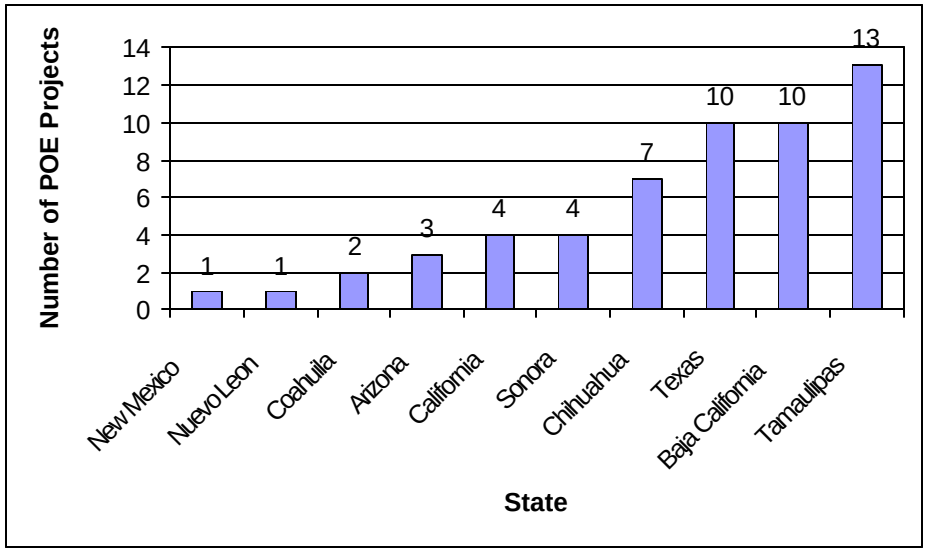
Projects in the Ports of Entry

In addition to the transportation projects identified by the ten border states, there are 55 POE projects along the U.S. - Mexican border that are anticipated to be implemented through 2012. Eighteen of those are in the POE facilities in the U.S., while 37 of them are in the POE facilities in Mexico. Figure 10 shows the number of POE projects by state.

The U.S. General Services Administration (GSA) provided a list of projects, including a brief description. Projects include proposals for expansion of existing facilities, operational improvements to separate truck traffic from passenger vehicles, or construction of new border stations.

SCT provided a list of projects in Mexican POEs. Proposed improvements include modernization and expansion of facilities as well as construction of new border crossings.

Figure 10
U.S.-Mexico POE Projects by State



Source: SCT and GSA

FINANCING OPTIONS FOR BORDER TRANSPORTATION INFRASTRUCTURE

The fifth and last objective of the BINS project was to investigate traditional and innovative methods to fund border transportation infrastructure needs. This section describes the funding processes in the U.S. and Mexico and it also introduces the concept of innovative financing to provide an understanding of the funding opportunities for transportation projects within the identified corridors.

Traditional Financing Sources in the United States

In the U.S., most of the funding for transportation projects is allocated at the federal and state levels, while the majority of planning occurs at the regional level. Congress authorizes multi-year transportation funding levels through legislation such as TEA-21, followed by annual appropriations through the budgetary process. The funds are administered by the U.S. DOT through FHWA, and the Federal Transit Administration (FTA). For highways, FHWA apportions funds to state DOTs by formula. The states prioritize the financing of transportation infrastructure projects statewide, and consequently along the border. Metropolitan Planning Organizations also play an important role in establishing funding priorities for transportation projects.

TEA-21 builds on the initiatives established in ISTEA, which was the last major authorizing legislation for surface transportation. TEA-21 expired on September 30, 2003 and a new funding act is expected in the upcoming months.

Traditional Financing Sources in Mexico

Mexico's transportation funding system is characterized by its centralization. This means the majority of transportation funding and planning originates at the federal level. The federal government is responsible for interstate or federal highways, international border crossings, bridges, and border roadways. However, within the past few years the federal government is becoming more de-centralized, giving states and municipalities more involvement and responsibility in the transportation planning process.

The planning process starts at the federal level typically with the SCT, while the SRE acts as a communicator for binational relations. Federal funds are largely derived from the national income tax. These funds are then distributed to state and local governments.

The State Urban Development and Public Works Departments are in charge of planning at the state level, as is the case of the State Secretariat of Infrastructure and Urban Development (Secretaría de Infraestructura y Desarrollo Urbano Estatal (SIDUE)) in Baja California. These agencies have similar functions to state transportation departments in the U.S.

Border and Corridor Grant Opportunities

In addition to funds allocated to U.S. states by Congress through a formula, TEA-21 provides two sections of supplemental funding for projects serving international trade in the border region. These are the CBI Program and the NCPD Program. Each program provided for $70 million dollars per year for the period between 1999 and 2003.

However, the need for improvements greatly exceeds the availability of public funds in these programs. For example, eligible applications for 1999 and 2000 totaled approximately $2 billion dollars, compared to the $280 million dollars available for those two years. The Administration's reauthorization proposal, dated May 13, 2003 and known as the Safe, Accountable, Flexible and Efficient Transportation Equity Act of 2003 (SAFETEA), recognizes the need for improvements by increasing the funding under the new versions of this program (Section 1806 Multi-State Corridor Planning Program with $76.5 million dollars the first year and $84 million dollars thereafter, and Section 1807 Border Planning, Operations, and Technology Program with $76.5 million dollars the first year and $84 million dollars thereafter). Additionally, recognizing the binational nature of the required projects, Section 1807 contains a provision for allowing projects in Canada or Mexico proposed by the border states that directly and predominantly facilitate crossborder vehicle and commercial cargo movements at the states' POEs to use funds allocated under this program, given assurances related to construction standards and maintenance of the project.

Table 1 indicates how the funds were allocated in FY 1999 through FY 2003. Of the approximately $1.1 billion dollars allocated, a large share of the funds went to Texas and California. However, in

total, non-border states received nearly twice as much funding from these programs as the states that border Canada and Mexico.

In 2002, a large amount of additional funding was obtained for these two programs through Section 1105 of the TEA-21 legislation ("Revenue and Aligned Budget Authority"), increasing the total amount of funds awarded to $492 million dollars.

Table 1
CBI and NCPD Allocations by State, FY 1999–FY 2003

	FY 1999-FY 2003	Percent of CBI/ NCPD Funding (1)
Individual Southwest Border States:		
Arizona	$11,223,343	1%
California	$61,631,218	6%
New Mexico	$10,971,000	1%
Texas	$90,524,701	8%
Total U.S. States Bordering Mexico	**$174,350,262**	**16%**
Total U.S. States Bordering Canada	**$196,447,453**	**18%**
All U.S. Border States	$370,797,715	34%
Non-border States	$725,240,015	66%
Total of Border and Non-border States	**$1,096,037,730**	**100%**
GSA	$6,292,338	
Total CBI/ NCPD Funding	$1,102,330,068	

(1) Funds allocated to GSA are not included in the computation of the Percent of CBI/NCPD Funding.
Source: U.S. DOT, FHWA

In the case of Mexico, funding for transportation projects is strongly dependent on federal resources. This dependency can be traced back to Mexico's centralized governmental system. Even though Mexico has begun a process of decentralization in which state and local governments are developing their own funding techniques, there is a significant reliance on federal funds to implement transportation projects. Some partnerships among local, state, and federal funding sources also have taken place.

Scarcity of transportation funding can prove challenging for states along the border as they attempt to fulfill the increased demand for transportation infrastructure. Two possible solutions to this problem are described in the remainder of this section.

First, the application of innovative financing techniques should be studied. Innovative finance initiatives respond to the need to supplement rather than replace traditional financing techniques. An inventory of conventional and innovative financing options has been created and is contained in the BINS final report. [23]

Second, the evaluation of major border transportation corridors along the U.S. - Mexico border should be updated regularly. The BINS project developed an evaluation process and tool to analyze

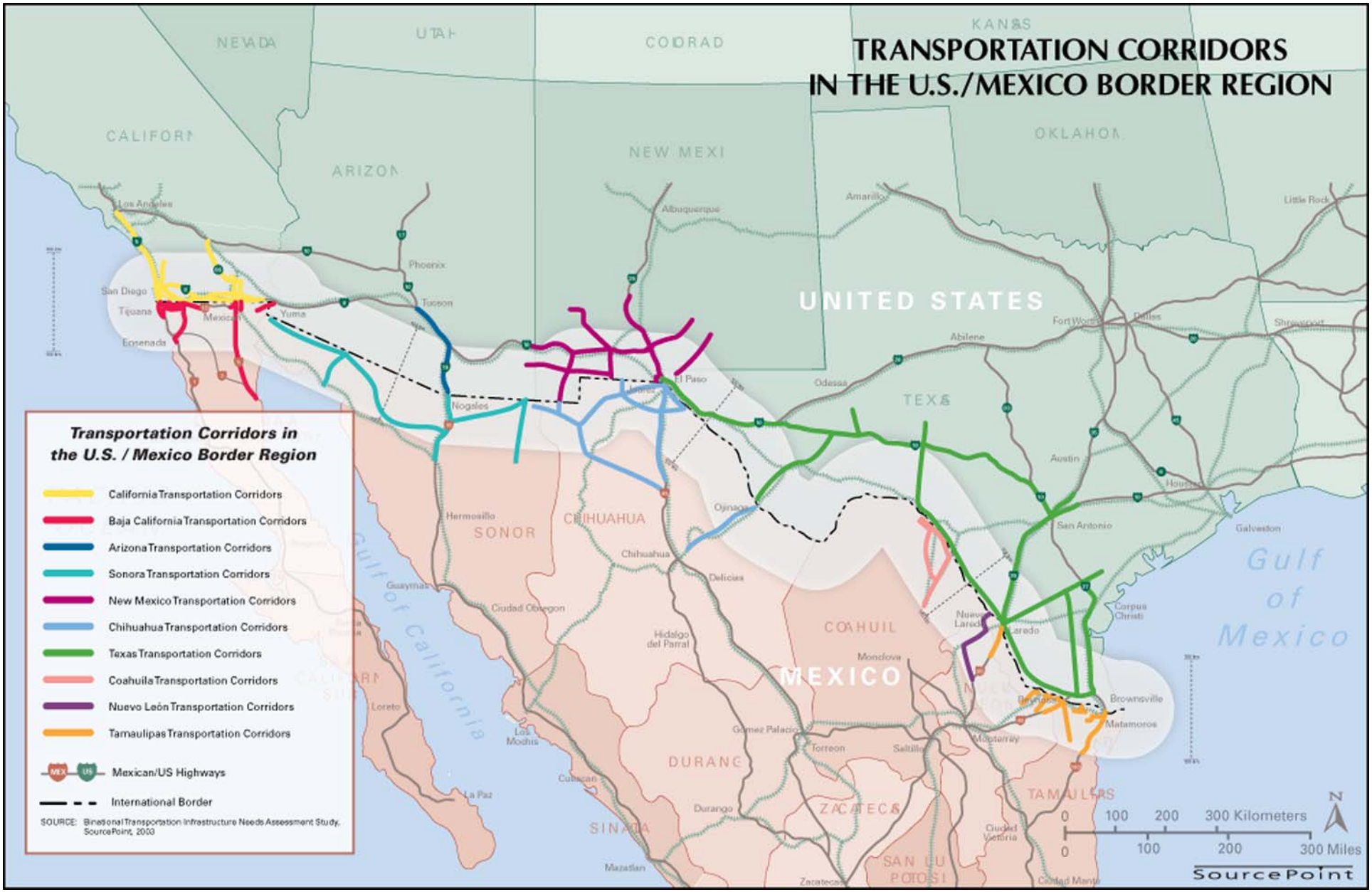
[23] Werner, Frederick, FHWA, "U.S./Mexico Joint Working Committee Innovative Finance Team FY 2004 Work Plan Products," July 10, 2003.

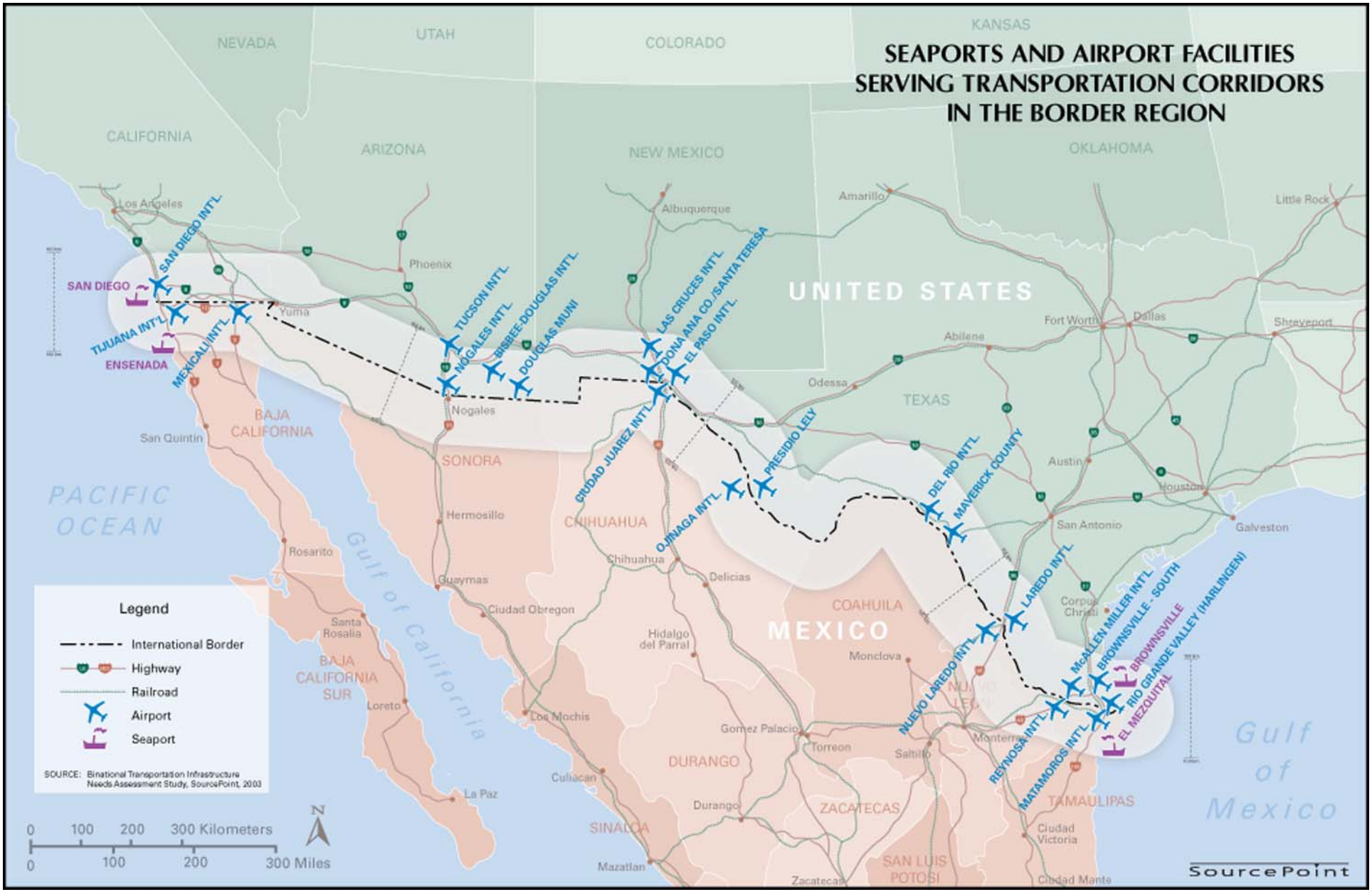
and prioritize each state's transportation corridors. This analysis gives states a quantitative guide to organize projects based on the infrastructure needs of their corresponding corridor. The BINS methodology takes a multimodal approach to gathering data for road, rail, maritime, airport, port of entry, and intermodal facilities. By using this quantitative method, transportation funding can be distributed giving priorities to the identified needs of corridors.

Innovative Financing

Innovative finance, as it relates to funding transportation projects, refers to non-traditional methods of financing transportation projects. Innovative Finance for transportation is a broadly defined term that encompasses a combination of specially designed techniques that supplement traditional highway financing methods. While many of these techniques may not be new to other sectors, their application to transportation is innovative (Innovative Financing is explained in detail in Chapter 5).

Because of a consistent shortfall in financing from traditional funding sources, both in the U.S. and Mexico, creative new ways to finance are needed on both sides of the border to encourage an adequate quality of travel in the border region. Transportation officials at all levels of government face a significant challenge when considering ways to pay for improvements to transportation infrastructure. Traditional government funding sources are insufficient to meet the increasingly complex and diverse needs of the border transportation system. Despite record levels of investment in surface transportation infrastructure in recent years, funding is not keeping pace with demands for improvements to maintain the vitality of the nation's transportation system. As forecasts have shown in this study, demand for transportation services is outpacing the supply of highway capacity by a two to one factor in the U.S.-Mexico border region.


TRANSPORTATION CORRIDORS
IN THE U.S./MEXICO BORDER REGION
UNITED STATES
MEXICO
Gulf of California
Gulf of Mexico
Transportation Corridors in the U.S. / Mexico Border Region
California Transportation Corridors
Baja California Transportation Corridors
Arizona Transportation Corridors
Sonora Transportation Corridors
New Mexico Transportation Corridors
Chihuahua Transportation Corridors
Texas Transportation Corridors
Coahuila Transportation Corridors
Nuevo León Transportation Corridors
Tamaulipas Transportation Corridors
Mexican/US Highways
International Border
SOURCE: Binational Transportation Infrastructure Needs Assessment Study, SourcePoint, 2003
0 100 200 300 Kilometers
0 100 200 300 Miles
N
SourcePoint


SEAPORTS AND AIRPORT FACILITIES
SERVING TRANSPORTATION CORRIDORS
IN THE BORDER REGION
NEVADA
UTAH
COLORADO
KANSAS
CALIFORNIA
ARIZONA
NEW MEXICO
OKLAHOMA
UNITED STATES
MEXICO
TEXAS
Los Angeles
Phoenix
Albuquerque
Amarillo
Little Rock
Fort Worth
Dallas
Shreveport
Abilene
Odessa
Austin
Houston
San Antonio
Galveston
Corpus Christi
Yuma
Nogales
San Quintin
Rosarito
Santa Rosalia
Loreto
La Paz
Hermosillo
Guaymas
Ciudad Obregon
Chihuahua
Delicias
Hidalgo del Parral
Monclova
Gomez Palacio
Torreon
Saltillo
Monterrey
Los Mochis
Culiacan
Durango
Mazatlan
Zacatecas
Ciudad Victoria
Ciudad Mante
SAN DIEGO INT'L
SAN DIEGO
TIJUANA INT'L
ENSENADA
MEXICALI INT'L
TUCSON INT'L
NOGALES INT'L
BISBEE-DOUGLAS INT'L
DOUGLAS MUNI
LAS CRUCES INT'L
DONA ANA CO./SANTA TERESA
EL PASO INT'L
CIUDAD JUAREZ INT'L
PRESIDIO LELY
OJINAGA INT'L
DEL RIO INT'L
MAVERICK COUNTY
LAREDO INT'L
NUEVO LAREDO INT'L
McALLEN MILLER INT'L
BROWNSVILLE - SOUTH
BROWNSVILLE
RIO GRANDE VALLEY (HARLINGEN)
EL MEZQUITAL
REYNOSA INT'L
MATAMOROS INT'L
PACIFIC OCEAN
Gulf of California
Gulf of Mexico
BAJA CALIFORNIA
BAJA CALIFORNIA SUR
SONORA
CHIHUAHUA
COAHUILA
NUEVO LEON
DURANGO
ZACATECAS
SINALOA
TAMAULIPAS
SAN LUIS POTOSI
Legend
International Border
Highway
Railroad
Airport
Seaport
SOURCE: Binational Transportation Infrastructure Needs Assessment Study, SourcePoint, 2003
0 100 200 300 Kilometers
0 100 200 300 Miles
N
SourcePoint


SOURCE: Binational Transportation Infrastructure Needs Assessment Study, SourcePoint, 2003
INTERNATIONAL BRIDGES AND BORDER CROSSINGS
Ports of Entry in the United States
LAND
1 San Ysidro
2 Otay Mesa
3 Tecate
4 Calexico
5 Calexico East
6 Andrade
7 San Luis
8 Lukeville
9 Sasabe
10 Nogales-Mariposa
11 Nogales-Dennis DeConcini
12 Naco
13 Douglas
14 Antelope Wells
15 Columbus
16 Santa Teresa
17 Paso del Norte (Santa Fe)
18 Good Neighbor (Stanton)
19 Bridge of the Americas
20 Ysleta
21 Tornillo/Fabens
22 Fort Hancock
23 Presidio
24 Heath's Crossing (closed)
25 Amistad Dam
26 Del Rio
27 Eagle Pass
28 Eagle Pass II
29 Dolores (Solidarity)/ Laredo Colombia (Solidarity)
30 Laredo IV (World Trade)
31 Laredo (Convent Street)/ Laredo (Gateway to Americas Bridge)
32 Laredo (Lincoln-Juarez)
33 Falcon Dam
34 Roma
35 Roma (closed)
36 Rio Grande City
37 Los Ebanos
38 Hidalgo
39 Pharr
40 Progreso
41 Los Indios
42 Brownsville & Matamoros Railroad/Vehicle
43 Brownsville
44 Los Tomates
RAIL
A San Ysidro
B Calexico
C Nogales
D El Paso
E El Paso
F Presidio
G Eagle Pass
H Laredo
I Brownsville & Matamoros Railroad/Vehicle
Ports of Entry in Mexico
LAND
1 Tijuana
2 Mesa de Otay
3 Tecate
4 Mexicali
5 Mexicali II
6 Algodones
7 San Luis Rio Colorado
8 Sonoyta
9 Sasabe
10 Nogales III
11 Nogales I
12 Naco
13 Agua Prieta
14 El Berrendo
15 Gral. Rodrigo M Quevedo (Palomas)
16 Jerónimo
17 Paso del Norte
18 Buen Vecino
19 Córdova
20 Zaragoza
21 Guadalupe
22 Porvenir
23 Ojinaga
24 La Linda (closed)
25 Presa de la Amistad
26 Cd. Acuña
27 Piedras Negras
28 Piedras Negras II
29 Colombia
30 Nuevo Laredo III
31 Nuevo Laredo I
32 Nuevo Laredo II
33 Presa Internacional Falcón
34 Miguel Alemán
35 Miguel Alemán (closed)
36 Camargo
37 Diaz Ordaz
38 Reynosa
39 Reynosa
40 Nuevo Progreso
41 Lucio Blanco
42 Ferroviario/Vehicular Brownsville & Matamoros
43 Matamoros
44 Matamoros III
RAIL
A Tijuana
B Mexicali
C Nogales
D Juarez
E Juarez
F Ojinaga
G Piedras Negras
H Nuevo Laredo
I Ferroviario/Vehicular Brownsville & Matamoros
PACIFIC OCEAN
Gulf of Mexico
MEXICO
UNITED STATES
CALIFORNIA
NEVADA
ARIZONA
NEW MEXICO
TEXAS
BAJA CALIFORNIA
SONORA
CHIHUAHUA
COAHUILA
DURANGO
ZACATECAS
TAMAULIPAS
SAN LUIS POTOSI
Los Angeles
San Diego
Tijuana
Ensenada
Mexicali
Yuma
Phoenix
Tucson
Albuquerque
El Paso
Juarez
Nogales
San Quintin
Rosarito
Guaymas
Hermosillo
Chihuahua
Delicias
Ojinaga
Hidalgo del Parral
Gomez Palacio
Torreon
Durango
Mazatlan
Zacatecas
Ciudad Victoria
Monclova
Saltillo
Monterrey
Nuevo Laredo
Laredo
Abilene
Odessa
Austin
San Antonio
Houston
Galveston
Corpus Christi
Brownsville
Matamoros
0 100 200 300 Kilometers
0 100 200 300 Miles
N
SourcePoint


RAILROAD FACILITIES SERVING TRANSPORTATION CORRIDORS IN THE BORDER REGION
NEVADA
UTAH
COLORADO
KANSAS
CALIFORNIA
ARIZONA
NEW MEXICO
OKLAHOMA
UNITED STATES
TEXAS
MEXICO
Los Angeles
San Diego
Tijuana
Mexicali
Yuma
Ensenada
Phoenix
Tucson
Albuquerque
Amarillo
Little Rock
Fort Worth
Dallas
Shreveport
Abilene
Odessa
El Paso
Ciudad Juarez
Nogales
BAJA CALIFORNIA
San Quintin
SONORA
Hermosillo
CHIHUAHUA
Ojinaga
Chihuahua
Delicias
Austin
Houston
San Antonio
Galveston
Corpus Christi
Nuevo Laredo
Laredo
COAHUILA
Monclova
Hidalgo del Parral
Ciudad Obregon
Guaymas
Rosarito
Santa Rosalia
BAJA CALIFORNIA SUR
Loreto
La Paz
Los Mochis
Culiacan
Mazatlan
SINALOA
Gomez Palacio
Torreon
Saltillo
Monterrey
NUEVO LEON
Reynosa
Brownsville
Matamoros
DURANGO
Durango
ZACATECAS
Zacatecas
SAN LUIS POTOSI
Ciudad Victoria
TAMAULIPAS
Ciudad Mante
PACIFIC OCEAN
Gulf of California
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International Border
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