2014

California-Baja California Border Master Plan Update

Actualización del Plan Maestro Fronterizo California-Baja California

Final Report
Informe Final

JULY 2014
JULIO 2014

2014

JULY 2014
JULIO 2014

California-Baja California Border Master Plan Update

Actualización del Plan Maestro Fronterizo California-Baja California

Final Report
Informe Final

Submitted to

Caltrans, District 11
4050 Taylor Street
San Diego, CA 92110

Submitted by

SANDAG Service Bureau
401 B Street, Suite 800
San Diego, CA 92101-4231
Phone 619.699.1900
sandag.org/servicebureau

Caltrans

SIDUE BAJACALIFORNIA
SECRETARÍA DE INFRAESTRUCTURA Y DESARROLLO URBANO

servicebureau
SANDAG

Joint Working Committee

JWC

U.S. / MEXICO BORDER TRANSPORTATION PLANNING

June 12, 2014

The California Department of Transportation (Caltrans) and the Secretariat of Infrastructure and Urban Development for the State of Baja California (SIDUE) would like to thank the California-Baja California 2014 Border Master Plan (BMP) Update Policy Advisory Committee and Technical Working Group for their valuable contributions and participation in this unique binational planning process. Special acknowledgement is due to the U.S. Federal Highway Administration and Mexico's Secretariat of Transportation and Communications for their leadership and appreciation for all of the agencies of the U.S.-Mexico Joint Working Committee for their participation and support.

The California-Baja California BMP is a binational comprehensive approach to coordinate planning and delivery of international land ports of entry (POEs) and transportation infrastructure projects serving the POEs in the region. The initial California-Baja California BMP was completed in 2008 with the participation of government agencies from both sides of the international border. This Update reflects changes in the POE and transportation planning environment at the border region. Caltrans and SIDUE are very gratified that other regions along the U.S.-Mexico border have adapted and expanded the BMP approach and customized it for their needs.

Developing new or improving existing international land POEs and related transportation infrastructure is a complex and lengthy undertaking that requires close coordination and collaboration between governmental agencies on both sides of the border. A comprehensive and systematic approach, like the California-Baja California BMP, maximizes resources to facilitate efficient cross border mobility and security of people and goods of Mexico and the United States. Effective mobility improves the quality of life for residents in the border region and ultimately for citizens of both countries.

Caltrans and SIDUE appreciate the outstanding support and commitment of the agencies involved in the California-Baja California BMP effort, and look forward to continuing this partnership in the future.

Sincerely,

LAURIE BERMAN
District Director
California Department of Transportation
CALTRANS

ING. MANUEL GUEVARA MORALES
Secretary
Secretariat of Infrastructure and Urban Development
SIDUE

Joint Working Committee

U.S. / MEXICO BORDER TRANSPORTATION PLANNING

Junio 12, 2014

El Departamento de Transporte de California (Caltrans por sus siglas en inglés) y la Secretaría de Infraestructura y Desarrollo Urbano del Estado de Baja California (SIDUE) desean agradecer al Comité Asesor de Políticas y al Grupo Técnico de Trabajo por su participación en la actualización del Plan Maestro Fronterizo California-Baja California y sus valiosas contribuciones en este proceso único de planeación binacional. Reconocemos de manera especial a la Administración Federal de Carreteras de los Estados Unidos y a la Secretaría de Comunicaciones y Transportes por su liderazgo y apreciación así como a todas las dependencias del Comité Conjunto de Trabajo México-Estados Unidos por su apoyo y participación.

El Plan Maestro Fronterizo California-Baja California es un instrumento de coordinación binacional que coordina la planea y jerarquiza los proyectos de Cruces Fronterizos e infraestructura del transporte que dan servicio a la región. El primer Plan Maestro Fronterizo fue terminado en 2008 con la participación de dependencias de los tres órdenes de gobierno en ambos lados de la frontera La presente actualización refleja los cambios en la estructura de planeación de Garitas y del transporte en la región fronteriza. Caltrans y SIDUE se encuentran muy complacidos ya que otras regiones a lo largo de la frontera México - Estados Unidos han adaptado los objetivos del Plan Maestro Fronterizo de acuerdo a sus necesidades.

Desarrollar nuevos o mejorar los Cruces Fronterizos, existentes así como la infraestructura del transporte relacionada a los mismas, es un esfuerzo complejo que requiere de coordinación y colaboración muy estrecha entre dependencias gubernamentales en ambos lados de la frontera. Un esfuerzo consensuado y sistemático como lo es el Plan Maestro Fronterizo California-Baja California maximiza recursos y facilita la movilidad y seguridad transfronteriza de bienes y personas entre México y los Estados Unidos de manera más eficaz. Una movilidad efectiva mejora la calidad de vida de los residentes en la región fronteriza y en definitiva para ciudadanos de ambos países.

Caltrans y SIDUE reconocen y aprecian el excepcional apoyo y compromiso por parte de las dependencias involucradas en el Plan Maestro Fronterizo California-Baja California y esperan mantener esta estrecha relación binacional en el futuro.

Sinceramente,

LAURIE BERMAN
Director de Distrito
Departamento de Transporte de California
CALTRANS

ING. MANUEL GUEVARA MORALES
Secretario
Secretaría de Infraestructura y Desarrollo Urbano de Baja California
SIDUE

ACKNOWLEDGEMENTS

This report was prepared with the assistance and guidance of the California-Baja California 2014 Border Master Plan (BMP) Update Policy Advisory Committee and Technical Working Group.

U.S. Representatives (as of June 2014)
(Agencies listed in alphabetical order)

California Department of Transportation (Caltrans)
Laurie Berman
Bill Figge
Sergio Pallares

City of Calexico
Oscar Rodriquez
Nick Servin

City of Chula Vista
Gary Halbert
Tom Adler
David Kaplan

City of El Centro
Ruben Duran
Abraham Campos

City of Holtville
Alexander Meyerhoff
Nick Wells

City of Imperial Beach
Greg Wade

City of National City
Leslie Deese
Steve Manganiello
Kenneth Fernandez

City of San Diego
Alejandra Gavaldon
Samir Hajjiri

County of Imperial
Rosa Lopez Solis
Bill Brunet
John Gay

County of San Diego
Sarah Aghassi
Megan Jones
Richard Chin
Murali Pasumarthi

Customs and Border Protection (CBP)
Pete Flores
Andy Brinton
Mikhail Pavlov

Department of State (DOS)
Andrew S.E. Erickson
Rachel Poynter
Steven C. Kameny
Jason Vorderstrasse

Federal Highway Administration (FHWA)
Sylvia Grijalva
Richard E. Backlund

General Services Administration (GSA)
Anthony Kleppe
Ramon D. Riesgo

Imperial County Transportation Commission (ICTC)
Mark Baza
Virginia Mendoza

San Diego Association of Governments (SANDAG)
Gary Gallegos
Charles “Muggs” Stoll
Rachel Kennedy

Southern California Association of Governments (SCAG)
Annie Nam
Mike Jones
Rajeev Seetharam

Invited Agency

Environmental Protection Agency (EPA)
David Fege

We also appreciate the assistance from all of the previous representatives who participated in the California-Baja California BMP Update (see Appendix A).

Mexico Representatives (as of June 2014)

(Agencies listed in alphabetical order)

Consulate General of Mexico in San Diego

Remedios Gómez Arnau
Juan Carlos Rivas

General Customs Administration (Aduanas)

Alberto Morales Arechavaleta
Rogelio Sanchez Cruz

General Customs Administration (Aduanas)–Tijuana

Alejandro González Guilbot
Enrique Manjarrez Uriarte

Institute of Administration and Estimates of National Real Estate (INDAABIN)

Carlos de la Fuente
Fernando Mas Roa
Fidel Castañeda Lugo
Salvador Lamas Padilla

Metropolitan Planning Institute of Tijuana (IMPlan)

Daniel Rubio Díaz de la Vega
Rodolfo Argote Gutiérrez
Óscar Cano Sauer

Municipal Planning Institute of Mexicali (IMIP)

Juventino Pérez Brambila
María Adriana Macías Caballero
Jesús Enrique Tapia Galindo

Municipality of Mexicali

Eduardo Contreras Alva

Municipality of Playas de Rosarito

César Villegas Campoy

Municipality of Tecate

Karla Ivonne Moreno Preciado
Ivonne Elena Anaya

Municipality of Tijuana

Roberto Sánchez Martínez
Antonio Cano
David Navarro Herrera

Office of the Governor of Baja California

Mario Gerardo Herrera Zárate
Mario Alberto Díaz Solís

Secretariat of Communications and Transportation (SCT)

Marco Antonio Frías Galván
Francisco Calvario

Secretariat of Exterior Relations (SRE)

Luis Javier Castro Castro
Román Alberto Fernández López

Secretariat of Infrastructure and Urban Development (SIDUE)

Manuel Guevara Morales
Germán Jesús Lizola Márquez
Carlos López Rodríguez
Karlo Omar Limón González
Víctor Hugo Rangel Ramírez

Secretariat of Social Development (SEDESOL)

José Luis Llovera Abreu
Salvador Gómez Rocha

Invited Agencies

Baja California Secretariat of Tourism

Oscar Escobedo Carignan
José de Jesús Quiñonez Ramírez
Héctor Reyes Orrantia

National Immigration Institute of Mexico (INM)

Rodulfo Figueroa Pacheco
Raúl Pareyon Castillo

Secretariat of Economic Development Baja California

Carlo Humberto Bonfante Olache
Francisco Verduzco Ortiz

Secretariat of Municipal Economic Development Tijuana

Xavier Peniche Bustamante

We also appreciate the assistance from all of the previous representatives who participated in the California-Baja California BMP Update (see Appendix A).

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

EXECUTIVE SUMMARY

The United States and Mexico share an international border that is nearly 2,000 miles long and spans four U.S. states and six Mexican states. Total population is estimated at approximately 309 million in the United States and 112 million in Mexico. International trade between the two countries is a key contributor to local, state, and national economic growth and is important for the continued success of the economies of both nations. The 1994 North American Free Trade Agreement (NAFTA) boosted crossborder trade, economic growth, and jobs. U.S.-Mexico trade through land ports of entry grew from $71 billion U.S. dollars (USD) in 1995 to $255 billion in 2010.[1] Mexico and Canada make up the two largest markets for U.S. exports, purchasing nearly one-third of exported U.S. merchandise. Furthermore, Mexican exports to the United States include 40 percent U.S. content, far exceeding the U.S. content of any other foreign imports.[2]

California and Baja California share a 150-mile long international border. This binational region is home to 6.4 million people and is projected to add 4.2 million people by 2040, bringing the total number of residents to more than 10.6 million. This growth in population and the associated economic activity will increase crossborder travel demand and continue to add pressure to the existing Ports of Entry (POE) facilities and connecting roads.

The California-Baja California region has six international land POEs: San Ysidro/Virginia Avenue-Puerta México/El Chaparral, Otay Mesa-Mesa de Otay, Tecate-Tecate, Calexico-Mexicali, Calexico East-Mexicali II, and Andrade-Los Algodones. In addition to these existing six POEs, the Otay Mesa East-Mesa de Otay II POE, a new passenger and commercial port, is planned to facilitate crossborder travel demand in the region. Also, the San Diego-Tijuana Airport Crossborder Facility is currently under construction. Another potential POE would be located at Jacumba-Jacumé, east of the Tecate-Tecate POE.

In 2010, approximately 25.3 million privately owned vehicles (POV) and more than 14.7 million pedestrians crossed northbound from Mexico into the United States through California-Baja California POEs. The number of northbound POV crossings is expected to reach 44.4 million in 2040 and northbound pedestrian crossings are anticipated to reach 24.2 million. More than 90 percent of the international trade between California and Baja California is transported to its final destination via highways. Commercial truck crossings are expected to increase from 1.1 million to nearly 1.5 million northbound trips between 2010 and 2040. In 2010, the total value of goods transported by truck through California-Baja California POEs was approximately $41.8 billion USD. Otay Mesa-Mesa de Otay handled nearly three-quarters of the value of freight ($30.7 billion). Calexico East-Mexicali II processed about 24 percent ($10.1 billion) and Tecate-Tecate processed about $943 million USD.

---

[1] Lee, Erik, Wilson, Christopher E., Lara-Valencia, Francisco, de la Para, Carlos A., Van Schoik, Rick, Patron-Soberano, Kristofer, Olsen, Eric L., Salee, Andrew, Wilson Center, Mexico Institute, et al, *The State of the Border Report – A Comprehensive Analysis of the U.S.-Mexico Border*, May 2013.

[2] U.S. Chamber of Commerce, *NAFTA Triumphant: Assessing Two Decades of Gains in Trade, Growth, and Jobs*, 2012.

Given the current and projected travel demand at the above mentioned POEs, improving the capacity and operations of the existing infrastructure is critical to decrease traffic congestion, facilitate international trade, reduce environmental impacts, and improve the overall quality of life for residents in the border region. Federal, state, regional, and local agencies responsible for planning and implementation of POEs and related transportation facilities in the California-Baja California region agree that a border master planning process is needed. This process will help optimize human and capital investments in border transportation infrastructure, while giving certainty to future actions related to POEs, POE transportation infrastructure development, and asset operations.

The California-Baja California Border Master Plan (BMP) is a binational comprehensive approach to coordinate planning and delivery of POE and transportation infrastructure projects serving the POEs in the California-Baja California region. The California and Baja California region completed its first BMP in 2008. One of the key successes of the 2008 BMP was the development of a methodology and criteria to evaluate and rank POE projects as well as roadway, interchange, and rail projects serving the POEs. Establishing criteria for ranking projects allowed for the development of a mutually agreed-upon list of prioritized projects within the binational study area that is an integral part of the California-Baja California BMP.

In November 2011, California and Baja California began work on an update to the BMP. The U.S.–Mexico Joint Working Committee (JWC), led by the U.S. Federal Highway Administration and Mexico's Secretariat of Communication and Transportation, provided the funding for the California-Baja California 2014 BMP Update. The California Department of Transportation (Caltrans), in partnership with the Secretariat of Infrastructure and Urban Development of Baja California (SIDUE) co-managed the project and retained the San Diego Association of Governments (SANDAG) Service Bureau to assist in the development of this BMP Update. Appropriate federal, state, regional and local agencies from the United States and Mexico provided direction for the effort via a Policy Advisory Committee (PAC) and a Technical Working Group (TWG). The goals of the California-Baja California 2014 BMP Update are to:

1. Re-establish and maintain binational coordination on the Border Master Plan, which began with the 2008 BMP.

2. Review findings of the 2008 BMP.

3. Identify new policy and/or legislative issues as well as funding trends and opportunities impacting planning and capital improvement in the study area of California and Baja California along the U.S.-Mexico border.

4. Adapt an existing web-based pilot data entry program in both English and Spanish for use by stakeholders. This tool allows stakeholder agencies to directly input project data information into a formatted online database, streamlining the previous process that required multiple steps of input at the agency and SANDAG Service Bureau levels.

5. Expand data collection, monitoring, and technical modeling capabilities to better capture crossborder travel characteristics and POE throughput capabilities. Research and develop capabilities to perform border region sensitivity analyses for scenario planning and project prioritization.

6. Identify ongoing funding sources for the California-Baja California BMP process.

7. Reach agreement with agencies on BMP process and objectives/requirements for future BMP activities.

8. Complete the update within three years from the date of the underlying agreement with a desired project completion date of December 31, 2013 (Note: The PAC extended the completion date to June 30, 2014.)

The California-Baja California 2014 BMP Update features updated priority rankings of POE and connecting transportation infrastructure projects, presents a framework for a future model to conduct POE sensitivity analysis, discusses funding opportunities and sources, and outlines recommendations. These topics are highlighted in the following sections.

PORT OF ENTRY AND TRANSPORTATION PROJECT RANKINGS

The California-Baja California 2014 BMP Update refreshes and updates the lists of projects for existing and new POEs and related transportation facilities submitted during the 2008 BMP effort, adds new projects, and re-ranks the priority of medium- and long-term projects.

POE projects are classified in two main categories of investment: 1) New POEs and 2) Modernization of Existing POEs. The POE projects were ranked separately within these two categories. (Projects that will be completed or under construction by the end of 2014 were not ranked.) The individual rankings are then used to establish a priority order for the POEs. Transportation projects also are individually ranked. They are grouped by the POE that is primarily served by the project. There are five categories of transportation facility projects:

1. Roadway—Capital infrastructure projects for highway and arterial roadways.
2. Interchange—Capital infrastructure projects for interchanges to interconnect roads and bridges.
3. Rail/Mass Transit—Capital infrastructure projects for freight, passengers (bus rapid transit and Trolley), and grade separations. Multi-modal transportation centers are classified as rail projects.
4. Non-Motorized Modes of Crossborder Transportation—Walking and bicycling capital projects.
5. Short-term Operational and Minor Capital Improvement Projects to Reduce Border Wait Times—Projects designed to facilitate federal processing of pedestrians and vehicles at the POEs, thereby expediting the flow of people and cargo.

New Port of Entry Projects

Six projects are included in the New POE category. Two projects are for the future Otay Mesa East-Mesa de Otay II POE, two are for the future San Diego-Tijuana Airport Crossborder Facility, and two are for the potential new Jacumba-Jacumé POE. Only the projects for the Otay Mesa East-Mesa de Otay II POE are ranked (see Figure ES.1). The projects for the San Diego-Tijuana Airport Crossborder Facility are anticipated to be completed in 2014. The projects for the potential Jacumba-Jacumé POE are included in the POE Project Inventory as the POE is in early conceptual stages of planning and data are not available to rank it. Maps showing the location of the transportation projects connected to the POE are included in Chapter 4.

Modernization of Existing Ports of Entry

BMP agencies submitted 16 projects for the modernization of existing POEs. Three POE projects are not ranked as one has an anticipated completion date that falls within the short-term time period and the other two are planned to be in construction by December 2014. Thirteen projects are individually ranked and then grouped by POE. The individual project rankings are used to establish the priority order shown in Table ES.1 and Figure ES.2. Maps showing the location of the transportation projects connected to the POEs are included in Chapter 4.

Table ES.1
Priority Order: Modernization of Existing Ports of Entry

Rank	Port of Entry
1	San Ysidro/Virginia Avenue-Puerta México/El Chaparral
2	Calexico-Mexicali I
3	Otay Mesa-Mesa de Otay Passenger
4	Calexico East-Mexicali II Commercial
5	Otay Mesa-Mesa de Otay Commercial
6	Calexico East-Mexicali II Passenger
7	Tecate-Tecate
8	Andrade-Los Algodones

Figure ES.1: New Port of Entry Project Ranking
California-Baja California 2014 Border Master Plan Update

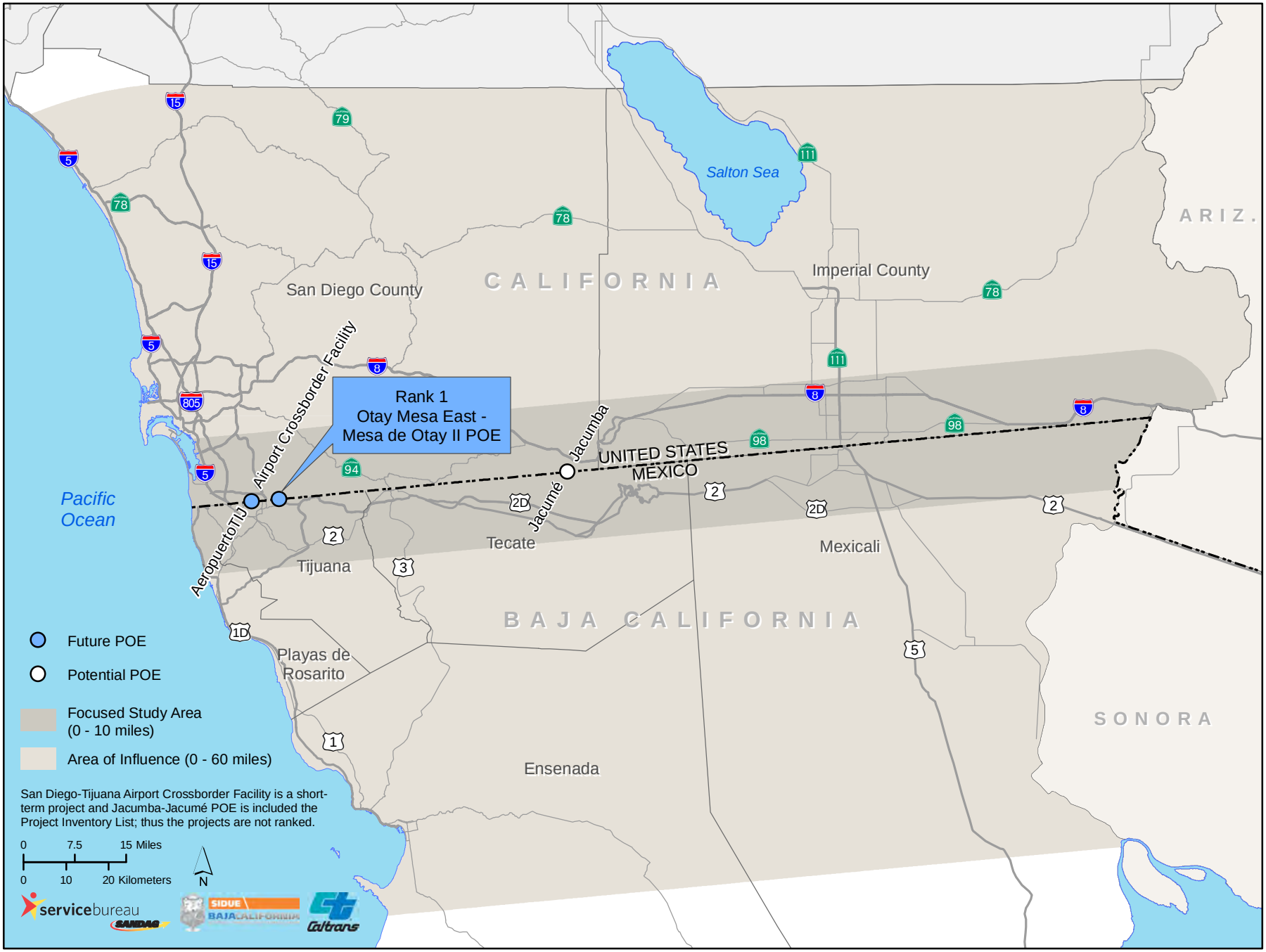
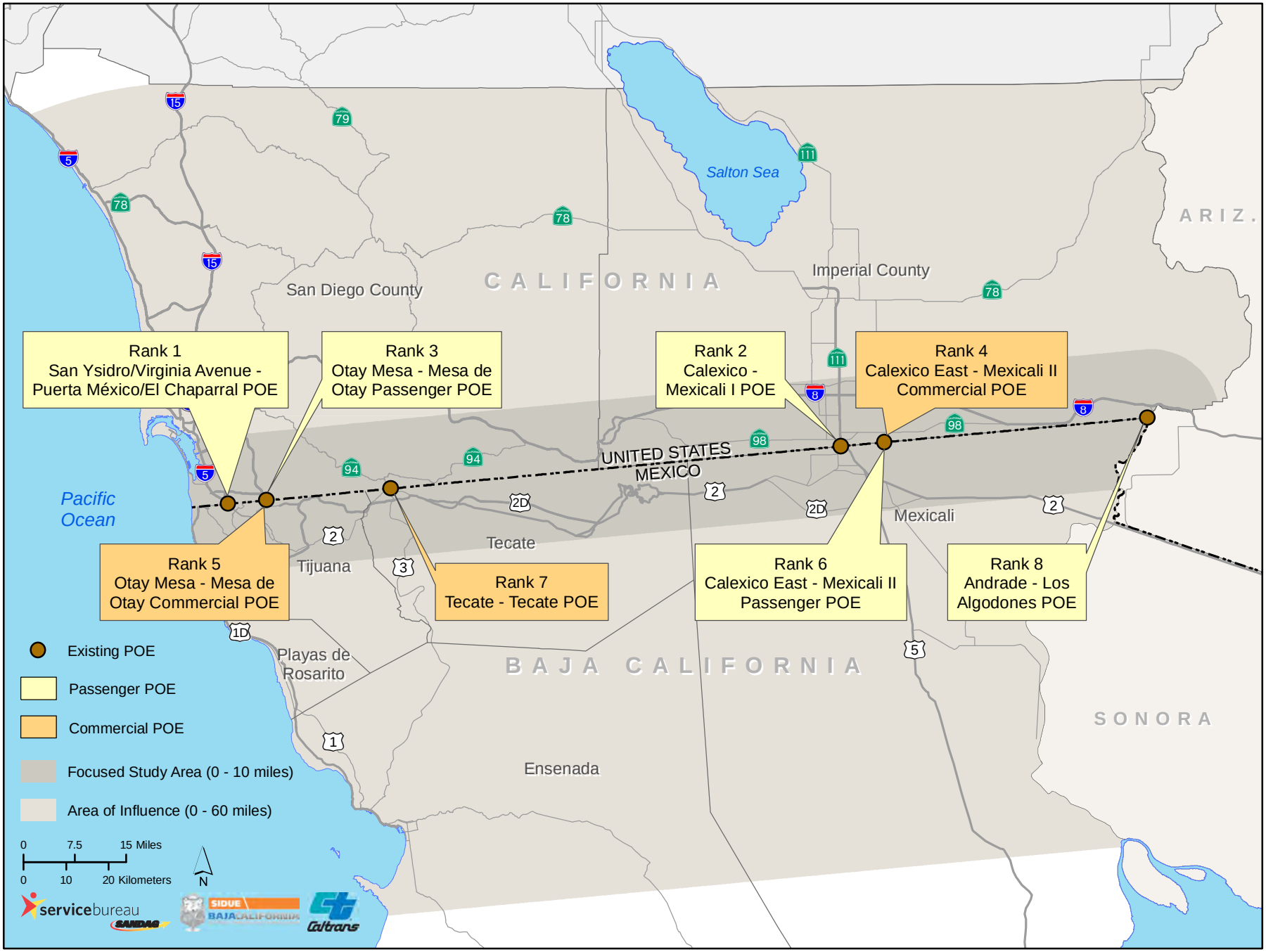


Figure ES.2: Modernization of Existing Ports of Entry Project Rankings
California-Baja California 2014 Border Master Plan Update



FRAMEWORK FOR A FUTURE MODEL TO CONDUCT CALIFORNIA-BAJA CALIFORNIA REGION PORT OF ENTRY SENSITIVITY ANALYSIS

A key task in the 2014 BMP Update is to develop a framework for a future model to conduct POE sensitivity analysis for capital improvements in a system of POEs in a binational metropolitan area. The report presents two options to develop binational travel demand modeling capabilities. Option 1 focuses on the long-term goal of developing two binational models—one for the Imperial–Mexicali metropolitan area and the other for the San Diego–Tijuana/Tecate metropolitan area. For Option 2, existing U.S. and Mexico travel demand models would be connected, or "stitched", using agreed-upon data and methods to forecast crossborder trips for each POE by mode of travel. The modeling framework for Option 1 should build upon the best practices in the region and extend the geographic scope to include Northern Baja California and Southern California as one model for each binational metropolitan area. The cost to develop the model for each binational metropolitan area would be comparable to the Activity Based Model (ABM) developed at both SANDAG and Southern California Association of Governments (SCAG) that have each cost more than $1 million USD.

Option 2 is a two-phased development of a set of performance metrics that could be used to evaluate the outcome of capacity and operational transportation improvements. In addition to model coordination and setup, Phase 1 includes the development of an econometric model to forecast the volume of border crossings. Phase 2 includes the development of modeling tools to forecast wait times by POE, roadway and transit performance, air quality, and economic performance.

A close and continuing collaboration of the technical staffs at SANDAG, SCAG, Metropolitan Planning Institute of Tijuana (IMPLAN), Municipal Planning Institute of Mexicali (IMIP), Caltrans, and SIDUE is key to ensuring a coordinated modeling effort. An ongoing commitment to invest in staff and technical resources also is required for successful coordination.

FUNDING OPPORTUNITIES AND SOURCES

The California-Baja California BMP is the first binational prioritization process for border planning for POE and connecting transportation infrastructure that includes a methodology that is accepted on both sides of the border at federal, state, regional, and local levels of government. It provides a level playing field for project prioritization and a systematic approach to planning. However, it does not have a long-term sustainable funding source that would allow for continuity and certainty of BMP updates.

The California-Baja California BMP brings a number of benefits to border planning including: 1) continuity in decision making, 2) binational harmonization of priorities, 3) certainty for private sector investment, 4) value for seeking public funding for project implementation, 5) connectivity with greenhouse gas and vehicle idling efforts, 6) sound, data-driven, and systematic planning processes, and 7) binational information sharing.

States along the U.S.-Mexico border have adapted and expanded the California-Baja California approach and customized it to address their individual needs. Funding levels for these BMPs varied depending on the tasks that were included. The costs for conducting the initial BMPs ranged from $250,000 to $1,000,000 USD. Currently, California-Baja California is the only border region conducting a BMP Update. The cost of the 2014 BMP update was $306,000 USD.

Identifying and establishing ongoing long term funding sources for the BMP as a binational process through traditional mechanisms is critical to continue to realize its benefits. Several ideas to address this critical need include advocating for funding in the next U.S. transportation bill, exploring potential funding sources in the United States and Mexico including incorporating the BMP into the annual budgets of Caltrans and SIDUE, leveraging existing U.S.-Mexico binational partnerships such as U.S.-Mexico JWC, U.S.-Mexico High Level Economic Dialogue, U.S.-Mexico Binational Bridges and Border Crossings Group, and Border Governors Conference, and other entities as appropriate to coordinate efforts to help secure consistent and reliable funding for the BMP process, exploring the possibility for funding assistance through the North American Development Bank or existing regional mechanisms, and exploring other funding alternatives such as Crowdfunding.

BMP 2014 FINAL RECOMMENDATIONS

To maintain and enhance the binational border master planning process, the 2014 BMP Update builds on the recommendations from the 2008 BMP. As a starting point, the recommendations from the 2008 BMP are reviewed and incorporated into the update, if appropriate, and new recommendations are developed. As a result, the California-Baja California BMP has a total of 23 recommendations which are grouped into three key themes:

Theme I: - Institutionalize the Border Master Planning Process

Theme II: - Modeling, Data Management, and Data Needs

Theme III: - Consistent and Reliable Funding

Recommendations by theme are shown in Table ES.2. Within these themes, the recommendations also are linked to each of the 2014 BMP Update goals. (Goals may not be shown in sequential order as they are grouped into the three themes.)

Table ES.2
Recommendations of the California-Baja California 2014 BMP Update (Grouped by Theme and Goals)

California-Baja California 2014 Border Master Plan (BMP) Update Goals	Recommendations
Theme I - Institutionalize the Border Master Planning Process	
Goal 1. Maintain Binational Coordination on the Border Master Plan	1.1 California Department of Transportation (Caltrans) and the Secretariat of Infrastructure and Urban Development of Baja California (SIDUE) should convene a working group to develop a process to make the Border Master Plan a living document.
	1.2 Caltrans and SIDUE would convene an annual meeting of the California-Baja California BMP Policy Advisory Committee to provide an update on the status of applicable themes, goals and recommendations adopted in the California-Baja California 2014 BMP Update. These meetings will include a standing item on the agendas to discuss proposed project updates and amendments.
	1.3 Subject to funding availability, comprehensive California-Baja California BMP updates would take place every four to six years. Caltrans and SIDUE would lead efforts to seek funding and manage these updates, in collaboration with the California-Baja California BMP Policy Advisory Committee, and, within the framework of the U.S.-Mexico Joint Working Committee (JWC).
	1.4 Caltrans and SIDUE would report on California-Baja California BMP monitoring and implementation at meetings of the Technical Commissions under the Border Liaison Mechanism (BLM), the U.S.-Mexico JWC, the U.S.-Mexico Binational Bridges and Border Crossings Group, and the U.S.-Mexico Border Governors Conference, and other binational forums as appropriate.
Goal 2. Review findings of the 2008 BMP	2.1 Consider the California-Baja California BMP as a framework to prioritize infrastructure projects and enhance coordination of planning and implementation of POE and related transportation facilities on both sides of the California-Baja California border.
	2.2 Consider using prioritized California-Baja California project information to compete for transportation funding sources.

Table ES.2 (Cont.)
Recommendations of the California-Baja California 2014 BMP Update (Grouped by Theme and Goals)

California-Baja California 2014 Border Master Plan (BMP) Update Goals	Recommendations
Theme I - Institutionalize the Border Master Planning Process (Cont.)	
	2.3 Use prioritized California-Baja California project information to follow a systematic and orderly approach toward the implementation of binational projects.
	2.4 Consider the California-Baja California BMP project evaluation criteria to guide or support individual agency project ranking processes.
	2.5 Use outcomes from the California-Baja California BMP as inputs in federal, state, regional, and local planning documents. In turn, outcomes of these planning documents would feed into updates of the California-Baja California BMP.
Goal 3. Identify New Policy and/or Legislative Issues, Trends, and Funding Realities and Opportunities Impacting the BMP	3.1 Explore opportunities for aligning the BMP with federal initiatives, such as the 2013 U.S.-Mexico High Level Economic Dialogue (HLED), and others as appropriate.
Goal 7. Reach agreement with agencies on BMP process and objectives/ requirements for future BMP activities	7.1 Develop criteria for evaluation and ranking of non-motorized projects.
	7.2 Incorporate planning efforts by other agencies into the BMP process, including border wait times estimation, air quality, and economic analyses.
Theme II - Modeling, Data Management and Data Needs	
Goal 4. Adapt Web-based Pilot Project Data Entry Program	4.1 Explore whether Caltrans and SIDUE could host and maintain the California-Baja California BMP online data management portal and mapping.
	4.2 Expand and enhance the Web-based Data Management Tool.

Table ES.2 (Cont.)
Recommendations of the California-Baja California 2014 BMP Update (Grouped by Theme and Goals)

California-Baja California 2014 Border Master Plan (BMP) Update Goals	Recommendations
Goal 5. Expand Data Collection, Monitoring and Technical Modeling Capabilities	5.1 Request support from the U.S.-Mexico JWC, the U.S.-Mexico Binational Bridges and Border Crossings Group, officials participating in the Cabinet-level High Level Economic Dialogue, the U.S.-Mexico Border Governors Conference, and others as appropriate, to advance travel demand modeling as an ongoing planning tool in border regions to support the California-Baja California border master planning process.
	5.2 Continue to collaborate through the U.S.-Mexico Border Forecasting Peer Exchange, led by the U.S.-Mexico JWC, to harmonize and share information on data collection and forecasting methodologies for crossborder travel demand by mode, and other crossborder-related transportation data, such as border wait times.
	5.3 Explore ways to establish and maintain close coordination among technical staffs from state and regional agencies to exchange ideas and data related to regional and transportation planning in the border region.
	5.4 With support from appropriate agencies, Caltrans and SIDUE would develop detailed scopes of work and refine cost estimates for each of the phases of the modeling framework and seek funding for staged implementation.
	5.5 Adopt the approved set of 20 performance measures for a modeling framework as relevant metrics when stakeholder agencies conduct specific project ranking processes or data collection and monitoring efforts.
	5.6 Define the specific boundaries of the two binational metropolitan areas in California-Baja California generally described as San Diego-Tijuana-Tecate and Imperial-Mexicali.
	5.7 Develop processes to collect and share needed northbound and southbound data.
Theme III - Consistent and Reliable Funding	
Goal 6. Identify BMP Ongoing Funding Sources	6.1 Discuss approach for developing a U.S.-Mexico borderwide BMP funding strategy with the U.S.-Mexico JWC, the U.S.-Mexico Binational Bridges and Border Crossings Group, the Cabinet-level High Level Economic Dialogue, and the U.S.-Mexico Border Governors Conference, and other entities as appropriate.
	6.2 Seek funding opportunities at the federal and state levels.

CONCLUSION

Development of a new POE or improvements to an existing POE and related transportation facilities is a complex and lengthy undertaking that requires close coordination and collaboration with governmental agencies on both sides of the border. The California-Baja California BMP process is a tool that can be used to help prioritize infrastructure projects and enhance coordination of planning and implementation of POE and transportation projects in both the U.S. and Mexico. A comprehensive approach helps agencies in both the United States and Mexico agree to and rely on medium- and long-term priorities to complete needed projects to efficiently facilitate international trade and improve the quality of life for residents in the border region.

The California and Baja California Binational Border Master Planning Process managed by Caltrans and SIDUE, under the leadership of both federal government and regional and local agencies, is a tool that can generate savings and high rates of return on border infrastructure investments for both countries. The California-Baja California 2014 BMP update is the outcome of an ongoing process that began in 2006, with its 2008 predecessor report. Key accomplishments of the California-Baja California 2014 BMP Update are:

1. Updating POE and transportation projects lists including cataloguing two new transportation categories: non-motorized modes of crossborder transportation and short-term operational and minor capital improvement projects to reduce border wait times,

2. Re-ranking of medium- and long-term POE and transportation projects (roadway, interchange, and rail/mass transit),

3. Developing a framework for a future transportation model to conduct POE sensitivity analysis for capital improvements in a system of POEs in a binational metropolitan area,

4. Identifying ongoing funding sources for the California-Baja California BMP process, and

5. Preparing recommendations to maintain and enhance the border master planning process.

The California-Baja California approach could continue to be expanded and adapted, resulting in a coordinated master planning process that could be very useful for the entire U.S.-Mexico border region. However, at this time no long-term, sustainable funding sources that would allow for continuity and certainty of future BMP updates have been identified. Stakeholders in the current border master planning process strongly endorse continuing to update the BMP on a regular schedule. Discussions are underway on potential approaches to incorporate the California-Baja California border master planning process into federal, state, regional or local planning processes as they relate to the border.

RESUMEN EJECUTIVO

México y Estados Unidos comparten una frontera internacional que abarca más de 3,300 kilómetros, a lo largo de cuatro estados en los Estados Unidos y seis entidades federativas mexicanas. Se estima que su población total es de alrededor de 309 millones de habitantes en EE.UU. y 112 millones en México. El comercio internacional entre ambos países es uno de los principales elementos coadyuvantes al crecimiento económico local, estatal y nacional y es un factor importante para que las economías de ambas naciones sigan teniendo éxito. El Tratado de Libre Comercio de América del Norte (TLCAN) de 1994 impulsó el comercio transfronterizo, el crecimiento económico y la generación de empleos. El comercio entre México y EE.UU. a través de puertos internacionales terrestres de entrada creció de $71,000 millones de dólares (USD) en 1995 a $255 mil millones en 2010.[1] México y Canadá representan los dos principales mercados para exportaciones de EE.UU., y en conjunto adquieren dos tercios de las exportaciones de mercancía estadounidense. Por otra parte, los productos que se exportan de México a Estados Unidos contienen un 40% de material estadounidense, superando por mucho el contenido estadounidense de importaciones de cualquier otro país.[2]

California y Baja California comparten una frontera de 233 kilómetros de longitud. Esta región binacional es hogar de 6.4 millones de personas y se proyecta un crecimiento de 4.2 millones de habitantes para 2040, con lo cual el número total de habitantes superará los 10.6 millones. Dicho crecimiento poblacional, y la actividad económica que esto conlleva, ocasionará un aumento en la demanda de cruces transfronterizos y una presión cada vez mayor a las instalaciones actuales de puertos fronterizos y sus vialidades de acceso.

En la región Baja California-California existen seis puertos internacionales terrestres de entrada: San Ysidro/Virginia Avenue-Puerta México/El Chaparral, Otay Mesa-Mesa de Otay, Tecate-Tecate, Calexico-Mexicali, Calexico East-Mexicali II, y Andrade-Los Algodones. Además de estas seis actuales, se cuenta con una propuesta para un nuevo puerto internacional terrestre de entrada para pasajeros y de carga, denominada Otay Mesa East-Mesa de Otay II, cuya finalidad sería facilitar la demanda de cruces transfronterizos. Además, la Terminal Transfronteriza del Aeropuerto de Tijuana se encuentra en obra de construcción. Otro posible puerto internacional terrestre de entrada se ubicaría en Jacumba-Jacumé, al este del puerto internacional terrestre de entrada Tecate-Tecate.

En 2010, aproximadamente 25.3 millones de vehículos ligeros y más de 14.7 millones de peatones cruzaron de México hacia Estados Unidos a través de los puertos internacionales terrestres de entrada de Baja California-California. El número de cruces de vehículos ligeros se anticipa que tenga un incremento a 44.4 millones en el 2040 y el número de peatones ligeros de México a Estados Unidos

[1] Lee, Erik, Wilson, Christopher E., Lara-Valencia, Francisco, de la Para, Carlos A., Van Schoik, Rick, Patron-Soberano, Kristofer, Olsen, Eric L., Salee, Andrew, Wilson Center, Mexico Institute, et al, *The State of the Border Report – A Comprehensive Analysis of the U.S.-Mexico Border*, May 2013.

[2] U.S. Chamber of Commerce, *NAFTA Triumphant: Assessing Two Decades of Gains in Trade, Growth, and Jobs*, 2012.

alcanzará los 24.2 millones. Más del 90% del comercio internacional entre California y Baja California se transporta a su destino final por carretera. Se anticipa que los cruces de camiones de carga de México a EE.UU. aumenten de 1.1 millones a casi 1.5 millones entre 2010 y 2040. En 2010, el valor total de los bienes que cruzaron por los puertos internacionales terrestres de entrada de Baja California-California en camiones de carga fue de aproximadamente $41,800 millones USD. Mesa de Otay-Otay Mesa despachó casi tres cuartas partes del valor de la carga ($30,700 millones). Mexicali II-Calexico East procesó alrededor del 24% ($10,100 millones) y Tecate-Tecate procesó alrededor de $943 millones USD.

En virtud de la demanda de cruces actual y proyectada en los puertos internacionales terrestres de entrada antes mencionados, es esencial mejorar la capacidad y operaciones de la infraestructura actual a fin de disminuir el congestionamiento vehicular, facilitar el comercio internacional, reducir los impactos al medio ambiente y mejorar en general la calidad de vida de los habitantes de la región fronteriza. Las dependencias federales, estatales y locales de la región Baja California-California a cargo de la planificación e implementación de puertos internacionales terrestres de entrada y sus respectivas instalaciones de transporte coinciden en la necesidad de contar con un proceso de planificación maestra fronteriza. Dicho proceso coadyuvará en la optimización de inversiones de capital humano y económico en infraestructura de transporte fronterizo, y al mismo tiempo dará certeza a acciones futuras relacionadas con puertos internacionales terrestres de entrada, desarrollo de infraestructura de transporte fronterizo en puertos internacionales terrestres de entrada, y las operaciones de activos.

El Plan Maestro Fronterizo (PMF) California-Baja California es una estrategia integral binacional para coordinar la planificación y entrega de proyectos de infraestructura de puertos internacionales terrestres de entrada y transporte al servicio de puertos de entrada en la región California-Baja California. La región California-Baja California finalizó su primer PMF en 2008. Uno de los logros clave del PMF 2008 fue el desarrollo de la metodología y los criterios para evaluar y jerarquizar proyectos de puertos internacionales terrestres de entrada así como proyectos de carreteras, distribuidores viales y vías ferroviarias que brindan servicio a los puertos internacionales terrestres de entrada. El establecimiento de criterios para la jerarquización de proyectos permitió el desarrollo de un listado mutuamente consensuado de proyectos priorizados dentro de la zona binacional de estudio, misma que forma parte integral del PMF California-Baja California.

En noviembre de 2011, California y Baja California iniciaron la labor de actualizar el PMF. El Comité Conjunto de Trabajo (CCT) México-EE.UU., bajo el liderazgo de la Administración Federal de Carreteras de EE.UU. y la Secretaría de Comunicaciones y Transporte de México, aportó el financiamiento para la Actualización del Plan Maestro Fronterizo California-Baja California 2014. El Departamento de Transporte del Estado de California (Caltrans), en conjunto con la Secretaría de Infraestructura y Desarrollo Urbano del Estado de Baja California (SIDUE) co-administraron el proyecto y contrataron a la Oficina de Servicios de la Asociación de Gobiernos de San Diego (SANDAG Service Bureau) para asistir en el desarrollo de la presente Actualización del PMF. Las dependencias federales, estatales, regionales y locales en materia tanto de EE.UU. como de México brindaron dirección al esfuerzo a través de un Comité Asesor en Políticas (PAC por sus siglas en inglés) y un Grupo Técnico de Trabajo (TWG, ídem). Los objetivos de la Actualización del PMF 2014 son los siguientes:

1. Restablecer y mantener la coordinación binacional respecto del Plan Maestro Fronterizo, la cual inició con el PMF 2008.

2. Revisar los resultados del PMF 2008.

3. Identificar nuevas problemáticas de políticas y/o legislativas, así como tendencias y oportunidades en materia de financiamiento, que afecten la planificación y las mejoras de infraestructura en la zona de estudio California-Baja California a lo largo de la frontera entre México y EE.UU.

4. Adaptar el programa piloto de captura de datos en línea tanto en inglés como en español para su uso de los participantes. Esta herramienta permite a las dependencias ingresar directamente en línea información de proyectos a una base de datos formateada, lo cual agilizaría el proceso anterior que constaba de varios pasos de captura a nivel dependencia y Oficina de Servicios de SANDAG.

5. Ampliar la capacidad de recolección de datos, monitoreo y modelación técnica a fin de captar con mayor precisión las características de viajes transfronterizos y las capacidades de despacho de los puertos internacionales terrestres de entrada. Investigar y desarrollar capacidades para la realización de análisis de sensibilidad en la región fronteriza con el fin de planificar escenarios y priorización de proyectos.

6. Identificar fuentes de financiamiento continuo para el proceso del PMF California-Baja California.

7. Lograr acuerdo entre las dependencias respecto del proceso del PMF y los objetivos/requisitos para actividades futuras del PMF.

8. Finalizar la actualización dentro de un plazo no mayor a tres años a partir de la suscripción del convenio de trasfondo, estableciendo como fecha deseada de finalización del proyecto el 31 de diciembre de 2013 (Nota: el PAC prorrogó la fecha de finalización al 30 de junio de 2014.)

La Actualización del Plan Maestro Fronterizo California-Baja California 2014 incluye una priorización actualizada de proyectos de puertos internacionales terrestres de entrada e infraestructura de transporte relacionada a los mismos, presenta un marco de trabajo para un modelo futuro de realización de análisis de sensibilidad de puertos internacionales terrestres de entrada, expone oportunidades y fuentes de financiamiento, y presenta un resumen de recomendaciones. Estos temas se resaltan en las secciones a continuación.

JERARQUIZACIÓN DE PROYECTOS DE PUERTOS INTERNACIONALES TERRESTRES DE ENTRADA Y DE TRANSPORTE

La Actualización del Plan Maestro Fronterizo California-Baja California 2014 actualiza los listados de proyectos para puertos internacionales terrestres de entrada actuales y nuevos y sus respectivas instalaciones de transporte que se presentaron durante el esfuerzo de preparación del PMF 2008, agrega nuevos proyectos, y jerarquiza nuevamente la prioridad de proyectos a mediano y largo plazo.

Los proyectos de puertos internacionales terrestres de entrada se clasifican en dos categorías principales de inversión: 1) Puertos internacionales terrestres de entrada nuevos y 2) Modernización de puertos internacionales terrestres de entrada existentes. Los proyectos se jerarquizaron de manera independiente dentro de cada una de estas dos categorías. (No se jerarquizaron aquellos proyectos que se habrán finalizado o se encontrarán en obra al cierre de 2014). Las jerarquizaciones individuales a su vez se utilizan para establecer un orden prioritario de los puertos internacionales terrestres de entrada. Asimismo, los proyectos de transporte se jerarquizan de manera independiente. Se les categoriza bajo el

puerto de entrada a la que el proyecto de transporte brinde principalmente sus servicios. Existen cinco categorías de proyectos de obras de transporte:

1. Caminos—proyectos de inversión en infraestructura carretera y vial.
2. Distribuidores viales—proyectos de inversión en infraestructura para distribuidores viales que interconecten caminos y puentes.
3. Ferrocarril/Transporte Público—proyectos de inversión en infraestructura de carga, pasajeros (autobuses y trolebuses de transporte público), y pasos a desnivel. Los centros de transporte multimodal se clasifican como proyectos ferroviarios.
4. Modos de transporte no motorizados transfronterizo—proyectos peatonales y de ciclovías.
5. Inversiones menores de capital y operativas a corto plazo para reducir los tiempos de espera en los cruces fronterizos con dirección norte y sur—Proyectos diseñados para facilitar el despacho federal de peatones y vehículos en los puertos internacionales terrestres de entrada, y por ende agilizar el flujo de bienes y personas.

Proyectos para Nuevos Puertos Internacionales Terrestres de Entrada

Se incluyen seis proyectos bajo la categoría de nuevos puertos internacionales terrestres de entrada. Dos de los proyectos son para el futuro Mesa de Otay II-Otay East, dos para la futura Terminal Transfronteriza del Aeropuerto Tijuana-San Diego y los dos restantes para el posible puerto de entrada Jacumé-Jacumba. Sólo se jerarquizaron los proyectos para el puerto internacional terrestre Mesa de Otay II-Otay Mesa East. (Véase Figura RE.1). Los proyectos para la Terminal Transfronteriza del Aeropuerto Tijuana-San Diego están programados para finalizarse en el transcurso de 2014. Los proyectos para un posible puerto de entrada en Jacumé-Jacumba se incluyen en el Inventario de Proyectos, ya que dicho puerto de entrada se encuentra en las etapas conceptuales iniciales de planificación y no se cuenta por lo tanto con datos para jerarquizarlo. En el Capítulo 4 encontrará mapas donde se ilustra la ubicación de los proyectos de transporte vinculados a cada puerto fronterizo.

Modernización de los Puertos Internacionales Terrestres de Entrada Existentes

Las dependencias participantes en el PMF presentaron 21 proyectos para la modernización de puertos internacionales terrestres de entrada existentes. Tres proyectos no se jerarquizaron debido a que se anticipa finalizar uno de ellos dentro del corto plazo, y se planea que los otros dos estén en obra de construcción para diciembre de 2014. Cinco proyectos están incluidos en el Inventario de Proyectos. Se jerarquizaron trece proyectos de manera individual y luego se agruparon por puerto internacional terrestre de entrada. Las jerarquizaciones individuales de los proyectos se utilizaron para establecer el orden prioritario que se indica en la Tabla RE.1 y en la Figura RE.2. En el Capítulo 4 encontrará mapas que ilustran la ubicación de los proyectos de transporte vinculados a los puertos de entrada.

Tabla RE.1
Orden Prioritario: Modernización de Puertos Internacionales Terrestres de Entrada Existentes

Lugar	Puerto de Entrada
1	Puerta México/El Chaparral-San Ysidro/Virginia Avenue
2	Mexicali I-Calexico
3	Mesa de Otay-Otay Mesa, pasajeros
4	Mexicali II-Calexico East, carga
5	Mesa de Otay-Otay Mesa, carga
6	Mexicali II-Calexico East, pasajeros
7	Tecate-Tecate
8	Los Algodones-Andrade

Figura RE.1: Jerarquización de Proyectos para Nuevos Puertos Internacionales Terrestres de Entrada
Actualización del Plan Maestro Fronterizo California-Baja California 2014

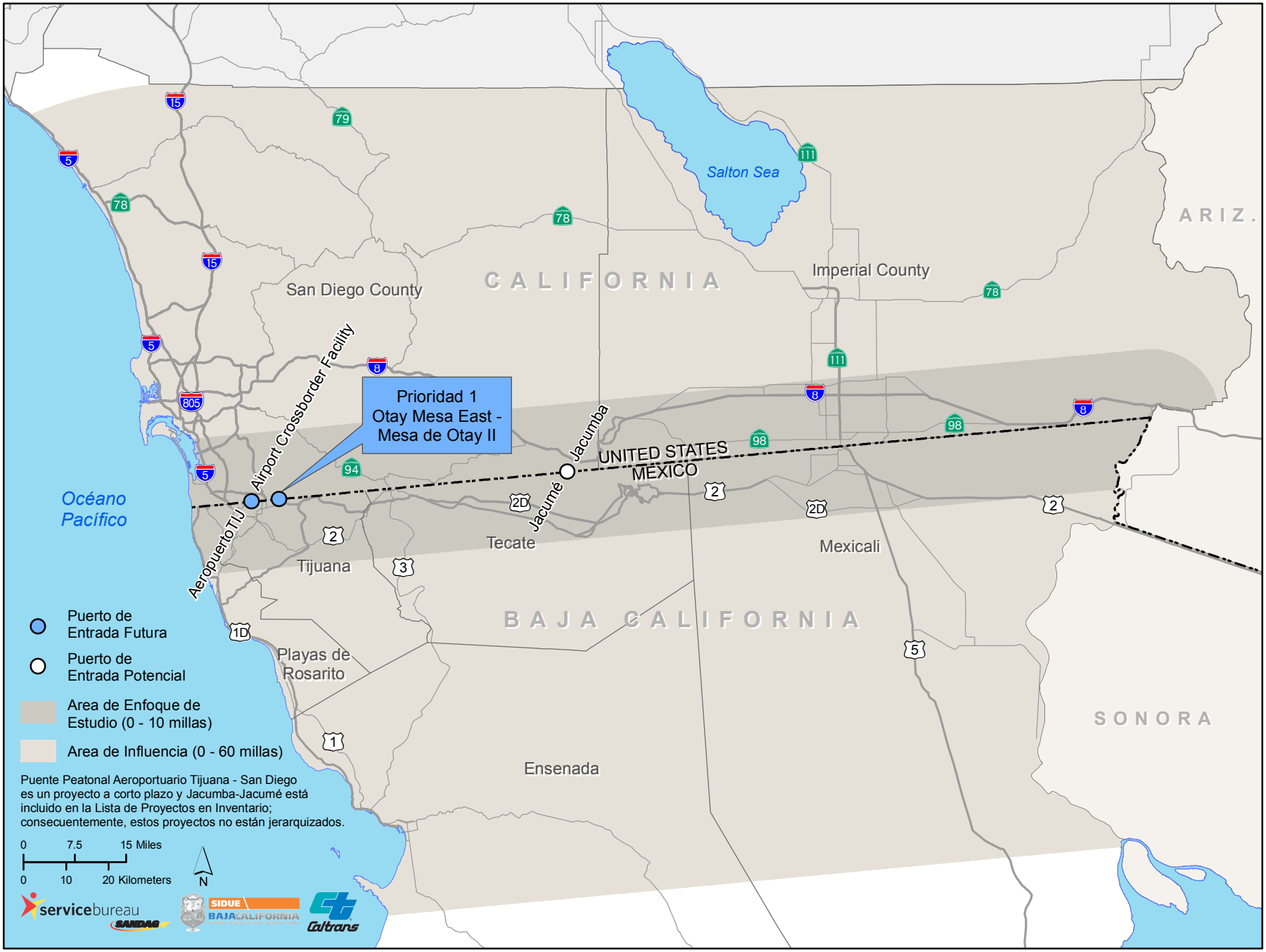
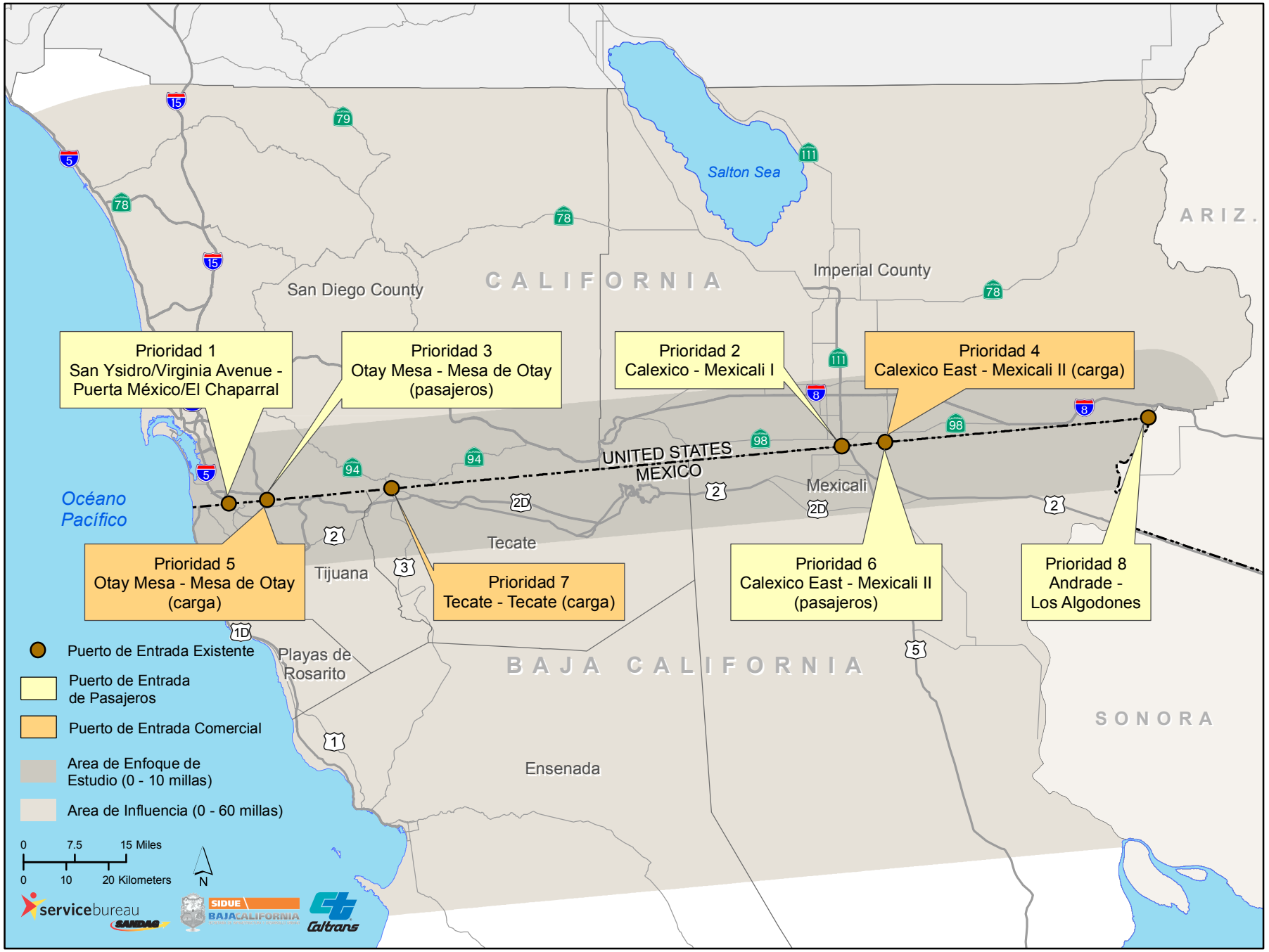


Figura RE.2: Jerarquización de Proyectos para Modernización de Puertos Internacionales Terrestres de Entrada Existentes
Actualización del Plan Maestro Fronterizo California-Baja California 2014



MARCO DE TRABAJO PARA UN MODELO FUTURO QUE REALICE EL ANÁLISIS DE SENSIBILIDAD DE PUERTOS INTERNACIONALES TERRESTRES DE ENTRADA EN LA REGIÓN CALIFORNIA-BAJA CALIFORNIA

Una de las tareas clave en la Actualización del PMF 2014 es el desarrollo de un marco de trabajo para un modelo futuro para la realización de análisis de sensibilidad de puertos internacionales terrestres de entrada en materia de mejoras de infraestructura en un sistema de puertos internacionales terrestres dentro de una zona metropolitana binacional. El informe presenta dos alternativas para el desarrollo de capacidades de modelación de demanda de viajes binacionales. La Opción 1 se centra en a la meta a largo plazo de desarrollar dos modelos binacionales—uno para la zona metropolitana Mexicali-Imperial y otro para la zona metropolitana Tijuana/Tecate-San Diego. En la Opción 2, los modelos existentes de demanda de viajes en EE.UU. y México se vincularían, o "tejerían", utilizando datos y métodos previamente acordados para pronosticar los viajes transfronterizos en cada una de los puertos internacionales terrestres por modalidad de transporte. El marco de trabajo de modelación para la Opción 1 debe partir de las mejores prácticas en la región y ampliar el alcance geográfico a fin de incluir al norte de Baja California y el sur de California como un modelo único para cada zona metropolitana binacional. El costo de desarrollar el modelo para cada zona metropolitana binacional sería comparable al del Modelo en Función de la Actividad (Activity Based Model, o ABM) que han desarrollado tanto SANDAG como la Asociación de Gobiernos del Sur de California (SCAG, por sus siglas en inglés), cuyo costo ha sido de más de $1 millón USD cada uno.

La Opción 2 se trata del desarrollo, en dos fases, de una serie de métricas de desempeño que podrían utilizarse para evaluar el resultado de las mejoras de capacidad y operaciones de transporte. Además de la coordinación y preparación del modelo, la Fase 1 incluye el desarrollo de un modelo econométrico para pronosticar el volumen de cruces fronterizos. La Fase 2 incluye el desarrollo de herramientas de modelación para pronosticar tiempos de espera por puerto internacional terrestre de entrada, desempeño de caminos y transporte público, calidad del aire, y rendimiento económico.

Será clave una estrecha y continua colaboración entre el personal técnico de SANDAG, SCAG, el Instituto Municipal de Planeación de Tijuana (IMPlan), el Instituto Municipal de Investigación y Planeación Urbana de Mexicali (IMIP), Caltrans, y SIDUE a fin de garantizar la coordinación en el esfuerzo de modelación. Para lograr con éxito dicha coordinación, será indispensable asimismo un compromiso continuo de inversión en recursos técnicos y de personal.

OPORTUNIDADES Y FUENTES DE FINANCIAMIENTO

El PMF California-Baja California constituye el primer esfuerzo binacional de priorización para la planificación fronteriza de puertos internacionales terrestres de entrada y su respectiva infraestructura de transporte que incluye una metodología aceptada en ambos lados de la frontera por las dependencias gubernamentales, federal, estatal, regional y local. Proporciona igualdad de condiciones para la priorización de proyectos y una estrategia sistemática para la planeación. Sin embargo, carece de una fuente de financiamiento sustentable a largo plazo que dé continuidad y certeza a las actualizaciones del PMF.

El PMF California-Baja California aporta una serie de beneficios a la planeación fronteriza, entre ellos: 1) continuidad en la toma de decisiones, 2) armonización binacional de prioridades, 3) certeza para la inversión privada, 4) significancia para solicitar fondos públicos para la implementación de proyectos,

5) conectividad con esfuerzos en materia de gases de efecto invernadero y emisiones de vehículos en espera de cruce, 6) procesos de planificación sólidos, impulsados por datos y sistemáticos, y 7) intercambio binacional de información.

Los estados fronterizos de México y EE.UU. han adaptado y ampliado la estrategia de California-Baja California y la han modificado para que cubra sus necesidades particulares. Los niveles de financiamiento para dichos PMF varían en función de las tareas que se incluyeron en cada uno. Los costos para la realización del PMF variaron entre $250,000 y $1,000,000 USD. Actualmente, California-Baja California es la única región fronteriza que está realizando una actualización a su Plan Maestro Fronterizo. El costo de la actualización del PMF 2014 fue de $306,000 USD.

La identificación y el establecimiento de fuentes de financiamiento constantes a largo plazo para el PMF en un proceso binacional mediante mecanismos convencionales es esencial para poder continuar concretando sus beneficios. Varias de las ideas para resolver esta necesidad crítica incluyen abogar para que se asignen fondos en el siguiente proyecto-ley de transporte en EE.UU., explorar posibles fuentes de financiamiento en EE.UU. y México—entre ello incorporar el PMF a los presupuestos anuales de Caltrans y SIDUE, el apalancamiento de alianzas binacionales existentes entre México y EE.UU., como por ejemplo del CCT México-EE.UU., el Diálogo Económico de Alto Nivel México-EE.UU., el Grupo de Cruces y Puentes Binacionales México-EE.UU., y la Conferencia de Gobernadores Fronterizos, así como otros organismos según sea el caso a fin de coordinar esfuerzos que den certeza a una fuente fiable y consistente de financiamiento para el proceso del PMF, explorar la posibilidad de apoyo en financiamiento a través del Banco de Desarrollo de América del Norte u otros mecanismos regionales existentes, y explorar otras alternativas de financiamiento como la conocida como “crowdfunding” (financiamiento colectivo).

RECOMENDACIONES FINALES DEL PMF 2014

A fin de conservar y fortalecer el proceso de planificación maestra fronteriza, la Actualización del PMF 2014 parte de las recomendaciones del PMF 2008. Como punto de partida, las recomendaciones del PMF 2008 se revisan y se incorporan, en su caso, a la actualización, y se desarrollan nuevas recomendaciones. Como resultado de lo anterior, el PMF California-Baja California consta de un total de 23 recomendaciones, mismas que se agrupan en tres temáticas clave:

Temática I: - Institucionalización del Proceso de Planificación Maestra Fronteriza

Temática II: - Modelación, Gestión de Datos, y Necesidades de Datos

Temática III: - Financiamiento Consistente y Seguro

Las recomendaciones se exhiben por temática en la Tabla RE.2. Dentro de cada temática, estas se vinculan asimismo a las metas de la Actualización del PMF 2014. (Es posible que las metas no aparezcan en orden secuencial, ya que se agruparon de acuerdo a las tres temáticas.)

Tabla RE.2
Recomendaciones de la Actualización del PMF 2014 (Agrupadas por Temática y Metas)

Metas de la Actualización del Plan Maestro Fronterizo (PMF) California-Baja California 2014	Recomendaciones
Temática I – Institucionalización del Proceso de Planificación Maestra Fronteriza	
Meta 1. Conservar la Coordinación Binacional en materia del Plan Maestro Fronterizo	1.1 El Departamento de Transporte del Estado de California (Caltrans) y la Secretaría de Infraestructura y Desarrollo Urbano del Estado de Baja California (SIDUE) deberán convocar a un grupo de trabajo para desarrollar un proceso que convierta al Plan Maestro Fronterizo en un documento vivo.
	1.2 Caltrans y SIDUE convocarían a una reunión anual del Comité Asesor en Políticas del PMF California-Baja California a fin de presentar una actualización sobre el estado que guardan las temáticas, metas y recomendaciones aplicables que se adoptaron en la Actualización del PMF California-Baja California 2014. Dichas reuniones deberán incluir un punto permanente en el orden del día para comentar actualizaciones y modificaciones que se propongan para proyectos.
	1.3 Sujeto a la disponibilidad de fondos, las actualizaciones de fondo al PMF California-Baja California se realizarían cada cuatro a seis años. Caltrans y SIDUE liderarán los esfuerzos para identificar fondos y administrar dichas actualizaciones, en colaboración con el Comité Asesor en Políticas del PMF California-Baja California y, dentro del marco del Comité Conjunto de Trabajo (CCT) México-EE.UU.
	1.4 Caltrans y SIDUE informarán respecto del monitoreo e implementación del PMF California-Baja California en las sesiones de las Comisiones Técnicas que auspicia el Mecanismo de Enlace Fronterizo (MEF), el Grupo Binacional México-EE.UU. sobre Puentes y Cruces Fronterizos, y la Conferencia de Gobernadores Fronterizos México-EE.UU., así como en otros foros binacionales según corresponda.
Meta 2. Revisar los resultados del PMF 2008	2.1 Considerar el PMF California-Baja California como un marco de trabajo para la priorización de proyectos de infraestructura y el fortalecimiento de la coordinación de la planificación e implementación de puertos internacionales terrestres de entrada e instalaciones de transporte relacionadas con los mismos en ambos lados de la frontera Baja california-California.
	2.2 Contemplar el uso de información priorizada de proyectos en Baja California-California para competir por fuentes de financiamiento del sector transporte.
	2.3 Utilizar la información priorizada de proyectos Baja California-California para seguir una metodología sistemática y ordenada dirigida a la implementación de proyectos binacionales.

Tabla RE.2
Recomendaciones de la Actualización del PMF 2014 (Agrupadas por Temática y Metas) (Continuación)

Metas de la Actualización del Plan Maestro Fronterizo (PMF) California-Baja California 2014	Recomendaciones
	2.4 Tomar en cuenta los criterios de evaluación de proyectos del PMF California-Baja California como guía o apoyo en procesos de jerarquización de proyectos de cada una de las dependencias.
	2.5 Aprovechar los resultados del PMF California-Baja California como insumos en documentos de planificación federales, estatales y locales. A su vez, los resultados de dichos documentos de planificación se alimentarían a las actualizaciones del PMF California-Baja California.
Meta 3. Identificar nuevas problemáticas y tendencias legislativas y/o de políticas, así como realidades y oportunidades de financiamiento que incidan en el PMF	3.1 Explorar oportunidades para alinear el PMF con iniciativas federales, como el Diálogo Económico de Alto Nivel México-EE.UU. (DEAN), entre otros, según corresponda.
Meta 7. Lograr el consenso con otras dependencias respecto del proceso y los objetivos del PMF, así como en materia de las necesidades para actividades futuras del PMF	7.1 Desarrollar criterios para la evaluación y jerarquización de proyectos de transporte no motorizado.
	7.2 Incorporar esfuerzos de planeación realizados por otras dependencias al proceso del PMF, incluyendo estimaciones de tiempos de espera en el cruce, calidad del aire, y análisis económicos.
Temática II – Modelación, Gestión de Datos y Necesidades de Datos	
Meta 4. Adaptar el programa piloto de captura de datos en línea	4.1 Explorar la posibilidad de que Caltrans y SIDUE hospeden y den mantenimiento al portal en línea de gestión de datos y cartografía del PMF California-Baja California.
	4.2 Ampliar y fortalecer la Herramienta de Gestión de Datos en la Web.
Meta 5. Mejorar la capacidad de acopio de datos, monitoreo y modelación técnica	5.1 Solicitar el apoyo del CCT México-EE.UU., el Grupo Binacional México-EE.UU. sobre Puentes y Cruces Fronterizos, funcionarios que participan en el Diálogo Económico de Alto Nivel a nivel Gabinete, la Conferencia de Gobernadores Fronterizos México-EE.UU., y otros según sea necesario, a fin de avanzar la modelación de demanda de cruces como una herramienta constante de planificación en las regiones fronterizas en apoyo al proceso de planificación maestra fronteriza California-Baja California.

Tabla RE.2
Recomendaciones de la Actualización del PMF 2014 (Agrupadas por Temática y Metas) (Continuación)

Metas de la Actualización del Plan Maestro Fronterizo (PMF) California-Baja California 2014	Recomendaciones
	5.2 Continuar la colaboración mediante el Intercambio entre Pares para Pronosticación Fronteriza México-EE.UU., liderado por el CCT México-EE.UU., a fin de armonizar e intercambiar información respecto de metodologías de acopio de datos y pronosticación, para demanda de cruces transfronterizos por modo de transporte, y otros datos relativos al transporte transfronterizo, entre ellos tiempos de espera en el cruce.
	5.3 Explorar formas de establecer y conservar una estrecha coordinación entre el personal técnico de dependencias estatales y regionales para intercambiar ideas y datos relacionados con la planificación regional y de transporte en la región fronteriza.
	5.4 Con el apoyo de las dependencias correspondientes, Caltrans y SIDUE desarrollarían términos de referencia detallados y refinarían estimaciones de costo para cada una de las fases del marco de modelación y buscarían financiamiento para su implementación en etapas.
	5.5 Adoptar la serie aprobada de 20 medidas de desempeño para un marco de modelación como métricas relevantes cuando dependencias participantes realicen procesos específicos de jerarquización o esfuerzos de acopio de datos y monitoreo.
	5.6 Definir los límites específicos de las dos zonas metropolitanas en California-Baja California conocidas en términos generales como Tijuana/Tecate-San Diego y Mexicali-Imperial.
	5.7 Desarrollar procesos para el acopio e intercambio de datos necesarios de viajes en dirección norte y sur.
Temática III – Financiamiento Consistente y Fiable	
Meta 6. Identificar fuentes de financiamiento continuo para el PMF	6.1 Dialogar sobre la forma de desarrollar una estrategia de financiamiento para Planes Maestros Fronterizos en toda la frontera entre México y EE.UU. con el CCT México-EE.UU., el Grupo Binacional México-EE.UU. sobre Puentes y Cruces Fronterizos, el Diálogo Económico de Alto Nivel a Nivel Gabinete, y la Conferencia de Gobernadores Fronterizos México-EE.UU., y otros organismos según sea necesario.
	6.2 Buscar oportunidades de financiamiento a nivel federal y estatal.

CONCLUSIÓN

El desarrollo de un nuevo puerto internacional terrestre de entrada o realizar mejoras a los puertos internacionales terrestres de entrada existentes y sus instalaciones de transporte relacionadas es un emprendimiento largo y complejo que exige una estrecha coordinación y colaboración con dependencias gubernamentales en ambos lados de la frontera. El proceso del PMF California-Baja California representa una herramienta que puede utilizarse para coadyuvar en la priorización de proyectos de infraestructura y fortalecer la coordinación de la planificación e implementación de los puertos internacionales terrestres de entrada y proyectos de transporte tanto en Estados Unidos como en México. Una estrategia integral ayuda a dependencias tanto de Estados Unidos como en México a convenir y depender de prioridades a mediano y largo plazo para llevar a su finalización proyectos necesarios para facilitar en forma eficiente el comercio internacional y mejorar la calidad de vida de quienes habitan la región fronteriza.

El proceso de Planificación Maestra Fronteriza Binacional entre California y Baja California que gestionan Caltrans y SIDUE, bajo el liderazgo tanto de la esfera federal como de dependencias regionales y locales, representa una herramienta que puede generar ahorros y altas tasas de rendimiento en inversiones en infraestructura fronteriza para ambos países. La Actualización del Plan Maestro Fronterizo California-Baja California 2014 es el resultado de un proceso continuo que inició en 2006, con su informe antecesor de 2008. Los logros clave de la Actualización del PMF California-Baja California 2014 son:

1. La actualización del listado de proyectos de puertos internacionales terrestres y transporte, incluyendo la catalogación de dos nuevas categorías de transporte: modos no motorizados de transporte transfronterizo, e inversiones menores de capital y operativas a corto plazo para reducir los tiempos de espera en los cruces fronterizos,
2. Un nuevo ejercicio de jerarquización de proyectos a mediano y largo plazo de puertos internacionales terrestres de entrada y transporte (caminos, distribuidores viales, y transporte público/ferroviario),
3. El desarrollo de un marco de trabajo para un futuro modelo de transporte que sirva para realizar análisis de sensibilidad para mejoras de infraestructura en un sistema de puertos internacionales terrestres de entrada dentro de una zona metropolitana binacional,
4. La identificación de fuentes de financiamiento continuo para el proceso del PMF California-Baja California, y
5. La preparación de recomendaciones para conservar y fortalecer el proceso de planificación maestra fronteriza.

La metodología utilizada en California-Baja California podría continuar ampliándose y adaptándose, dando como resultado un proceso de planificación maestra coordinado que podría ser de gran utilidad para toda la franja fronteriza México-EE.UU. Sin embargo, a la fecha no se han identificado fuentes de financiamiento sustentables a largo plazo que pudieran dar continuidad y certeza a las actualizaciones futuras del PMF. Las dependencias que participan en el presente proceso de planificación maestra fronteriza están totalmente a favor de que se continúe actualizando el PMF de manera programada. Ya se ha emprendido el diálogo respecto de posibles formas de incorporar el proceso de planificación maestra fronteriza California-Baja California a los procesos de planeación federales, estatales, regionales o locales en sus componentes relacionados con la frontera.

CHAPTER 1
INTRODUCTION

PURPOSE OF STUDY

The California-Baja California Border Master Plan (BMP) is a binational comprehensive approach to coordinate planning and delivery of land ports of entry (POEs) and transportation infrastructure projects serving those POEs in the California-Baja California region. The California and Baja California region completed its first BMP in 2008. One of the key successes of the 2008 BMP was the development of a methodology and criteria to evaluate and rank POE projects as well as roadway, interchange, and rail projects serving the POEs. Establishing criteria for ranking projects allowed for the development of a mutually agreed-upon list of prioritized projects within the binational study area that is an integral part of the California-Baja California BMP. Since completing the 2008 report, other border states have adapted and expanded the California-Baja California approach and customized it to address each area's individual needs. The Arizona-Sonora BMP was finalized in February 2013, the Laredo-Coahuila/Nuevo León/Tamaulipas BMP was completed in June 2012, and the El Paso/Santa Teresa-Chihuahua BMP and Lower Rio Grande Valley-Tamaulipas BMP were completed in October 2013. The New Mexico-Chihuahua BMP is under development and anticipated to be finalized in spring/summer 2015.

In November 2011, California and Baja California began work on an update to the BMP. The U.S.–Mexico Joint Working Committee (JWC), headed by the U.S. Federal Highway Administration (FHWA) and Mexico's Secretariat of Communications and Transportation (SCT), provided the funding for the California-Baja California 2014 BMP Update. The California Department of Transportation (Caltrans), in partnership with the Secretariat of Infrastructure and Urban Development of Baja California (SIDUE) co-managed the project and retained the San Diego Association of Governments (SANDAG) Service Bureau to assist in the development of this BMP Update. The primary goals of the 2014 BMP Update are to:

1. Re-establish and maintain binational coordination on the Border Master Plan, which began with the 2008 BMP.
2. Review findings of the 2008 BMP.
3. Identify new policy and/or legislative issues as well as funding trends and opportunities impacting planning and capital improvement in the study area of California and Baja California along the U.S.-Mexico border.
4. Adapt an existing web-based pilot data entry program in both English and Spanish for use by stakeholders. This tool allows stakeholder agencies to directly input project data information into a formatted online database, streamlining the previous process that required multiple steps of input at the agency and SANDAG Service Bureau levels.
5. Expand data collection, monitoring, and technical modeling capabilities to better capture crossborder travel characteristics and POE throughput capabilities. Research and develop capabilities to perform border region sensitivity analyses for scenario planning and project prioritization.

6. Identify ongoing funding sources for the California-Baja California BMP process.
7. Reach agreement with agencies on BMP process and objectives/requirements for future BMP activities.
8. Complete the update within three years from the date the underlying Project Implementation Order as signed by both parties, with a desired project completion date of December 31, 2013.[1]

SCOPE OF WORK

The Border Master Plan Policy Advisory Committee (PAC) was established to provide direction throughout the study, including the preparation of a Scope of Work. By invitation, the PAC included top-level executive managers of federal, state, regional, and local entities responsible for land use, transportation, POE facilities, and security operations from the United States and Mexico. A Technical Working Group (TWG) composed of senior staff from the agencies participating in the PAC also was established to provide ongoing support and guidance to the consultant in collecting and providing the requested information.

The 2014 California-Baja California Border Master Plan Scope of Work as approved by the PAC identified 12 key tasks that are summarized below. All tasks have been completed.

Task 1: Survey Technical Working Group Representatives and Develop Draft Work Plan

Meet with stakeholders to discuss the project goals and steps required to achieve those goals. Conduct a survey of PAC representatives to collect input and information to help develop the Final Work Plan.

Task 2: Develop and Approve Final Work Plan

With input from Task 1, develop Draft Final Work Plan for Caltrans and SIDUE to present to the TWG and obtain feedback and recommendations for PAC approval of the Final Work Plan.

Task 3: Subconsultant Services

Following completion of the Final Work Plan, Caltrans, SIDUE and SANDAG determine whether the SANDAG Service Bureau will need to obtain subconsultant services to assist with completion of the study.

Task 4: Existing BMP Data and Sources and Modeling Capabilities

Review, evaluate, and query data types and sources available to meet 2014 BMP modeling goals. Review modeling capabilities and data sources used for the 2008 BMP and current modeling/forecast data and tools.

[1] In November 2011, the Policy Advisory Committee approved the Hybrid Scope of Work for the 2014 BMP Update with modifications and additional funding. To accommodate changes in administrations, staff training for the web tool used to submit projects for evaluation and ranking was postponed and the 2014 BMP Update project completion date was moved to March 31, 2014. Subsequently, the completion date was changed to June 30, 2014 to accommodate the U.S.-Mexico border wide *U.S. – Mexico Border Master Planning for Port of Entry and Connecting Transportation Infrastructure: Why and How to Fund this Borderwide Process* Peer Exchange held in October 2013.

Task 5: Data Gap Analysis for BMP Sensitivity Analysis

Identify the level of analysis, data, tools, and funding needed to move toward the development of a model that could help assess the impact and sensitivity of POE and transportation infrastructure investments.

Task 6: Update Travel Demand Data and Planning Horizon

Work with the TWG to update current and forecasted travel demand data and current border wait times data, and define the planning horizon for use in the evaluation criteria for scoring POE and transportation improvement projects.

Task 7: Update Project Lists and Re-rank Projects

Update lists of existing and POE and transportation infrastructure projects. Use the 2008 BMP methodology as basis to re-rank medium and long-term POE and transportation infrastructure projects. (Short-term projects are not ranked.) POE projects will be classified as either new POE infrastructure or modernization of existing POE infrastructure. POE projects will be ranked within these two classifications.

Task 8: Incorporate Infrastructure Projects for Non-motorized Modes Related to Crossborder Travel

Define and identify projects for non-motorized modes of transportation. Determine if projects can be ranked using existing methodology and evaluation criteria. If these projects cannot be ranked using the existing criteria, then catalog these projects for reference for the BMP agencies, mapping the location of submitted projects where possible.

Task 9: Identify Possible Short-term Operational and Minor Capital Investment Projects to Reduce Northbound and Southbound Crossborder Wait Times

Define and identify possible short-term northbound and southbound operational and short-term capital investment improvements at the border to reduce crossborder wait times. Catalog results, including mapping the location of submitted projects where possible.

Task 10: Funding Issues and Opportunities

Identify possible funding opportunities and sources including legislation or regulations (existing or needed) for the BMP to become a permanent binational process.

Task 11: Draft Recommendations

Develop draft recommendations for next steps in BMP process. Include specific recommendations and action items for appropriate agencies to implement the findings as part of the next steps in the BMP process.

Task 12: Draft and Final Reports

Develop and submit Draft and Final Reports for Caltrans and SIDUE to present to TWG and PAC.

DECISION-MAKING STRUCTURE

Under the direction of the U.S.-Mexico JWC, Caltrans, and SIDUE, a California-Baja California Border Master Plan PAC and TWG were established. The agencies listed below were invited to participate in the development of the plan. Each agency was asked to designate executive-level managers to serve on the PAC and senior staff to serve on the TWG. The participating agencies are:

United States

- U.S. Department of State (DOS)
- U.S. Customs and Border Protection (CBP)
- U.S. General Services Administration (GSA)
- U.S. Federal Highway Administration (FHWA)
- California Department of Transportation (Caltrans)
- Imperial County Transportation Commission (ICTC)
- San Diego Association of Governments (SANDAG)
- Southern California Association of Governments (SCAG)
- County of Imperial
- County of San Diego
- City of Calexico
- City of El Centro
- City of Holtville
- City of Chula Vista
- City of Imperial Beach
- City of National City
- City of San Diego

Mexico

- Secretariat of Foreign Relations (Secretaría de Relaciones Exteriores, SRE)
- Consulate of Mexico in San Diego (Consulado General de México)
- Secretariat of Communications and Transportation (Secretaría de Comunicaciones y Transportes, SCT)
- General Customs Administration of Mexico (Administración General de Aduanas, México D.F.)
- General Customs Administration of Tijuana (Administración General de Aduanas, Tijuana B.C.)
- Secretariat of Social Development (Secretaría de Desarrollo Social, SEDESOL)

- Institute of Administration and Estimates of National Real Estate (Instituto de Administración y Avalúos de Bienes Nacionales, INDAABIN)
- Office of the Governor of Baja California
- Secretariat of Infrastructure and Urban Development of Baja California (Secretaría de Infraestructura y Desarrollo Urbano del Estado de Baja California, SIDUE)
- Metropolitan Planning Institute of Tijuana (Instituto Metropolitano de Planeación de Tijuana, IMPLAN)
- Municipal Planning Institute of Mexicali (Instituto Municipal de Planeación de Mexicali, IMIP)
- Municipality of Mexicali (Municipio de Mexicali)
- Municipality of Playas de Rosarito (Municipio de Playas de Rosarito)
- Municipality of Tecate (Municipio de Tecate)
- Municipality of Tijuana (Municipio de Tijuana)

Other agencies also were invited to participate on specific tasks as work progressed. These agencies are:

- National Immigration Institute of Mexico (Instituto Nacional de Migración de México))
- Secretariat of Economic Development of Baja California (Secretaría de Desarrollo Económico)
- Secretariat of Tourism of Baja California (Secretaría de Turismo)
- U.S. Environmental Protection Agency

The PAC was responsible for providing direction, approving the study parameters, and establishing criteria for future evaluation of projects. The TWG was responsible for working with the consultant by providing requested information in a timely manner and making recommendations to the PAC. Specific roles of the PAC and TWG are outlined in the charter included in Appendix A-1. The PAC and TWG representatives list and contact information are located in Appendix A-2.

Over the course of the study, six PAC meetings and eight TWG meetings were held. The schedule of meetings is provided in Appendix A-3. Meeting agreements and attendance for the PAC are shown in A-4 and A-5. Meeting agreements and attendance for the TWG are shown in Appendix A-6 and A-7. Meeting agreements and attendance for focus groups and peer exchanges are included in Appendix A-8 through A-11. Also included in Appendix A is a list of individuals other than the PAC or TWG representatives who participated in the BMP (Appendix A-12) and comments and responses on the draft report (Appendix A-13).

APPROACH FOR COMPLETING THE TASKS

Caltrans and SIDUE developed the Scope of Work collaboratively with the PAC. A survey of participating BMP agencies was conducted to gather input to develop the scope of work and set priorities. Questions to document how BMP agencies had used the 2008 BMP also were included. The summary of the survey is shown in Appendix B-1 and agency responses are included in Appendix B-2.

To accomplish the tasks outlined in the Scope of Work, questionnaires were prepared to request pertinent task-level data from TWG member agencies. Summaries and analyses were presented to the TWG for

discussion. Following the TWG meetings, the same information and analyses, updated according to the input received from the TWG, were presented at the PAC meetings. The TWG made recommendations to the PAC on tasks, such as recommending the planning horizon for the study and prioritization of POEs and connecting transportation projects.

Throughout the process, Caltrans and SIDUE, the Study's project managers, worked closely with the binational PAC and TWG to ensure the California-Baja California 2014 BMP Update met its goals and resulted in a model that could be used in other border areas for similar binational infrastructure planning and coordination.

ORGANIZATION OF THE REPORT

Chapter 2 of the California-Baja California 2014 BMP Update presents a profile of the communities within the binational study area and includes data on income as well as current and projected population, employment, and land use information. Chapter 3 examines the current POE configuration and current and projected border crossing data. Chapter 4 describes the process for updating POE and transportation project rankings, including project categories and evaluation criteria. It features the project rankings for new POEs, modernization to existing POEs, and connecting transportation projects. Chapter 5 proposes a framework for developing a future model to conduct a POE sensitivity analysis and Chapter 6 describes funding opportunities for a binational border master planning process. Chapter 7 provides recommendations for the next steps in the binational planning process, including suggestions for institutionalizing the California-Baja California Border Master Plan process. Chapter 8 provides a status of the recommendations from the California-Baja California 2008 BMP. The Appendices include PAC and TWG contact lists, meeting agreements, agency responses to questionnaires, POE and transportation facility project rankings and scoring, and other documents pertinent to the study.

CHAPTER 2
CURRENT AND PROJECTED DEMOGRAPHIC AND ECONOMIC PROFILE

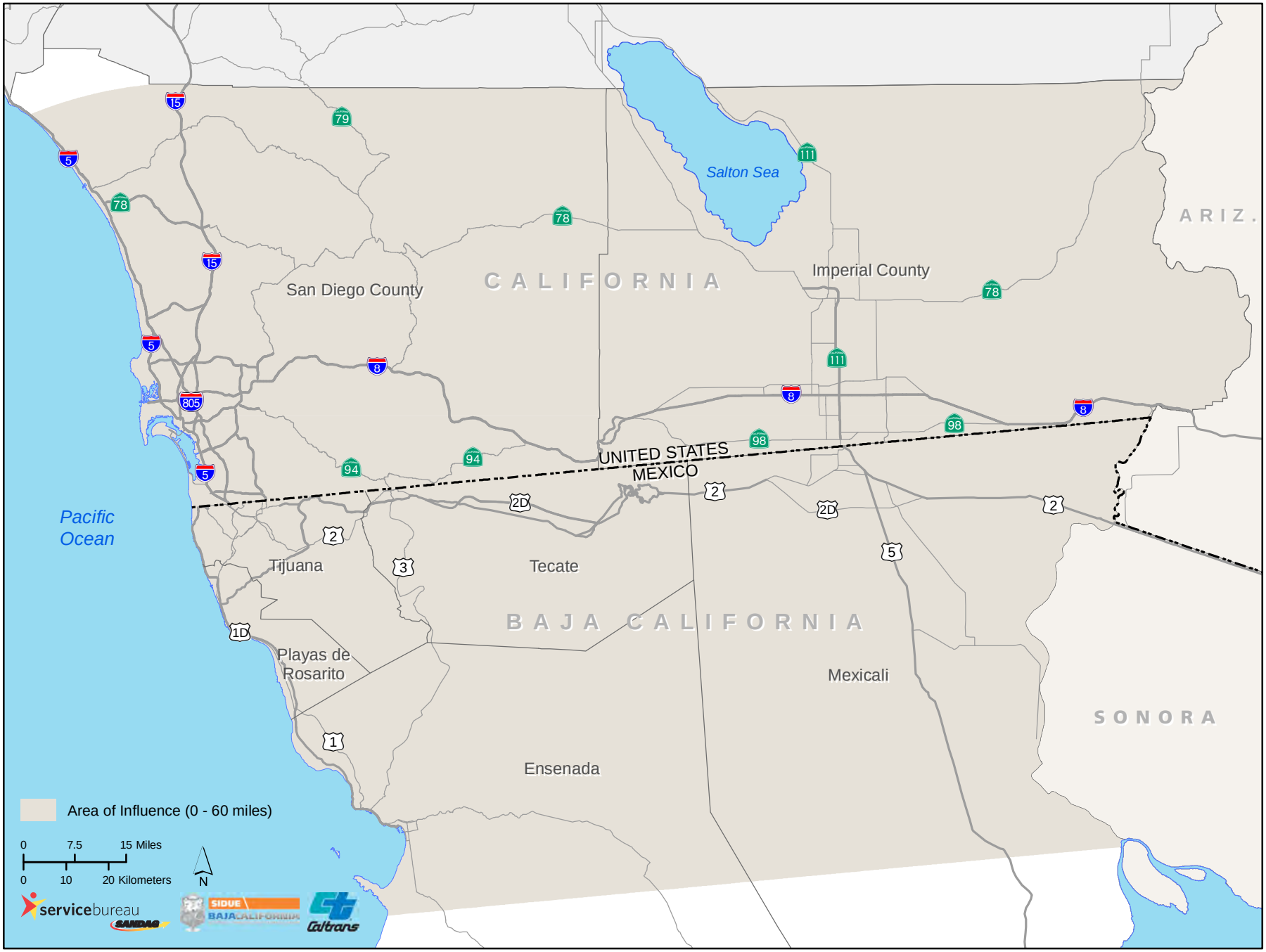
This chapter presents a demographic and economic profile of the communities in the California-Baja California binational study area and includes current and projected population, employment, and land use information. It also includes data on income and gross domestic product.

AREA OF INFLUENCE

The demographic and economic profile is based on the Area of Influence of the border area, which comprises a total of 120 mile, or 200 km., north and south of the California-Baja California International Border. As shown in Figure 2.1, in California, the Area of Influence includes the counties of San Diego and Imperial. In Baja California, it includes the municipalities of Tijuana, Tecate, Playas de Rosarito, parts of Mexicali, and the urban area of Ensenada. Although Playas de Rosarito and Ensenada do not physically lie along the California-Baja California International boundary, they are important urban centers with highway and road transportation networks that connect to California-Baja California ports of entry (POE).

The following analysis is based on data provided by the Southern California Association of Governments (SCAG); the San Diego Association of Governments (SANDAG); the Secretariat of Infrastructure and Urban Development of Baja California (SIDUE); and the Municipal Planning Institute of Mexicali (IMIP). The Border Master Plan (BMP) Policy Advisory Committee (PAC) established 2010 as the base year and 2040 as the planning horizon for this 2014 BMP Update.

Figure 2.1: Area of Influence
California-Baja California 2014 Border Master Plan Update



POPULATION

Approximately 3.27 million people lived in California's Area of Influence in 2010, comprising nearly 9 percent of the state's population. Of this total, 95 percent lived in San Diego County and 5 percent in Imperial County. Population is expected to grow at an annual rate of 1.0 percent per year between 2010 and 2040, with Imperial County growing at a faster rate. The combined population of San Diego and Imperial counties is projected to reach more than 4.45 million people by 2040 (Table 2.1).

Table 2.1
Total Population, 2010 and 2040
California and San Diego and Imperial Counties [(1)]

Area	2010	2040	Change 2010-2040	Annual Average Growth Rate 2010-2040
California	37,312,510	47,983,659	10,671,149	0.8%
San Diego County	3,095,313	4,163,688	1,068,375	1.0%
Imperial County	174,528	288,000	113,472	1.7%
California Area of Influence	**3,269,841**	**4,451,688**	**1,181,847**	**1.0%**

[(1)] Projections for Imperial County were only available for 2035. Projected data for the Area of Influence includes 2040 data for San Diego County added to 2035 data for Imperial County.

Source: California Department of Finance Interim Population Projections 2012 and SANDAG 2050 Regional Growth Forecast; 2010 Census and SCAG 2012-2035 Regional Transportation Plan (RTP) Forecast, compiled by SANDAG and SCAG.

About 3.16 million people lived in Baja California in 2010. The population is expected to nearly double to 6.19 million by 2040. Most of the population in Baja California is concentrated in the municipalities of Tijuana and Mexicali. Tijuana is the largest municipality and is expected to grow at an average rate of 2.2 percent annually between 2010 and 2040. Mexicali is anticipated to have the slowest growth rate during this period at 1.9 percent per year. Playas de Rosarito is the newest municipality (previously part of Tijuana) and is expected to be the fastest growing, at an average rate of 4.6 percent annually. Ensenada's coastal urban center has emerged as a tourist destination in Baja California and it is home to the Port of Ensenada. Its population is expected to more than double its current population by 2040. With just over 100,000 residents in 2010, Tecate is the second smallest municipality and is expected to have a 2010 - 2040 average annual growth rate of 2.2 percent, similar to that of Baja California as a whole (Table 2.2).

Table 2.2
Total Population, 2010 and 2040
Baja California Municipalities [(1)]

Area	2010	2040	Change 2010-2040	Annual Average Growth Rate 2010-2040
Tijuana	1,561,342	2,961,741	1,400,399	2.2%
Playas de Rosarito	90,872	346,934	256,062	4.6%
Ensenada	467,414	1,011,408	543,994	2.6%
Tecate	101,191	197,182	95,991	2.2%
Mexicali	937,722	1,668,502	730,780	1.9%
Baja California	**3,158,541**	**6,185,767**	**3,027,226**	**2.3%**

[(1)] *Data represent the entire municipalities of Ensenada and Mexicali, not only the portions within the 60-mile Area of Influence*

Sources: Instituto Nacional de Estadística y Geografía (INEGI) 2010 Census; Comité de Planeación para el Desarrollo del Estado de Baja California (COPLADE)*; compiled by SIDUE.*

The total population in the combined California-Baja California Area of Influence was nearly 6.43 million in 2010 and is expected to grow to about 10.64 million by 2040. Nearly three-quarters of this expansion will occur in Baja California. A population increase of 1.18 million people is forecast for San Diego and Imperial counties, while the municipalities in Baja California are expected to grow by approximately 3.03 million residents (Table 2.3).

Table 2.3
Total Population, 2010 and 2040
Combined California-Baja California Area of Influence

Area	2010	2040	Change 2010-2040	Annual Average Growth Rate 2010-2040
San Diego & Imperial Counties	3,269,841	4,451,688	1,181,847	1.0%
Baja California	3,158,541	6,185,767	3,027,226	2.3%
Combined California-Baja California Area of Influence	**6,428,382**	**10,637,455**	**4,209,073**	**1.7%**

Source: SANDAG, SCAG, and SIDUE; compiled by SANDAG Service Bureau

EMPLOYMENT

The number of employed residents in the California Area of Influence included approximately 1.47 million people in 2010 and is forecast to gain nearly a half million people between 2010 and 2040. The San Diego County labor market is much larger than the Imperial County labor market and as such, is expected to generate most of the increase. However, Imperial County is expected to grow at a rate nearly three times faster than San Diego County, more than doubling its civilian employment base during the forecast period. Table 2.4 shows civilian employment for 2010 and 2040.

Table 2.4
Civilian Employment, 2010 and 2040 [1]
California and San Diego and Imperial Counties [2]

Area	2010	2040	Change 2010-2040	Annual Average Growth Rate 2010-2040
California	16,051,500	--	--	--
San Diego County	1,407,100	1,833,100	426,000	0.9%
Imperial County	58,687	121,000	62,313	2.4%
California Area of Influence	**1,465,787**	**1,954,100**	**488,313**	**1.0%**

(1) *Civilian employment includes individuals 16 years or older who worked as an employee or as self-employed.*

(2) *Projections for Imperial County were only available for 2035. Projected California Area of Influence includes 2040 data for San Diego County added to 2035 data for Imperial County.*

Source: SANDAG 2050 Regional Growth Forecast and SCAG 2012-2035 RTP Forecast (2010), compiled by SANDAG and SCAG.

Approximately 1.39 million people were employed in Baja California in 2010. That figure is projected to more than triple by 2040, increasing by 3.22 million workers (4.1 percent per year). The largest 2010-2040 numeric gain is expected to occur in Tijuana, with an estimated increase of 1.71 million employed persons. The fastest rate of growth is forecast for Playas de Rosarito, (5.9 percent annually during the forecast period), while the slowest growth is anticipated to occur in Mexicali (3.3 percent per year). The estimated figures are shown in Table 2.5.

Table 2.5
Civilian Employment 2010 and 2040 [1]
Baja California Municipalities [2]

Area	2010	2040	Change 2010-2040	Annual Average Growth Rate 2010-2040
Tijuana	698,353	2,403,655	1,705,303	4.2%
Playas de Rosarito	37,635	209,557	171,922	5.9%
Ensenada	207,139	776,510	569,371	4.5%
Tecate	41,660	140,519	98,859	4.1%
Mexicali	405,361	1,076,112	670,751	3.3%
Baja California	**1,390,148**	**4,606,354**	**3,216,206**	**4.1%**

[1] *Civilian employment numbers reflect persons 12 years of age and older in a household who work to earn an income.*

[2] *Data represent the entire municipalities of Ensenada and Mexicali, not only the portions within the 60-mile Area of Influence*

Source: INEGI, COPLADE; compiled by SIDUE.

Total civilian employment in the combined California-Baja California Area of Influence was estimated at 2.86 million in 2010. Employment is expected to increase by 3.70 million during the forecast period, reaching approximately 6.56 million by 2040. As shown in Tables 2.4 and 2.5, about 87 percent of the total expansion is expected to occur in Baja California. Of the counties and municipalities in the combined Area of Influence, the fastest annual growth rate is forecasted for Playas de Rosarito at 5.9 percent, while the slowest growth rate is forecasted for San Diego County (0.9 percent). The largest numeric increase in the number of persons employed is expected to occur in Tijuana (1.7 million people) and the smallest increase will be in Imperial County (just over 62,000 people). Table 2.6 shows the 2010 and 2040 data.

Table 2.6
Civilian Employment, 2010 and 2040
Combined California-Baja California Area of Influence

Area	2010	2040	Change 2010-2040	Annual Average Growth Rate 2010-2040
San Diego & Imperial Counties	1,465,787	1,954,100	488,313	1.0%
Total, Baja California	1,390,148	4,606,354	3,216,206	4.1%
Combined California-Baja California Area of Influence	**2,855,935**	**6,560,454**	**3,704,519**	**1.7%**

Source: SANDAG, SCAG, and SIDUE; compiled by SANDAG Service Bureau

PER CAPITA INCOME AND GROSS DOMESTIC PRODUCT

The per capita income for San Diego County was $45,627 in 2010, higher than both Imperial County ($27,342) and the State of California ($42,297). Per capita income for the California Area of Influence was estimated at $44,517. Projections for 2040 are not available (Table 2.7).

Table 2.7
Per Capita Income (USD), 2010
California Area of Influence

Area	2010
California	$42,297
San Diego County	$45,627
Imperial County	$27,342
California Area of Influence	**$44,517**

Source: Bureau of Economic Analysis (BEA), Per Capita Personal Income; compiled by SANDAG

San Diego County's gross domestic product (GDP) was approximately $163.9 billion dollars in 2010, comprising nearly 9 percent of the state's gross economic output (estimated at $1.85 trillion). Imperial County's GDP was estimated at $4.6 billion. Projections for 2040 are not available (Table 2.8).

Table 2.8
Gross Domestic Product, 2010 (Millions, USD)
California and San Diego and Imperial Counties

Area	2010
California	$1,845,279
San Diego County	$163,875
Imperial County	$4,580
California Area of Influence	**$168,455**

Source: BEA, Gross Domestic Product by State and Metropolitan Area; compiled by SANDAG

In 2010, the per capita income for the State of Baja California was $6,062 USD. The municipality with the highest per capita income was Mexicali, estimated at $8,160 USD. The municipality with the lowest per capita income was Ensenada, estimated at $2,874 USD. The data for Baja California and its five municipalities are shown in Table 2.9.

Table 2.9
Per Capita Income, 2010 [1]
Baja California and Municipalities [2]

Area	2010 (MXN)	2010 (USD)
Tijuana	$74,593	$5,906
Playas de Rosarito	$38,533	$3,051
Ensenada	$36,292	$2,874
Tecate	$81,708	$6,469
Mexicali	$103,055	$8,160
Baja California	**$76,565**	**$6,062**

[1] *Exchange rate based on $1 USD = $12.63 MXN per U.S. Federal Reserve average for 2010.*

[2] *Data represent the entire municipalities of Ensenada and Mexicali, not only the portions within the 60-mile Area of Influence*

Source: INEGI, COPLADE; compiled by SIDUE.

In 2010, the GDP for the State of Baja California stood at $19.1 billion USD. Tijuana represented nearly half (48%) of the state's GDP that same year, while the rapidly developing Playas de Rosarito represented 1.4 percent of the total. The State's GDP is expected to grow to approximately $31.5 billion USD in 2040. Annual average growth is estimated at approximately 1.7 percent throughout the State of Baja California. GDP data in Mexican pesos and U.S. dollars are shown in Table 2.10.

Table 2.10
Gross Domestic Product, 2010 and 2040 (Millions) [1]
Baja California and Municipalities [2]

Area	2010 (MXN)	2010 (USD)	2040 (MXN)	2040 (USD)	Annual Average Growth Rate
Tijuana	$116,466	$9,221	$191,492	$15,162	1.7%
Playas de Rosarito	$3,502	$277	$5,757	$456	1.7%
Ensenada	$16,964	$1,343	$27,891	$2,208	1.7%
Tecate	$8,268	$655	$13,594	$1,076	1.7%
Mexicali	$96,636	$7,651	$158,890	$12,580	1.7%
Baja California	**$241,835**	**$19,148**	**$397,625**	**$31,483**	**1.7%**

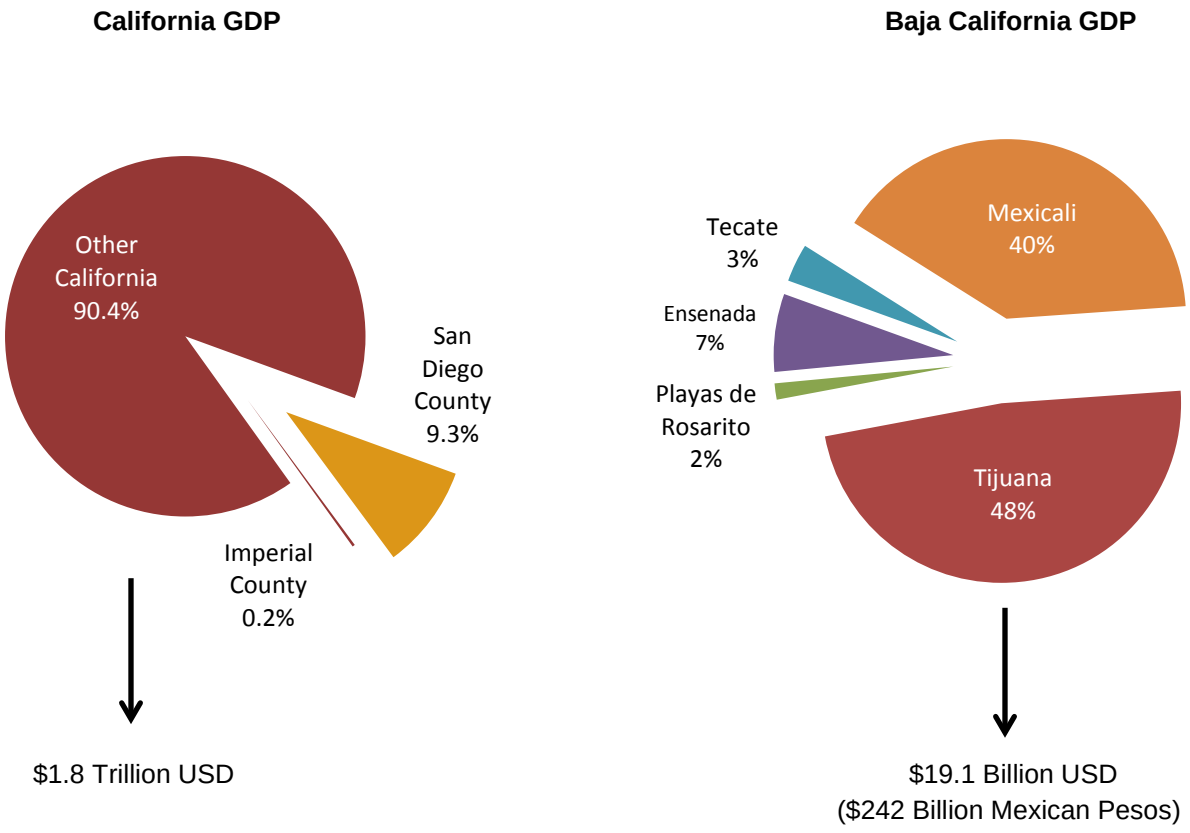
[1] *Gross Domestic Product (GDP) is based on the value of the Mexican Peso from 2003. No official statistics are generated on GDP at the municipal level. The state's total GDP (from INEGI's 2009 Economic Census) was proportioned to each municipality for 2010 and 2040 by COPLADE. Exchange rate used was $1 USD = $12.63 MXN based on U.S. Federal Reserve average for 2010.*

[2] *Data represent the entire municipalities of Ensenada and Mexicali, not only the portions within the 60-mile Area of Influence*

Source: INEGI, COPLADE; compiled by SIDUE.

Figure 2.2 illustrates the distribution of GDP for California and San Diego and Imperial counties and for Baja California and its five municipalities for 2010.

Figure 2.2
Distribution of Gross Domestic Product (GDP), 2010
California and San Diego and Imperial Counties; Baja California and Municipalities [(1)]



[(1)] Data represent the entire municipalities of Ensenada and Mexicali, not only the portions within the 60-mile Area of Influence
Sources: Bureau of Economic Analysis (BEA), provided by SANDAG; and INEGI, COPLADE; provided by SIDUE.

LAND USE

Existing and projected land use in San Diego and Imperial counties including total acreage for residential, commercial, industrial, agricultural, and other lands, are shown in Table 2.11. The "other" category consists of the total acreage of other developed lands (land not classified as residential, commercial, industrial, or agricultural), vacant, and undevelopable lands.

Of the approximately 2.7 million acres in San Diego County, 13 percent is designated as residential, 4 percent as agricultural, 2 percent as commercial, 1 percent as industrial, and 80 percent as other designated land uses. Land developed for residential use is projected to increase the most in this area, growing at an average rate of 1.7 percent per year between 2010 and 2040. San Diego County is

anticipated to lose approximately 48,000 acres of agricultural land between 2010 and 2040 as it is converted to other uses, amounting to an average 1.8 percent loss per year.

According to 2008 records provided by SCAG, Imperial County has about 2.8 million acres of land. Agriculture comprises a large share of the land in Imperial County, with 17 percent designated for this use. Industrial, residential, and commercial lands each consume less than one percent of the total land area in the county, while 82 percent is classified as Other. Residential land is projected to have the largest rate of change in Imperial County between 2008 and 2040, growing by approximately 8.6 percent per year. Acreage of industrial land is anticipated to decline between 2010 and 2040, shrinking by 7,100 acres or about 1.7 percent on average per year. Unlike San Diego County, agricultural acres in Imperial County will increase over the forecast period.

Table 2.11
Land Use, San Diego County and Imperial County [(1)]
2010 and 2040 (Acres) [(2)]

Land Use / Area	2010	2040	Change 2010-2040	Annual Average Growth Rate 2010-2040
Residential				
San Diego County (2010)	344,677	577,173	232,496	1.7%
Imperial County (2008)	12,668	176,289	163,621	8.6%
Commercial				
San Diego County (2010)	44,601	45,064	463	0.0%
Imperial County (2008)	5,515	5,933	418	0.2%
Industrial				
San Diego County (2010)	27,693	31,796	4,103	0.5%
Imperial County (2008)	16,856	9,757	-7,100	-1.7%
Agriculture				
San Diego County (2010)	117,508	69,184	-48,324	-1.8%
Imperial County (2008)	485,895	520,206	34,311	0.2%
Other				
San Diego County (2010)	2,192,720	2,003,982	-188,738	-0.3%
Imperial County (2008)	2,322,476	2,131,225	-191,251	-0.3%
Total				
San Diego County (2010)	2,727,199	2,727,199	0	0.0%
Imperial County (2008)	2,843,410	2,843,410	0	0.0%

(1) Current Land Use data for Imperial County is only available for 2008.

(2) Other land use category includes total acreage of other developed lands (land not classified as residential, commercial, industrial, or agricultural), vacant, and undevelopable lands.

Source: SANDAG 2030 Growth Forecast and SANDAG 2050 Growth Forecast, SCAG 2008 Existing Land Use Database and SCAG General Plan Land Use Database; compiled by SANDAG and SCAG.

Existing and projected residential, commercial, and industrial land use (in acres) for Baja California municipalities are shown in Table 2.12. Information on agricultural and other land uses is not included as data could not be obtained for the base or projection years for all municipalities.

Table 2.12
Residential, Commercial, and Industrial Land Use, 2010 and 2040 (Acres) [1]
Baja California Municipalities [2]

Land Use / Area	2010	2040	Change 2010-2040	Annual Average Growth Rate 2010-2040
Residential				
Tijuana	30,398	57,665	27,266	2.2%
Playas de Rosarito	6,641	25,353	18,712	4.6%
Ensenada	9,831	27,140	17,310	3.4%
Tecate	2,524	4,918	2,393	2.2%
Mexicali	23,277	41,417	18,140	1.9%
Commercial				
Tijuana	2,648	5,022	2,374	2.2%
Playas de Rosarito	181	691	510	4.6%
Ensenada	874	2,761	1,887	3.9%
Tecate	245	477	232	2.3%
Mexicali	2,258	4,016	1,759	1.9%
Industrial				
Tijuana	13,933	5,022	-8,912	-3.3%
Playas de Rosarito	235	896	661	4.6%
Ensenada	884	2,253	1,368	3.2%
Tecate	309	477	168	1.5%
Mexicali	2,477	4,016	1,539	1.6%

[1] *Hectares converted to acres using following formula: 1 hectare = 2.47 acres.*

[2] *For Ensenada, a) numbers indicate Net Land Use (not Gross) which excludes vacant lots and roadways and b) A constant growth rate was applied to reflect change from 1985 to 2010.*

Sources: INEGI, INPLAN, IMIP Mexicali, Programa de Desarrollo Urbano del Centro de Población (PDUCP) de Tijuana, Ensenada y Playas de Rosarito; compiled by SIDUE.

Residential land occupies the largest share of the developed acreage in Baja California, followed by industrial and commercial uses. Agricultural and other non-residential, commercial, or industrial lands are known to make up a large part of developed land in Baja California although specific data were not available for most municipalities.

Tijuana is the largest municipality in terms of developed land area in Baja California. Out of all the municipalities in Baja California, it has the greatest amount of residential land (30,398 acres), commercial land (2,648 acres), and industrial land (13,933 acres). Residential and commercial acres are anticipated to grow significantly between 2010 and 2040, increasing an average of 2.2 percent per year. However, lands designated as industrial are anticipated to decline by approximately 9,000 acres between 2010 and 2040, amounting to an annual average loss of 3.3 percent.

Developed land in Mexicali is largely residential (23,277 acres), but also has a relatively significant amount of land in commercial (2,258 acres) and industrial (2,477 acres) uses. Residential and commercial lands are both anticipated to increase at an annual average rate of 1.9 percent between 2010 and 2040. Gains in industrial acreage will occur at a slightly slower pace (1.6% per year).

Playas de Rosarito is relatively rural but is anticipated to grow rapidly in the next 30 years. The developed land is largely designated as residential (6,641 acres), with some small commercial and industrial areas (181 acres and 235 acres, respectively). This municipality is anticipated to see annual average gains of 4.6 percent in each of the three land use categories.

Ensenada has the largest total land area of all municipalities in Baja California but is sparsely developed. The land that is developed is largely residential (9,831 acres), with some small areas designated as commercial (874 acres), and industrial (884 acres). Residential, commercial, and industrial acreage all are expected to see relatively large annual average rates of growth (3.4%, 3.9%, and 3.2%, respectively) throughout the forecast period.

Tecate is the municipality with the smallest amount of developed land in Baja California. Like the other municipalities, most of Tecate's developed land is residential (2,524 acres), with comparatively small amounts of industrial (309 acres) and commercial land (245 acres). While all three types of land use in Tecate will increase in acreage by 2040, the gains will be relatively small both numerically and in terms of annual average rates of growth.

SUMMARY

The 2010 population of 6.43 million people in the combined California-Baja California Area of Influence is expected to grow by more than four million people—to a total of 10.64 million—by 2040. Nearly three-quarters (3.03 million people, or 72%) of this increase will occur in the municipalities of Baja California, while San Diego and Imperial Counties combined are expected to add 1.18 million residents.

At the same time, the total civilian employment in the combined California-Baja California study area is expected to expand by approximately 3.70 million employed persons, increasing from 2.86 million in 2010 to approximately 6.56 million by 2040. While San Diego and Imperial Counties combined will add fewer than 500,000 civilian employees, the municipalities in Baja California are expected to add approximately 3.2 million—87 percent of the employment growth in the combined California-Baja California Area of Influence.

The addition of 4.21 million residents and 3.70 million jobs by 2040 will increase crossborder travel demand in the region and continue to add pressure to the POE facilities and connecting roads. Adequate infrastructure capacity is critical to alleviate traffic congestion, facilitate international trade, and improve the quality of life for residents in the border region.

CHAPTER 3
PORT OF ENTRY FACILITIES AND CURRENT AND PROJECTED BORDER CROSSING DATA

INTRODUCTION

There are six existing POEs along the California-Baja California International Border: San Ysidro / Virginia Avenue-Puerta México/El Chaparral, Otay Mesa-Mesa de Otay, Tecate-Tecate, Calexico-Mexicali I, Calexico East-Mexicali II, and Andrade-Los Algodones. This chapter presents current (2010) information about each POE facility, or border station on each side of the border,[1] border wait time data, current and projected border crossing data, and information about trade between the United States and Mexico. The chapter concludes with a brief summary.

The analysis is based on completed questionnaires from the U.S. Customs and Border Protection (CBP); California Department of Transportation (Caltrans); San Diego Association of Governments (SANDAG); Mexican General Customs Administration (Aduanas); Institute of Administration and Estimates of National Real Estate (INDAABIN); and Secretariat of Infrastructure and Urban Development of Baja California (SIDUE). In addition, data from the U.S. Department of Transportation, Bureau of Transportation Statistics are incorporated.

CALIFORNIA-BAJA CALIFORNIA PORT OF ENTRY FACILITIES

The information provided for each POE includes current acreage of the facilities and hours of operation. The number of lanes and lane configuration as of 2010 also is included. Lanes for Secure Electronic Network for Travelers Rapid Inspection (SENTRI),[2] Ready lanes,[3] or Free and Secured Trade (FAST)[4] (Empresa Certificada as it is known in Mexico), may have opened at these ports after 2010 and are not reflected in the descriptions. Current and projected northbound crossborder travel data also are discussed, followed by average daily throughput, northbound border wait times, and value and volume of trade between the United States and Mexico.

[1] The terms POE facility or border station are used when referring specifically to a port facility in the U.S. or Mexico, but not to the entire international POE.

[2] SENTRI is a land border-crossing program that provides expedited Customs and Border Protection processing for pre-approved low-risk travelers.

[3] Ready Lane is a dedicated primary vehicle lane for travelers entering the U.S. at land POEs. Travelers who obtain and travel with a Western Hemisphere Travel Initiative (WHTI) compliant Radio Frequency Identification (RFID) enabled travel document may receive the benefits of utilizing a Ready Lane to expedite the inspection process while crossing the border. In the California-Baja California border region, Ready Lanes became operational at the San Ysidro, Otay Mesa, and the Calexico East border stations in 2011.

[4] FAST is a land border-crossing commercial program offering expedited clearance to pre-approved carriers and importers.

Port of Entry Facilities

San Ysidro/Virginia Avenue-Puerta México/El Chaparral[5]

The San Ysidro/Virginia Avenue-Puerta México/El Chaparral POE serves privately owned vehicles (POVs), buses, and pedestrians. This POE does not process commercial trucks; however, a freight rail line crosses at this facility. The POE is open 24 hours per day, seven days per week.

On the U.S. side, the San Ysidro/Virginia Avenue border station is located on 36 acres of land. In 2010, it included 23 POV lanes, four of which processed SENTRI pass holders. The POE also had one bus lane and 14 regular pedestrian lanes.

In Mexico, the Puerta México/El Chaparral border station covers 11 acres. In 2010, the border station had seven regular passenger vehicle lanes and an additional lane serving as a declaration lane and a bus lane. It had one pedestrian lane to accommodate individuals traveling from the United States into Mexico.

The San Ysidro/Virginia Avenue-Puerta México/El Chaparral POE is undergoing a large scale modernization. Once completed, it will have 62 northbound vehicle primary inspection booths, one dedicated bus lane and inspection booth, and improved processing facilities for bus and SENTRI travelers. In addition, a portion of the Interstate (I)-5 South freeway will be realigned to connect to Mexico's El Chaparral facility, which has 19 southbound vehicle lanes. Pedestrians will be able to move northbound and southbound through the Virginia Avenue/El Chaparral facility as well as the San Ysidro/Puerta México facility.

Otay Mesa-Mesa de Otay

The Otay Mesa-Mesa de Otay POE serves POVs, buses, pedestrians, and commercial trucks. In the United States, the Otay Mesa border station is situated on 58 acres of land and is located approximately six miles east of the San Ysidro border station. Pedestrian and passenger vehicle crossings are processed 24 hours per day, seven days per week. Hours of operation for regular commercial trucks are generally 6 a.m. to 7 p.m. on weekdays, 8 a.m. to 2 p.m. on Saturdays, and 9 a.m. to 2 p.m. on Sundays, but specific hours may vary depending on the season and types of goods being processed.

In 2010, the Otay Mesa border station had 11 lanes that served POV traffic with one additional lane dedicated to SENTRI users. This border station included one bus lane and six regular pedestrian lanes. Ten commercial vehicle lanes served trucks crossing at this POE, with one lane dedicated to accommodating FAST trucks and one dedicated to empty trucks.

In Mexico, the Mesa de Otay border station is located on 56 acres in the eastern part of Tijuana. It is open 24 hours per day, seven days per week for passenger vehicles and pedestrians. Truck processing is

[5] This report refers to the full name of the San Ysidro/Virginia Avenue-Puerta México/El Chaparral POE. However, the POE is currently undergoing a large-scale modernization that is being constructed in phases. As of November 2012, southbound vehicles are processed at the El Chaparral facility and northbound vehicles are processed at the San Ysidro facility.

operational from 8 a.m. to 8 p.m. during weekdays, 8 a.m. to 2 p.m. on Saturdays, and it is closed on Sundays. In 2010, Mesa de Otay included four POV lanes and one pedestrian lane to accommodate southbound traffic, with no dedicated lanes for southbound bus crossings. It also had six regular commercial truck lanes, two empty truck lanes, and one Empresa Certificada (FAST) certified truck lane.

Tecate-Tecate

The Tecate-Tecate POE serves POVs, buses, pedestrians, commercial trucks, and rail (through the Campo terminal, located just to the east of this POE). In the United States, the Tecate border station comprises approximately 12 acres of land. Passenger vehicles and pedestrians are processed from 5 a.m. to 11 p.m., seven days per week. Commercial trucks are processed only on weekdays from 8 a.m. to 4 p.m. In 2010, the Tecate border station in the United States, dedicated two lanes to process POVs, four lanes for pedestrians, and two lanes for regular commercial trucks. Although buses cross through this border station, there is no dedicated bus lane.

In Mexico, the Tecate border station comprises approximately three acres of land. It is open daily from 6 a.m. to midnight for passenger vehicle and pedestrian access. Commercial truck traffic is processed from 6 a.m. to 6 p.m. on weekdays, and 6 a.m. to 2 p.m. on Saturdays. The station is closed on Sundays for commercial truck processing. In 2010, it had four POV lanes, one pedestrian lane, and two commercial truck lanes.

Calexico-Mexicali I

The Calexico-Mexicali I POE serves pedestrians, POVs, and rail. Northbound buses do not cross at the POE; they are processed at the nearby Calexico East border station. Buses are permitted to cross in the southbound direction. Commercial trucks have not crossed at this facility since the Calexico East-Mexicali II POE opened in 1997; however, freight rail service exists and operates regularly. The Calexico-Mexicali I POE operates 24 hours per day, seven days per week for pedestrian and POV crossings.

In the United States, the Calexico border station is situated on nine acres of land. In 2010, it included nine regular POV lanes and one SENTRI passenger vehicle lane. Six lanes were dedicated for pedestrian crossings - five regular pedestrian lanes and one pedestrian SENTRI lane.

The Mexicali border station is located on 26.5 acres of land. In 2010 it had five lanes for POVs, two for buses, and one for pedestrians. A large scale modernization is planned for the Calexico-Mexicali I POE in the future.

Calexico East-Mexicali II

The Calexico East-Mexicali II POE was completed in 1997 and provides service for POVs, buses, pedestrians, and commercial trucks. It is the largest POE (a total of 184 acres) of all land ports in the California-Baja California region. In the northbound direction, passenger vehicles and pedestrians are processed from 3 a.m. to midnight on weekdays and 6 a.m. to midnight on weekends. In the southbound direction, hours of operations for passenger vehicles and pedestrians are from 6 a.m. to midnight daily. Northbound and southbound commercial crossings are accommodated from 6 a.m. to 8 p.m. on weekdays and from 10 a.m. to 5 p.m. on Saturdays. The border station is closed on Sundays for commercial truck processing.

In the United States, the Calexico East border station is situated on 85 acres. In 2010, there were seven passenger vehicle lanes, including one SENTRI lane and one bus lane that also processes POVs, and six pedestrian lanes. On the commercial side, it had two regular commercial truck lanes and one FAST lane.

In Mexico, the Mexicali II border station covers 99 acres. In 2010, it included four POV lanes, one bus lane, and one pedestrian lane. The commercial side had six truck lanes—four for regular truck access, one for empty trucks, and one for Empresa Certificada (FAST) certified trucks.

Andrade-Los Algodones

The Andrade-Los Algodones POE is located in the County of Imperial in the United States and in the Municipality of Mexicali in Mexico. This POE accommodates pedestrians and POVs. The hours of operation for the POE are from 6 a.m. to 10 p.m., seven days per week. The Andrade border station occupies two acres of land. In 2010, it had two lanes serving POVs and four lanes serving pedestrians. The Los Algodones border station occupies 1.5 acres and in 2010 had two POV lanes and one pedestrian lane.

Port of Entry Lane Configuration

Table 3.1 shows the 2010 lane configuration by California border station, and Table 3.2 shows the lane configuration by Baja California border station.

Table 3.1
Number of Northbound Lanes by California Border Station, 2010

Northbound Lanes [1]	San Ysidro	Otay Mesa	Tecate	Calexico	Calexico East	Andrade
Privately-Owned Vehicles (POV)	23	12	2	10	7	2
Regular POV Lanes	19	11	2	9	6	2
POV SENTRI Lanes	4	1	0	1	1	0
POV Ready Lanes [2]	0	0	0	0	0	0
Bus Lanes	1	1	0	0	1	0
Pedestrian	14	6	4	6	6	4
Regular Pedestrian Lanes	14	6	4	5	6	4
Pedestrian SENTRI Lanes	0	0	0	1	0	0
Commercial	0	10	2	0	3	0
Regular Commercial Lanes	n/a	8	2	n/a	2	n/a
Commercial Lanes - Empty Trucks	n/a	1	0	n/a	0	n/a
Commercial FAST Lanes	n/a	1	0	n/a	1	n/a

[1] The Ready Lane program began operating at several POEs in 2011 and therefore is not included in this 2010 table.
n/a=not applicable

Source: U.S. CBP

Table 3.2
Number of Southbound Lanes by Baja California Border Station 2010

Southbound Lanes	Puerta México/ El Chaparral	Mesa de Otay	Tecate	Mexicali I	Mexicali II	Los Algodones
POV Lanes	7	4	4	5	4	2
Bus Lanes	1	n/a	n/a	2	1	n/a
Pedestrian Lanes	1	1	1	1	1	1
Commercial	n/a	9	3	n/a	6	n/a
Regular Commercial Lanes	n/a	6	2	n/a	4	n/a
Commercial Lanes - Empty Trucks	n/a	2	0	n/a	1	n/a
Commercial Empresa Certificada (FAST) Lanes	n/a	1	0	n/a	1	n/a

n/a=not applicable

Source: Institute of Administration and Estimates of National Real Estate (INDAABIN)

CURRENT AND PROJECTED CROSSBORDER TRAVEL

This section describes current and projected northbound crossborder travel at POEs along the California-Baja California International Border. Data on northbound POV, bus, truck, rail, and pedestrian crossings for the years 2005 and 2010 were provided by CBP.[6] Caltrans produced projections of 2040 northbound crossings for POVs, buses, trucks, trains, and rail cars. SIDUE prepared 2040 projections of northbound pedestrian crossings. Data for southbound crossborder travel demand were not provided.

Appendix C-1 contains detailed tables with the number of northbound crossings by mode for each POE. It also includes 2040 projections for POV and truck crossings for the proposed Otay Mesa East-Mesa de Otay II POE.

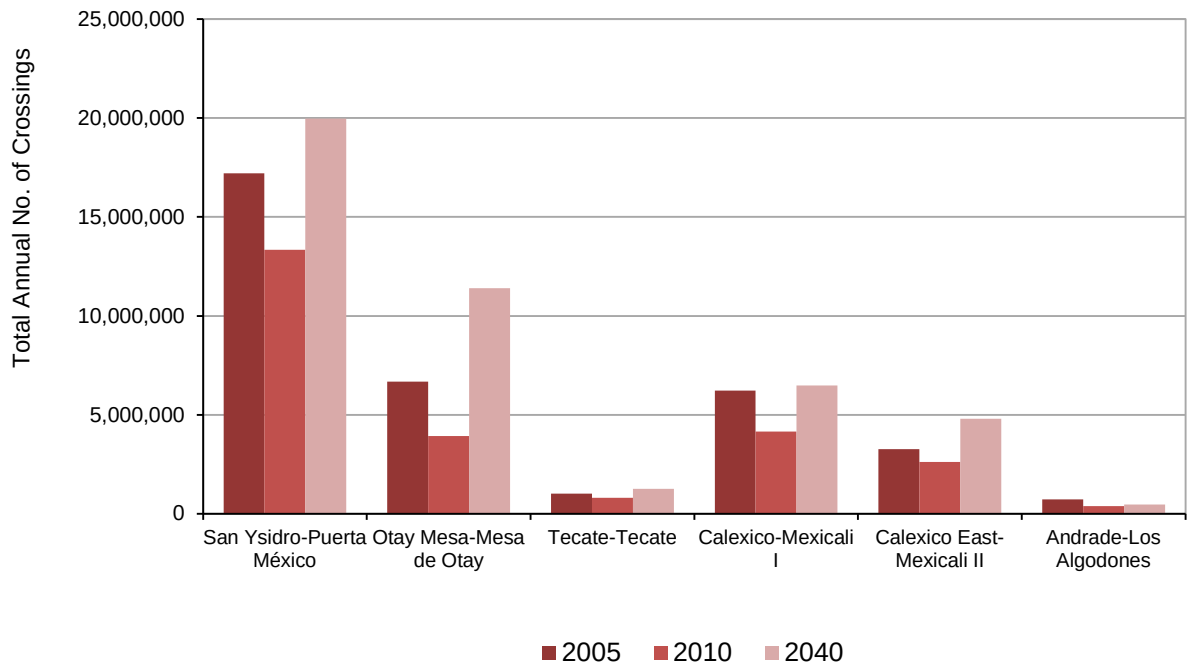
[6] CBP provided the 2005 figures for the California-Baja California 2008 BMP report.

Northbound POV

Northbound POV crossings declined across all POEs between 2005 and 2010. In 2010, the San Ysidro/Virginia Avenue-Puerta México/El Chaparral POE accommodated about half of all POV crossings (approximately 13.3 million) at the California-Baja California International Border. The Calexico-Mexicali I and the Otay Mesa-Mesa de Otay POEs processed the second and third largest number of northbound POVs in 2010 (approximately 4.2 million and 3.9 million northbound vehicles, respectively). Tecate-Tecate and Andrade-Los Algodones processed a small number of northbound vehicles in 2010 (about 810,000 and 390,000, respectively).

In 2040, it is expected that the largest number of POV crossings will occur at San Ysidro/Virginia Avenue-Puerta México/El Chaparral POE (19,980,000) and the smallest number at Andrade-Los Algodones POE (470,000). Northbound POV crossings are shown in Figure 3.1.

Figure 3.1
Northbound POV Crossings, 2005, 2010, and 2040
California-Baja California POEs



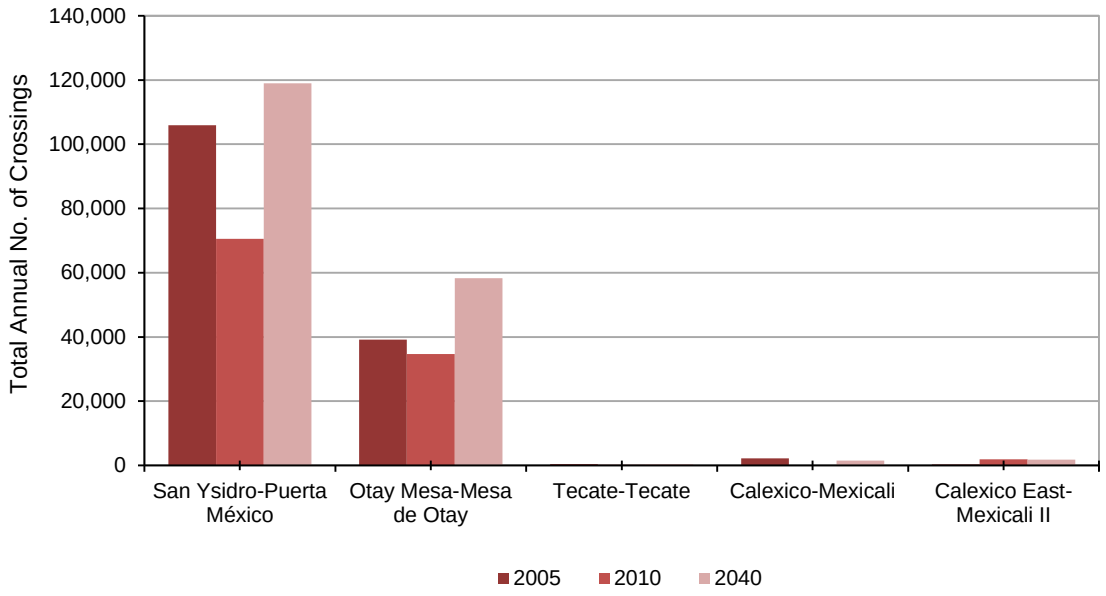
Source: U.S. CBP and Caltrans

Northbound Buses

The number of northbound bus crossings declined at three out of four POEs between 2005 and 2010. In 2010, the San Ysidro/Virginia Avenue-Puerta México/El Chaparral POE accommodated about two thirds (nearly 71,000) of all bus crossings at the California-Baja California International Border. The Otay Mesa-Mesa de Otay POE processed about one third (nearly 35,000) of all northbound buses. The remaining buses crossed northbound through the Calexico East-Mexicali II (about 1,900 buses) and Tecate-Tecate POEs (230 buses).

By 2040, the largest increase in the number of bus crossings is expected to occur at the San Ysidro/Virginia Avenue-Puerta México/El Chaparral POE and the smallest increase at the Tecate-Tecate POE. Bus crossings are anticipated to decline slightly between 2010 and 2040 at Calexico East-Mexicali II. Northbound bus crossings are shown in Figure 3.2.

Figure 3.2
Northbound Bus Crossings, 2005, 2010, and 2040 [(1)]
California-Baja California POEs



[(1)] CBP reported no bus crossings at the Andrade-Los Algodones POE in 2010.

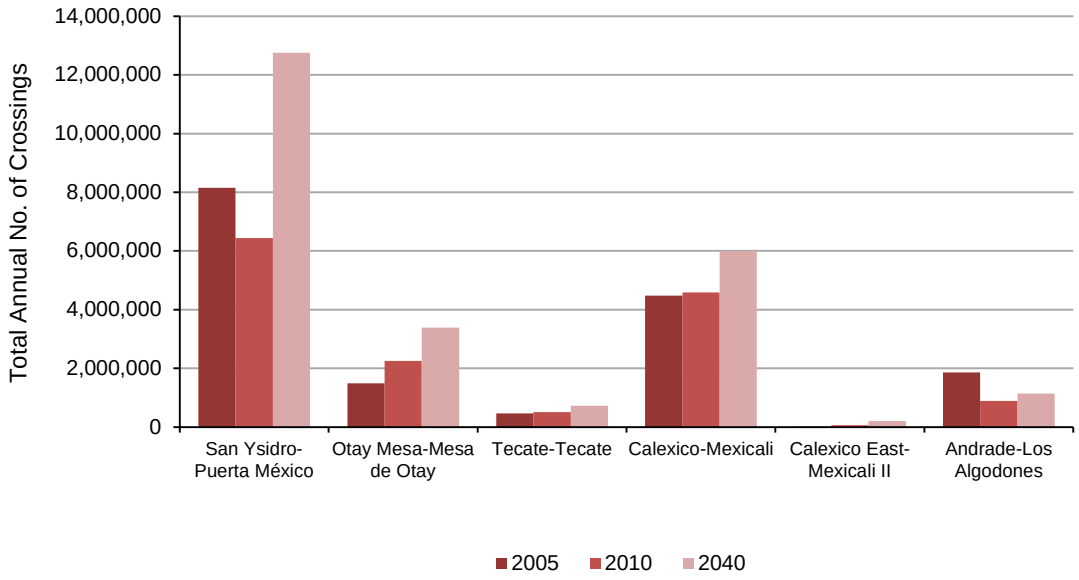
Source: U.S. CBP and Caltrans

Northbound Pedestrian Crossings

The number of pedestrian crossings declined between 2005 and 2010 at the San Ysidro/Virginia Avenue-Puerta México/El Chaparral and Andrade-Los Algodones POEs, and increased at the other POEs. In 2010, the San Ysidro/Virginia Avenue-Puerta México/El Chaparral POE accommodated the largest number of northbound pedestrian crossings (approximately 6.4 million) followed by the Calexico-Mexicali I POE (about 4.6 million). The Otay Mesa-Mesa de Otay POE showed the third largest number of pedestrian crossings in 2010 (roughly 2.3 million).

Northbound pedestrian crossings are anticipated to increase at all POEs between 2010 and 2040. More than half of all pedestrian crossings in 2040 are expected to cross through San Ysidro/Virginia Avenue-Puerta México/El Chaparral. This amounts to nearly 12.8 million pedestrian crossings in 2040. Calexico-Mexicali I and Otay Mesa-Mesa de Otay show the second and third largest number of pedestrian crossings in 2040 (approximately 6.0 million and 3.4 million, respectively). Northbound pedestrian crossings are shown in Figure 3.3.

Figure 3.3
Northbound Pedestrian Crossings 2005, 2010, and 2040
California-Baja California POEs



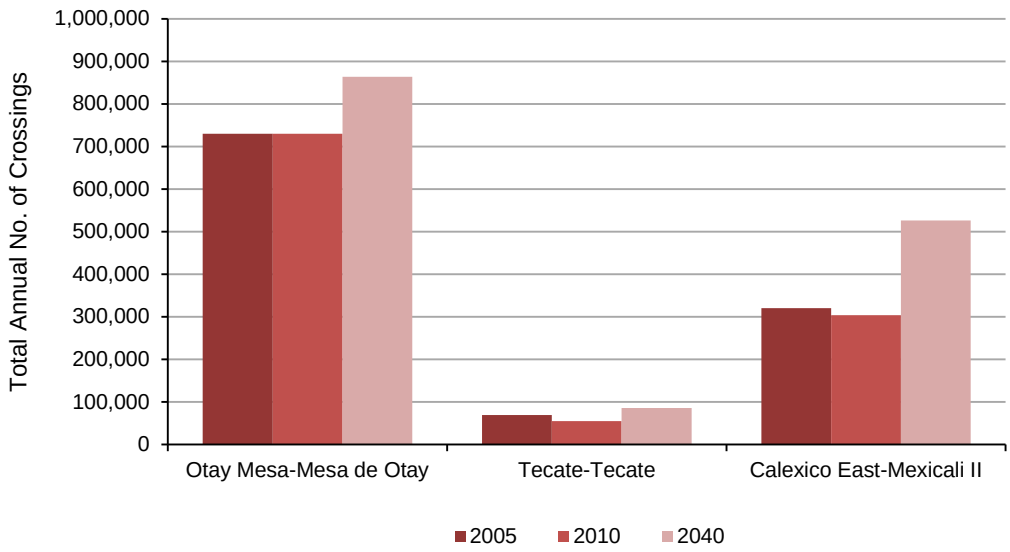
Source: U.S. CBP and SIDUE

Northbound Truck Crossings

The Otay Mesa-Mesa de Otay, Calexico East-Mexicali II, and Tecate-Tecate POEs accommodate commercial truck traffic.[7] Northbound truck crossings declined at all three POEs between 2005 and 2010. In 2010, Otay Mesa-Mesa de Otay processed about two-thirds of truck crossings (about 730,000 trucks) through the California-Baja California International Border. About 28 percent of the trucks (nearly 304,000 trucks) crossed through the Calexico East-Mexicali II POE. Tecate-Tecate accommodated about 5 percent of the truck traffic in 2010 (approximately 55,000 trucks).

By 2040, the largest number of northbound truck crossings is expected to occur at Otay Mesa-Mesa de Otay (864,000). Calexico East-Mexicali II is anticipated to accommodate 526,000 trucks in 2040 and Tecate-Tecate is expected to accommodate 86,000 trucks. Northbound commercial truck crossings are shown in Figure 3.4.

Figure 3.4
Northbound Truck Crossings, 2005, 2010, and 2040 (1)
California-Baja California POEs



(1 Trucks do not cross at the San Ysidro/Virginia Avenue-Puerta México/El Chaparral and Calexico-Mexicali I POEs.

Source: U.S. CBP and Caltrans.

[7] Although truck crossing have historically been reported at the Andrade-Los Algodones POE, U.S. CBP reports truck crossings are no longer processed at Andrade-Los Algodones POE.

Northbound Rail Car Crossings

A rail line crosses at the POEs at San Ysidro/Virginia Avenue-Puerta México/El Chaparral, Tecate-Tecate, and Calexico-Mexicali I.[8] The San Diego and Imperial Valley Railroad (SD&IV) operates the short line owned by the San Diego Metropolitan Transit System (MTS) that connects the Santa Fe Depot in downtown San Diego with the San Ysidro freight yard and border crossing. The Carrizo Gorge Railway (CZRY) owns the rights to operate limited service between the Mexican border at the San Ysidro/Puerta México border crossing, through Mexico to the Tecate-Tecate POE. The rail line continues from Tecate to Plaster City in the western part of Imperial County. The section between Tijuana and Tecate is owned by the Mexican government, while the section between Tecate, California and Plaster City is owned by MTS. However, the portion between Division (near Tecate) and Plaster City is currently closed due to bridge repairs. South of Calexico, Ferrocarril Mexicano, S.A. de C.V. (Ferromex) operates the rail line providing service between Mexicali and several points in Mexico.

Of the nearly 10,300 rail cars that crossed northbound in 2010, the Calexico-Mexicali I POE processed the most (approximately 5,900 rail cars) followed by the San Ysidro/Virginia Avenue-Puerta México / El Chaparral POE (nearly 4,400 rail cars). No rail cars crossed at the Tecate-Tecate POE in 2010. In 2040, rail car crossings are expected to reach 7,800 at Calexico-Mexicali I and 6,800 at San Ysidro / Virginia Avenue-Puerta México/El Chaparral. Northbound rail car crossings are shown in Table 3.3.

Table 3.3
Northbound Rail Car Crossings, 2005, 2010, and 2040
California-Baja California POEs

	Rail Cars		
	2005	2010	2040
San Ysidro-Puerta México	5,891	4,375	6,800
Tecate-Tecate	64	0	0
Calexico-Mexicali I	12,358	5,903	7,800
Total	**18,313**	**10,278**	**14,600**

Source: U.S. CBP and Caltrans

[8] Rail lines cross at San Ysidro/Virginia Avenue-Puerta México/El Chaparral and Calexico-Mexicali I, although inspections are reported at Otay Mesa-Mesa de Otay and the Calexico East-Mexicali II. The Tecate border station is responsible for inspecting northbound trains that cross the border in the town of Campo, which is located 13 miles east of the port. To be consistent with how Mexico reports its data, these three POEs were used in the report.

AVERAGE DAILY THROUGHPUT

Average Daily POVs Processed Northbound

Table 3.4 shows the average number of northbound POVs processed daily and during the peak period in 2010 for regular POV and SENTRI lanes.

The San Ysidro/Virginia Avenue-Puerta México/El Chaparral POE processed nearly 38,100 POVs per weekday, a volume more than three times greater than any other California-Baja California POE in 2010. The majority of these POVs were processed as regular passenger vehicles (about 28,500) and approximately 9,600 were processed via SENTRI lanes. During the weekday peak period of 5 to 9 a.m., about 6,800 vehicles per day were processed in regular passenger vehicle lanes and about 2,200 in SENTRI lanes.

The Calexico-Mexicali I POE had the second highest northbound throughput, with about 11,600 POVs processed per day. Of these, 8,200 crossed in the regular POV lanes and 3,300 in the SENTRI lanes. During the peak period of 5 to 9 a.m., approximately 2,300 POVs were processed as regular passenger vehicles and about 670 were SENTRI vehicles.

The Otay Mesa-Mesa de Otay POE processed about 11,000 passenger vehicles per day. About 8,600 of these passenger vehicles crossed in regular vehicles lanes and about 2,500 in SENTRI lanes. During the 5 to 9 a.m. peak period, an average of 2,100 POVs was processed in the regular lanes and 680 in the SENTRI lane.

The Calexico East-Mexicali II POE processed 7,500 POVs per day and about 1,600 POVs on average during the peak period. Calexico East-Mexicali II did not have SENTRI lanes in 2010. The Tecate-Tecate POE throughput averaged 2,100 POVs per day and during its peak period of 5 to 8 a.m., about 500 regular POVs. The POE did not have SENTRI lanes in 2010. The Andrade-Los Algodones POE showed the smallest throughput with approximately 1,070 POV crossings processed through this POE per day. About 160 POVs crossed on a daily basis during the peak period (5 to 8 a.m.). Northbound POV throughput is shown in Table 3.4. Passenger vehicle Ready Lanes were not operational at these POEs in 2010.

Table 3.4
Northbound POV
Average Daily and Peak Period Throughput, Weekday (Mon-Fri) (2010) [1]
California-Baja California POEs

	San Ysidro-Puerta México		Otay Mesa-Mesa de Otay		Tecate-Tecate	
	Daily Average	Peak Period Daily Average	Daily Average	Peak Period Daily Average	Daily Average	Peak Period Daily Average
Privately Owned Vehicles	38,096	8,961	11,066	2,782	2,131	487
Regular POV Lanes	28,529	6,769	8,585	2,100	2,131	487
Passenger SENTRI Lanes	9,567	2,192	2,481	682	n/a	n/a

	Calexico-Mexicali I		Calexico East-Mexicali II		Andrade-Los Algodones	
	Daily Average	Peak Period Daily Average	Daily Average	Peak Period Daily Average	Daily Average	Peak Period Daily Average
Privately Owned Vehicles	11,559	2,259	7,500	1,571	1,070	163
Regular POV Lanes	8,236	1,588	7,500	1,571	1,070	163
Passenger SENTRI Lanes	3,323	671	n/a	n/a	n/a	n/a

[1] U.S. CBP provided the hours for the peak period. The peak period for all POEs except for Tecate-Tecate and Andrade-Los Algodones, was 5 to 9 a.m. The peak period for Tecate-Tecate and Andrade-Los Algodones was 5 to 8 a.m.

n/a = not applicable

Source: U.S. CBP

Average Daily Commercial Trucks Processed Northbound

Otay Mesa-Mesa de Otay had the highest average number of commercial trucks traveling northbound per weekday (2,144) in 2010. Of these, 648 were processed in regular truck lanes, 1,100 in the empty truck lanes, and 396 in the FAST lanes. During the weekday peak period of 2 to 7 p.m., nearly 2,000 trucks were processed per day - more than 90 percent of the average daily total. Calexico East-Mexicali II had the second highest average number of daily truck throughput (986). On average, the POE processed 343 commercial trucks per weekday in regular lanes, 476 in empty truck lanes, and 167 in FAST lanes. During the peak period (5 to 8 p.m.), the POE processed about 376 commercial trucks per weekday. Tecate-Tecate processed 320 trucks per weekday with 190 trucks in regular lanes and 130 in empty truck lanes. Peak period daily average throughput was not provided for the Tecate-Tecate POE. Northbound commercial truck throughput is shown in Table 3.5.

Table 3.5
Northbound Commercial Trucks
Average Daily and Peak Period Throughput, Weekday (Mon-Fri) (2010) [(1)]
California-Baja California POEs

	Otay Mesa-Mesa de Otay		Tecate-Tecate		Calexico East-Mexicali II	
	Daily Average	Peak Period Daily Average	Daily Average	Peak Period Daily Average	Daily Average	Peak Period Daily Average
Commercial Trucks	2,144	1,964	320	--	986	376
Regular Commercial Lanes	648	541	190	--	343	160
Commercial Lanes - Empty Trucks	1,100	1,100	130	--	476	154
Commercial FAST Lanes	396	323	n/a	n/a	167	62

[(1)] U.S. CBP provided the hours for the peak period. The peak periods were 2 to 7 p.m. for Otay Mesa-Mesa de Otay, and 5 to 8 p.m. for Calexico East-Mexicali II. No peak period was identified for Tecate-Tecate.

n/a = not applicable

Source: U.S. CBP

NORTHBOUND BORDER WAIT TIMES

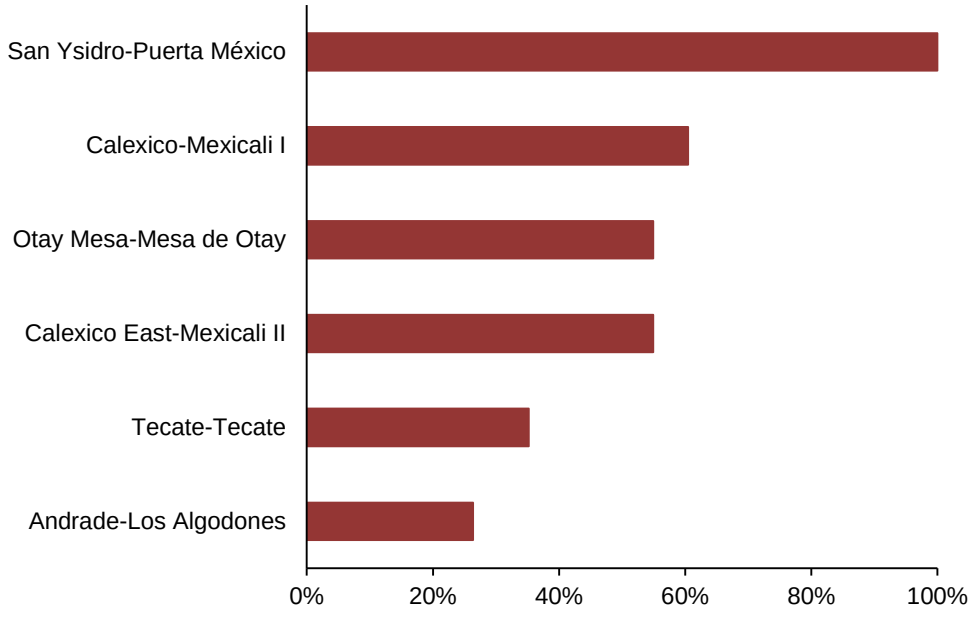
Estimates for northbound wait times were provided by SANDAG based on data from the CBP website. Northbound POV, pedestrian, and truck border crossing wait times are collected and reported by CBP. CBP posts current border waits times by hour and mode for all California-Baja California POEs on its public website. Wait times are segregated by different CBP-administered programs including SENTRI, Ready Lanes, and FAST. On an hourly basis, SANDAG scans the CBP reported wait time information from the CBP website and stores the information in a database. Both passenger vehicle and truck wait times reflect the average wait to arrive at a primary inspection booth. Data on southbound border wait times are not available from any known government source at this time.

BMP agencies expressed concern that the average wait times in minutes produced for these different modes do not generally reflect observed waits for all lane types. The following figures show the relative wait time at each POE rather than the CBP-reported wait times in minutes. Wait times in minutes are included in Appendix C-2.

Weekday Average Peak Period Wait Times—POV (Regular Lanes)

San Ysidro-Puerta México had the longest northbound wait time and is shown as 100 percent, followed by the wait times at remaining POEs in relation to San Ysidro-Puerta México. The wait time at the Calexico-Mexicali I POE is 60 percent of that at San Ysidro-Puerta México, and the waits at both Otay Mesa-Mesa de Otay and Calexico East-Mexicali II are just slightly more than half (55%). The wait at the Tecate-Tecate POE is about one-third of the San Ysidro-Puerta México wait and Andrade-Los Algodones is about one-quarter of the wait time. (Figure 3.5)

Figure 3.5
Relative Wait Time for Northbound POV Regular Lanes [(1)]
Average Weekday Peak Period Wait Times [(2)]
California-Baja California POEs



(1) Time period is October 27, 2011 – August 9, 2012.

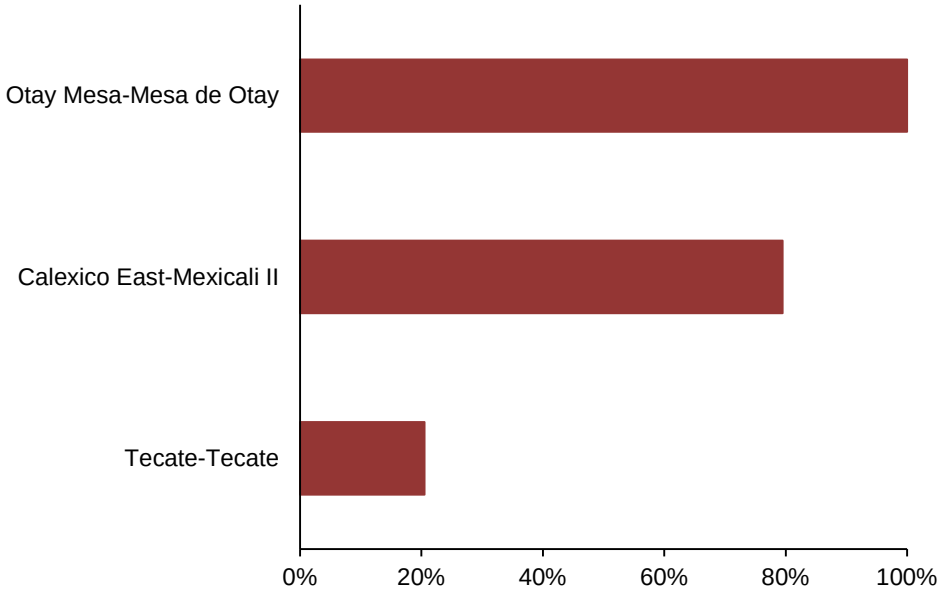
(2) The Peak Period is from 5 to 9 a.m. and 3 to 7 p.m. for San Ysidro-Puerta México, Otay Mesa-Mesa de Otay, Tecate-Tecate, and Calexico-Mexicali I. The Peak Period is from 6 to 9 a.m. and 3 to 7 p.m. for the Calexico East-Mexicali II and Andrade-Los Algodones.

Source: U.S. CBP; compiled by SANDAG

Weekday Average Peak Period Wait Times—Commercial Truck (Regular Lanes)

The Otay Mesa-Mesa de Otay POE had the longest northbound wait time during the time period, which is shown as 100 percent. The positions of the remaining POEs are shown in relation to Otay Mesa-Mesa de Otay. The wait at Calexico East-Mexicali II is about 80 percent of the wait at Otay Mesa-Mesa de Otay and the wait at Tecate-Tecate is approximately one-fifth of the wait time. (Figure 3.6)

Figure 3.6
Relative Wait Time for Northbound Commercial Truck Regular Lanes [(1)]
Average Weekday Peak Period Wait Times [(2)]
California-Baja California POEs



[(1)] Time period is October 27, 2011 – August 9, 2012.

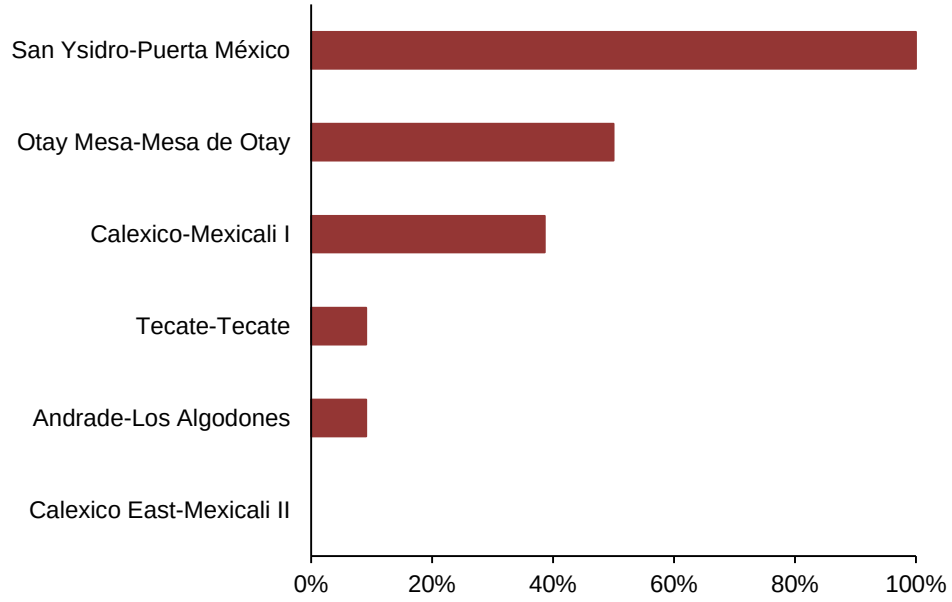
[(2)] The Peak Period is from 2 to 6 p.m. for Otay Mesa-Mesa de Otay and Calexico East-Mexicali II and 2 to 4 p.m. for Tecate-Tecate.

Source: U.S. CBP

Weekday Average Wait Times—Pedestrians (Regular Lanes)

San Ysidro/Puerta México had the longest northbound pedestrian wait time, and is shown as 100 percent. The positions of the remaining POEs are shown in relation to San Ysidro/Puerta México. The wait at Otay Mesa-Mesa de Otay is half of the wait time at San Ysidro-Puerta México and Calexico-Mexicali I is 40 percent of the wait time. Both Tecate-Tecate and Andrade-Los Algodones are about one-tenth of San Ysidro-Puerta México wait time. The Calexico East-Mexicali II POE is on average free flowing during the peak period. (Figure 3.7)

Figure 3.7
Relative Wait Time for Northbound Pedestrian Regular Lanes [1]
Average Weekday Peak Period Wait Times [2]
California-Baja California POEs



[1] Time period is October 27, 2011 – August 9, 2012.

[2] The Peak Period is from 5 to 9 a.m. and 3 to 7 p.m. for San Ysidro-Puerta México, Otay Mesa-Mesa de Otay, Tecate-Tecate, and Calexico-Mexicali I. The Peak Period is from 6 to 9 a.m. and 3 to 7 p.m. for Calexico East-Mexicali II and Andrade-Los Algodones.

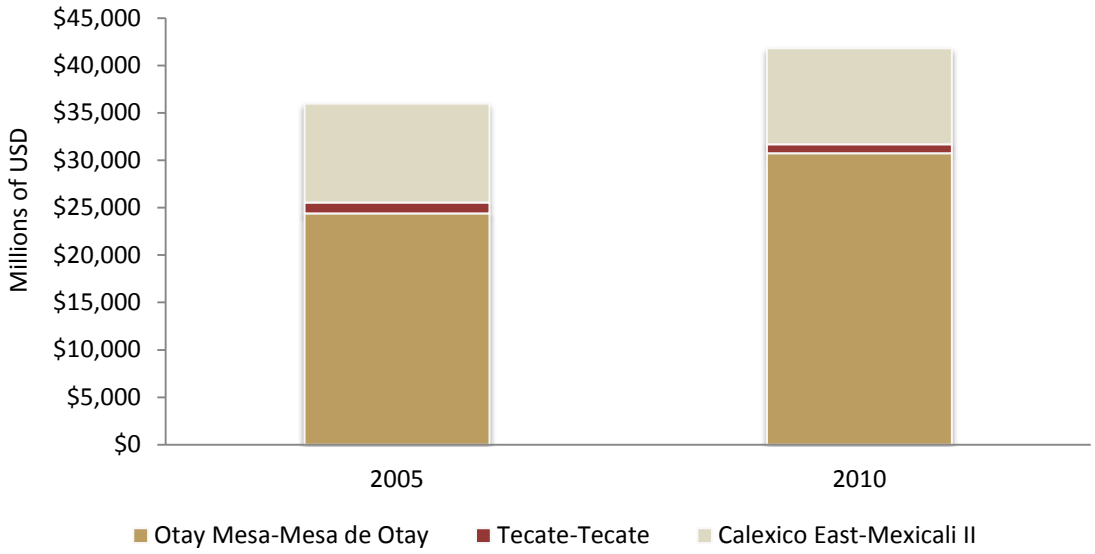
Source: U.S. CBP

GOODS MOVEMENT

Goods Movement by Truck

Freight movement by truck dominates crossborder trade across California-Baja California POEs. Total value of goods transported by truck through California-Baja California POEs was approximately $36 billion U.S. dollars (USD) in 2005 and $41.8 billion USD in 2010, an increase of $5.8 billion or 16 percent (not adjusted for inflation). Otay Mesa-Mesa de Otay handled nearly three quarters of the value of freight in 2010 ($30.7 billion) while Calexico East-Mexicali II processed about 24 percent ($10.1 billion). The Tecate-Tecate POE processed about 2 percent of the total value of goods ($943 million). Total value of trade transported by truck is shown in Figure 3.8.

Figure 3.8
Value of Trade by Truck, 2005 and 2010 [(1)]
California-Baja California POEs



[(1)] Value of trade is in millions of USD; not adjusted for inflation.

Source: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, TransBorder Freight Data.

The volume of goods transported from Mexico into the United States by truck was approximately 5 million metric tons in 2010.[9] Otay Mesa-Mesa de Otay handled about two-thirds of the volume (nearly 3.3 million metric tons), while Calexico East-Mexicali II and the Tecate-Tecate handled 30 percent and 5 percent of the volume, respectively.

The volume of goods transported by trucks northbound through all California land POEs increased from about 4.8 million metric tons to nearly 5.0 million metric tons between 2005 and 2010. The Otay Mesa-Mesa de Otay POE recorded the largest increase, expanding by 19 percent between 2005 and 2010. The Calexico East-Mexicali II POE and the Tecate-Tecate POE both showed a decline in the volume of goods transported northbound (down by 23 % and 15 %, respectively). Northbound volume of trade by truck is shown in Table 3.6.

Table 3.6
Northbound Volume of Trade by Truck, 2005 and 2010 (1)
California-Baja California POEs

POE (2)	Volume (metric tons) 2005	Volume (metric tons) 2010	Share (3) 2005	Share (3) 2010	2005-2010 Change	2005-2010 Pct. Chg.
Otay Mesa-Mesa de Otay	2,739,386	3,257,670	57%	66%	518,284	19%
Tecate-Tecate	313,169	239,880	7%	5%	-73,288	-23%
Calexico East-Mexicali II	1,721,309	1,469,903	36%	30%	-251,406	-15%
Total	**4,773,863**	**4,967,453**	**100%**	**100%**	**193,589**	**4%**

(1) *Data for southbound volumes are not available.*

(2) *The San Ysidro/Virginia Avenue-Puerta México/El Chaparral, Calexico-Mexicali I, and Andrade-Los Algodones POEs do not process commercial trucks.*

(3) *Percentages may not add to 100 due to rounding.*

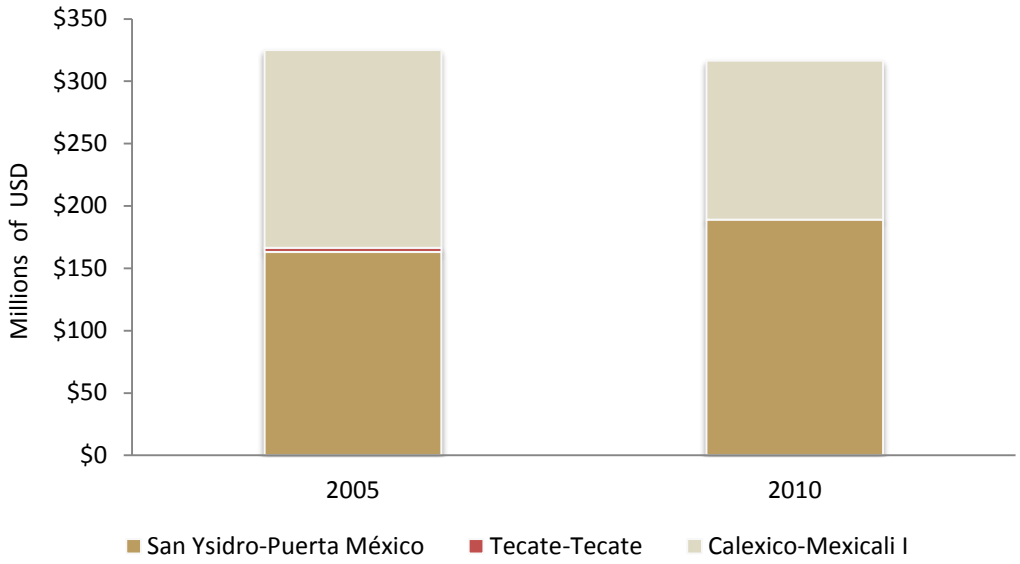
Source: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, TransBorder Freight Data.

[9] Data on southbound volume of trade is not available through U.S. Department of Transportation, Bureau of Transportation Statistics.

Goods Movement by Rail

The total value of goods transported by rail through California-Baja California POEs declined from approximately $325 million USD in 2005 to $317 million USD in 2010. San Ysidro/Puerta México comprised 60 percent of the total value of freight in 2010 ($189 million USD) and Calexico-Mexicali I comprised 40 percent ($127 million USD). The Tecate-Tecate POE processed $3.5 million USD in 2005, however, rail shipments ceased at Tecate-Tecate in 2009.[10] Total value of trade transported by rail is shown in Figure 3.9.

Figure 3.9
Value of Trade by Rail, 2005 and 2010 (1)
California-Baja California POEs



(1) Value of trade is in USD; not adjusted for inflation.

Source: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, TransBorder Freight Data.

[10] SANDAG, Committee on Binational Regional Opportunities, Agenda Item No. 9, September 3, 2013.

The volume of good transported from Mexico into the United States by rail was approximately 38,400 metric tons in 2010.[11] Calexico-Mexicali I handled virtually all of the northbound shipments out of the three border crossings in 2010. Overall, the volume of goods transported by rail northbound through the California land POEs decreased by more than 50 percent from about 96,700 metric tons in 2005 to about 38,400 metric tons in 2010. Northbound volume of trade transported by rail is shown in Table 3.7.

Table 3.7
Northbound Volume of Trade by Rail, 2005 and 2010 (1)
California-Baja California POE

	Volume (metric tons)		Share (2)		2005-2010	
POE	2005	2010	2005	2010	Change	Pct. Chg.
San Ysidro-Puerta México	2,493	109	3%	0%	-2,384	-96%
Tecate-Tecate (3)	360	0	0%	0%	-360	-100%
Calexico-Mexicali I	93,843	38,267	97%	100%	-55,576	-59%
Total	**96,695**	**38,376**	**100%**	**100%**	**-58,320**	**-60%**

(1) Data for southbound volumes are not available.

(2) Percentages may not add to 100 due to rounding.

(3) Rail service ceased at the Tecate-Tecate POE in 2009.

Source: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, TransBorder Freight Data.

SUMMARY

This chapter presents POE capacity information, and border wait times data, and current and projected border crossing data for the six existing POEs along the California-Baja California International Border.

The data show that northbound crossborder travel demand for POVs, buses, and pedestrians have declined across all POEs between 2005 and 2010. The San Ysidro/Virginia Avenue-Puerta México/ El Chaparral POE has and will continue to accommodate the majority of passenger and pedestrian traffic. Northbound POV crossings are projected to increase by 2040. The largest increase in POV crossings between 2010 and 2040 is expected to occur at Otay Mesa-Mesa de Otay, followed by San Ysidro/Virginia Avenue-Puerta México/El Chaparral, Calexico-Mexicali I, Calexico East-Mexicali II, Tecate-Tecate, and the smallest increase in volume is expected to occur at Andrade-Los Algodones.

The largest increase in bus crossings between 2010 and 2040 is expected to occur at San Ysidro/Virginia Avenue-Puerta México/El Chaparral, followed by Otay Mesa-Mesa de Otay. Smaller numbers are estimated for Calexico-Mexicali I and Tecate-Tecate. The number of bus crossings is projected to decline slightly at Calexico East-Mexicali II. No bus crossings occur at Andrade-Los Algodones.

[11] Data on southbound volume of trade is not available through U.S. Department of Transportation, Bureau of Transportation Statistics.

The largest increase in pedestrian crossings between 2010 and 2040 is expected to occur at San Ysidro/Virginia Avenue-Puerta México/El Chaparral, followed by Calexico-Mexicali I, Otay Mesa-Mesa de Otay, Andrade-Los Algodones, Tecate-Tecate, and the smallest volume at Calexico East-Mexicali II.

Northbound truck crossings also have declined between 2005 and 2010, but similar to other modes, they are projected to increase between 2010 and 2040. The largest increase in truck crossings between 2010 and 2040 is expected to occur at Calexico East-Mexicali II, followed by Otay Mesa-Mesa de Otay, and the smallest volume is expected to occur at Tecate-Tecate.

Wait times for all modes of crossborder travel remain high at California-Baja California POEs. The relative position of POEs by weekday average peak period wait times for northbound POV crossings indicate that San Ysidro/Virginia Avenue-Puerta México/El Chaparral has the longest northbound wait time followed by Calexico-Mexicali I. Both Otay Mesa-Mesa de Otay and Calexico East-Mexicali II are tied for the next longest wait time, followed by Tecate-Tecate and Andrade-Los Algodones.

For northbound pedestrian crossings, San Ysidro/Virginia Avenue-Puerta México/El Chaparral had the longest northbound wait time followed by Otay Mesa-Mesa de Otay, and then Calexico, Tecate-Tecate, and Andrade-Los Algodones. The Calexico East-Mexicali II POE is on average free flowing during the peak period.

For northbound commercial truck crossings, the longest wait time was reported at Otay Mesa-Mesa de Otay, followed Calexico East-Mexicali II, and Tecate-Tecate.

Freight movement by truck dominates the overall crossborder trade across California-Baja California POEs. The total value of the goods transported by trucks through the California-Baja California POEs in 2010 was approximately $41.8 billion USD, an increase of approximately $5.8 billion over the 2005 figure.

CHAPTER 4
PRIORITIZATION AND ANALYSIS OF PORT OF ENTRY AND TRANSPORTATION PROJECTS

INTRODUCTION

The California-Baja California Border Master Plan (BMP) Update calls for 1) updating lists of existing and new Port of Entry (POE) and related transportation projects and 2) re-ranking medium- and long-term projects. This chapter describes the process for updating the POE and transportation project rankings, reviews the evaluation criteria used in the 2014 BMP Update, and focuses on the analysis and prioritization of the POE, roadway, rail/mass transit and interchange projects submitted by BMP agencies. Other projects catalogued as part of the BMP process but not ranked also are discussed in this chapter. A series of maps showing the location of the transportation projects follows each POE discussion.

PORT OF ENTRY AND TRANSPORTATION PROJECT CATEGORIES

POE Categories

POE projects are classified in two main categories of investment: 1) New POEs and 2) Modernization of existing POEs. The POE projects were ranked separately within these two categories.

Transportation Categories

Transportation projects are grouped into five categories. In addition to the three existing categories of roadway, interchange, and rail/mass transit projects, two new categories of transportation projects were added during this 2014 Update. The five transportation project categories are:

1. Roadway—Capital infrastructure projects for highway and arterial roadways.
2. Interchange—Capital infrastructure projects for interchanges to interconnect roads and bridges.
3. Rail/Mass Transit – Capital infrastructure projects for freight, passengers (bus rapid transit and Trolley), and grade separations. Multi-modal transportation centers are classified as rail/mass transit projects.
4. Non-Motorized Modes of Cross Border Transportation - Walking and bicycling capital infrastructure projects. Bicycle project types include bike paths, bike lanes/routes, signage, support facilities, and other types of bike projects. Pedestrian projects include pedestrian crossings, traffic calming, and sidewalk design projects.
5. Short-term Operational and Minor Capital Improvement Projects to Reduce Border Wait Times - Projects designed to facilitate federal processing of pedestrians and vehicles at the POEs, thereby expediting the flow of people and cargo. The projects have three distinguishing characteristics:
    a. Completion dates within the short-term timeframe of 2013-2014
    b. A clear nexus to reducing northbound and/or southbound border wait times
    c. A capital project cost of less than $3 million U.S. Dollars (USD)

PROCESS FOR UPDATING PORT OF ENTRY AND TRANSPORTATION PROJECT RANKINGS

The following is a summary of the guidelines and process for submitting POE and related transportation projects:

- POE and transportation projects submitted by BMP agencies were limited to the focused study area, which is the area ten miles north and ten miles south of the California-Baja California International Border. Projects were required to have already been included in an approved planning document.

- POE projects are classified in two main categories: 1) new POEs and 2) modernization of existing POEs. POE projects are ranked separately within these two categories. BMP agencies are responsible for determining the appropriate category.

- POE and related transportation projects are classified in three categories: short-, medium-, and long-term. Short-term projects are catalogued, but not ranked. Medium-term and long-term projects are ranked. The time periods used in the BMP Update are:

  - Short-term: 2013-2014
  - Medium-term: 2015-2020
  - Long-term: 2021-2040

The time periods for short-, medium-, and long-term represent “date open to traffic.”

The two new transportation project categories (infrastructure projects for non-motorized modes related to crossborder travel and short-term operational and minor capital investment projects to reduce northbound and southbound crossborder wait times) are catalogued, but not ranked.

- The BMP Update incorporates Construction Phase Screening and Funding Status Screening criteria into the framework. The additional screening criteria avoid ranking a project that is in construction in the short-term period, but open to traffic after 2014, and also avoid ranking fully funded projects.

  The three steps for determining which projects will be ranked and which will be catalogued are described below. Figure 4.1 illustrates the steps in a flowchart.

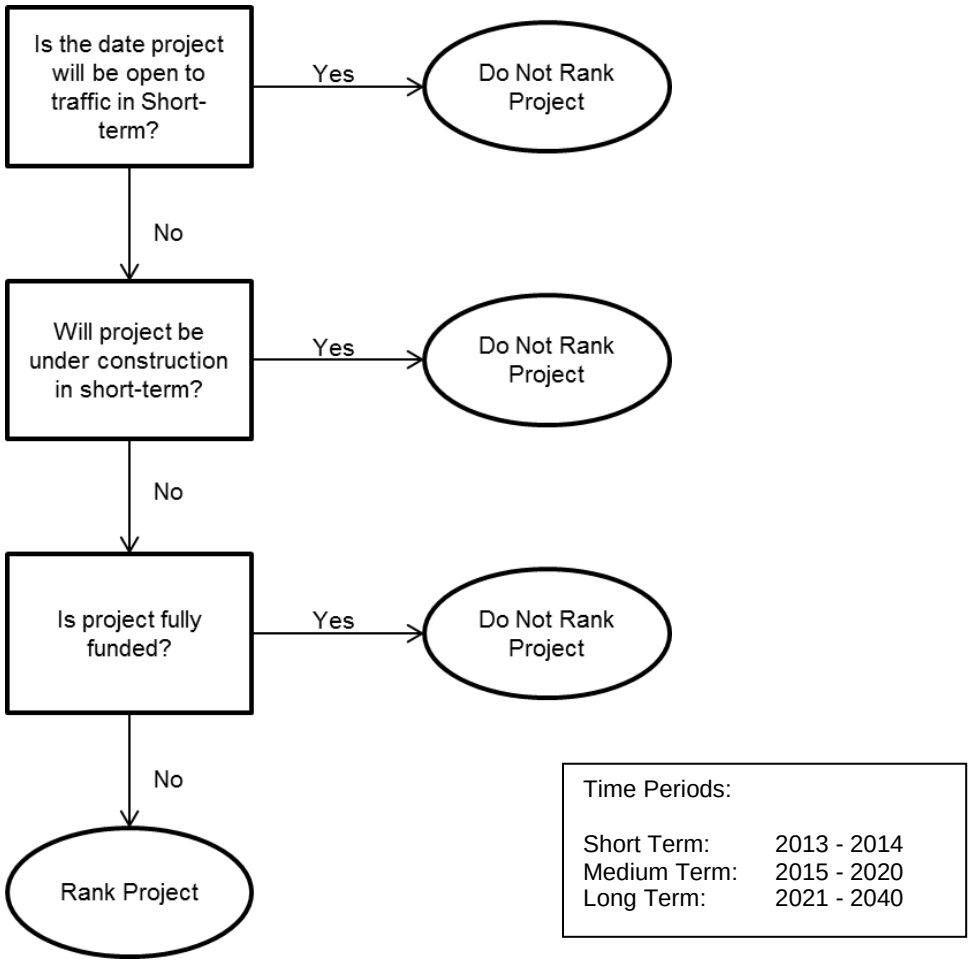
  1) Short-term projects are not ranked; they are catalogued for information purposes.

  2) Projects that are in construction during the short-term period (2013-2014) are not ranked even if the open to traffic date is after December 31, 2014.

  3) Projects that are fully funded were not ranked regardless of the time period.[1]

[1] At the request of the PAC, a second list that ranks fully funded projects was created. The purpose of this list is to be able to demonstrate the ranking of the project if a project loses funding and efforts are needed to pursue funding in the future. This list is included in Appendix F-11 and is referred to as BMP 2014 Expanded List of Ranked Projects.

Figure 4.1
Flowchart for Ranking Projects
Construction and Funding Screening Criteria Applied [2]



[2] At the request of the PAC, a second list that ranks fully funded projects was created. The purpose of this list is to be able to demonstrate the ranking of the project if a project loses funding and efforts are needed to pursue funding in the future. This list is included in Appendix F-11 and is referred to as BMP 2014 Expanded List of Ranked Projects.

Project Submittal

The California-Baja California 2014 BMP Update created an online data management portal for BMP agencies to update information about projects previously submitted for the 2008 BMP and to submit new projects. A User Guide, included in Appendix D, was developed in English and Spanish and bilingual training on how to use the new tool was conducted. Project categories included POEs (new or modernization), roadway, interchanges, rail/mass transit, non-motorized (bicycle and pedestrian), as well as short-term operational improvements and minor capital investments. A Geographic Information System (GIS) tool also was incorporated in the web-based portal for mapping each project.

POE Projects:

A total of 27 POE projects were submitted by the agencies listed below. Six are for new POEs and 21 are for existing POEs. Two new POE projects were not ranked because they have anticipated completion dates within the short-term time period of 2013-2014. Two others are in the early conceptual stages of development and therefore are included in the Project Inventory List. Three existing POE projects are not ranked because one has an anticipated completion date within the short-term time period and the other two are planned to be in construction by December 2014. Five projects for existing POEs are included in the Project Inventory List.

- U.S.: U.S. Customs and Border Protection (CBP); U.S. General Services Administration (GSA); California Department of Transportation (Caltrans), and San Diego Association of Governments (SANDAG).

- Mexico: Secretariat of Communications and Transportation (SCT); General Customs and Administration (Aduanas); and State of Baja California Secretariat of Infrastructure and Urban Development (SIDUE) with concurrence from Secretariat of Exterior Relations (SRE) and Institute of Administration and Appraisals of National Real Estate (INDAABIN).

Roadway and Interchange Projects:

A total of 68 roadway and 25 interchange projects were submitted by the BMP agencies listed below. Of the total roadway projects submitted, 63 were ranked. Four roadway projects are planned to be in construction by December 31, 2014 and one project is fully funded. Thus, according to the construction screening criteria, these four projects are not ranked. Of the 25 interchange projects submitted, 23 were ranked. One is planned to be open to traffic during the 2013-2014 short-term time period and another is on the project inventory list, therefore they are not ranked.

- U.S.: Caltrans; Imperial County Transportation Commission (ICTC); County of San Diego; City of San Diego; and City of Chula Vista.

- Mexico: SIDUE.

Rail/Mass Transit Projects:

Twenty rail/mass transit projects were submitted by the agencies listed below. Of these, 13 projects are ranked. Of the seven projects not ranked, two are planned to be under construction by December 31, 2014,

and two are scheduled for completion during the short-term time period, and three are included in the Project Inventory List.

- U.S.: Caltrans; SANDAG; ICTC; City of El Centro.
- Mexico: SIDUE; Municipality of Tijuana including Metropolitan Planning Institute of Tijuana (IMPlan).

Non-Motorized Modes of Crossborder Travel and Short-Term Operational and Minor Capital Investment Projects:

A total of 16 bicycle projects and six pedestrian projects were submitted. These projects were catalogued but not ranked. (Currently, there are no criteria to rank non-motorized projects, so these projects have been catalogued for this effort. Future BMP efforts will evaluate the need for developing ranking criteria. Bicycle classification systems for California and Baja California are described in Appendix E.) In addition, several ideas for short-term operation and minor capital investment projects were submitted to decrease border wait times. These projects were submitted by the following agencies:

- United States: Caltrans, SANDAG, City of San Diego, and City of Chula Vista
- Mexico: SIDUE, Municipality of Tijuana including IMPlan, and the Municipality of Mexicali including Municipal Planning Institute of Mexicali (IMIP)

Project Lists

The ranked POE and transportation projects are shown in Appendix F. The transportation projects are organized by country and by type. (Information on evaluation criteria also is included in Appendix F.) Appendix G includes detailed project data and scoring sheets for all ranked projects, including the one project that is fully funded. Projects that are catalogued but not ranked are included in Appendix H. These include short-term projects, projects planned to be under construction by December 31, 2014, projects for non-motorized modes of crossborder travel, and short-term operational and minor capital investment projects for reducing border wait times. In addition, Appendix H includes project inventory lists for those projects in the early conceptual planning phases without sufficient data for ranking.

REVIEW OF EVALUATION CRITERIA

The ranking of POE and transportation projects use the same evaluation criteria and methodology applied in the 2008 BMP effort, with some modifications approved by the Policy Advisory Group (PAC) at its November 15, 2012 meeting.

POE Evaluation Criteria

Two sets of criteria and scores are used to evaluate POE projects: POE Criteria and Project Criteria.

POE Criteria

This set of criteria is based on current POE travel and trade demand, current POE congestion, and projected change in POE travel demand. Table 4.1 shows the 15 possible variables or criteria that can be

scored for each type of POE project. Since there are a different number of variables that could be scored for each type of project, the maximum possible score by type of project is normalized to 100 points. This approach results in a level playing field for all project types while highlighting differences between POE projects of the same type.

For example, an improvement to an existing passenger POE could score up to 24 points while an improvement to an existing cargo POE could score up to 18 points. If those two projects score the maximum number of points under each project type, they would both be normalized to 100 points. A score lower than the maximum is similarly adjusted to represent its value relative to 100 (for example, a cargo POE received a score of nine and the maximum possible score is 18, its normalized score would be 50 points). POE projects that pertain to a POE passenger facility are scored only on criteria that relates to passenger vehicles or pedestrians. POE projects related to a POE cargo facility are scored only on freight and truck/freight rail related criteria. For example, an expansion of a POE commercial facility would be evaluated on the benefit the project provides for crossborder truck traffic and trade; however, an expansion of SENTRI lanes would be evaluated on the benefit the project provides for passenger travel. (Refer to Appendix F-1 for additional detail.)

Project Criteria

The second set of criteria pertains specifically to each project and the same number of criteria are scored for all projects. Table 4.2 shows the four criteria and the proposed ranges, weights, and maximum possible points for each criterion score.

It should be noted that if data were missing from the questionnaires completed by the TWG representatives, then not all criteria would be scored for those POE projects.

POE projects in early conceptual stages of development for which quantitative and/or qualitative information was not available were inventoried without a priority ranking and are listed in the Project Inventory List for POE projects (Table 4.54 and Appendix H). In addition, some POE projects were submitted after the submittal deadline. These projects are included in the BMP in the Project Inventory List.

Table 4.1
POE Evaluation Criteria

Focus	Criteria		Description		Score	Criteria to be Scored by POE Project Type						
						Existing Passenger POE	Existing Cargo POE - Truck	Existing Cargo POE Rail	New Passenger POE	New Truck POE	New Rail POE	New Passenger & Cargo POE
Current POE Demand (Travel and Trade)	CURRENT	1. Crossborder Truck Traffic	Number of Trucks that crossed the POE in 2010	NB	1-3		♦					
		2. Crossborder Tonnage of Goods by Truck	Volume of Goods in tons transported by truck in 2010	NB	1-3		♦					
		3. Crossborder Value of Goods by Truck	Value of Goods in tons transported by truck in 2010	NB	1-3		♦					
		4. Crossborder Passenger Vehicle Traffic	Number of Passenger Vehicles and Buses that crossed the POE in 2010	NB	1-3	♦						
		5. Crossborder Pedestrian Traffic	Number of Pedestrians that crossed the POE in 2010	NB	1-3	♦						
		6. Crossborder Rail Traffic	Number of Rail Cars that crossed the POE in 2010	NB	1-3			♦				
		7. Crossborder Tonnage of Goods by Rail	Volume of Goods in tons transported by rail in 2010	NB	1-3			♦				
		8. Crossborder Value of Goods by Rail	Value of Goods in tons transported by rail in 2010	NB	1-3			♦				
Current Congestion at POE	CURRENT	9. Current Relative Truck Wait Times at POE	Relative position of POEs by weekday average peak period wait times for truck crossings or for nearest POE (for new POEs) (Oct. 2011 - Aug. 2012)	NB	1-3		♦			♦		♦
		10. Current Relative Passenger Vehicle Wait Times at POE	Relative position of POEs by weekday average peak period wait times for passenger vehicle crossings or for nearest POE (for new POEs) (Oct. 2011 - Aug. 2012)	NB	1-3	♦			♦			♦
		11. Current Relative Pedestrian Wait Times at POE	Relative position of POEs by weekday average peak period wait times for pedestrian crossings at nearest POE (for new POEs) (Oct. 2011 - Aug. 2012)	NB	1-3	♦			♦			♦

Table 4.1
POE Evaluation Criteria (Cont.)

Focus	Criteria		Description		Score	Criteria to be Scored by POE Project Type						
						Existing Passenger POE	Existing Cargo POE - Truck	Existing Cargo POE - Rail	New Passenger POE	New Truck POE	New Rail POE	New Passenger & Cargo POE
Projected Change in POE Demand (Travel)	**PROJECTED**	12. Change in Crossborder Truck Traffic	a. Numerical Change in Number of Trucks between 2010 and 2040	NB	1-3		♦			♦		♦
			b. Percent Change in Number of Trucks between 2010 and 2040	NB	1-3		♦					
		13. Change in Crossborder Passenger Vehicle Traffic	a. Numerical Change in Number of Passenger Vehicles and Buses between 2010 and 2040	NB	1-3	♦			♦			♦
			b. Percent Change in Number of Passenger Vehicles and Buses between 2010 and 2040	NB	1-3	♦						
		14. Change in Crossborder Pedestrian Traffic	a. Numerical Change in Number of Pedestrians between 2010 and 2040	NB	1-3	♦			♦			♦
			b. Percent Change in Number of Pedestrians between 2010 and 2040	NB	1-3	♦						
		15. Change in Crossborder Rail Traffic	a. Numerical Change in Number of Rail Cars between 2010 and 2040	NB	1-3			♦			♦	
			b. Percent Change in Number of Rail Cars between 2010 and 2040	NB	1-3			♦				
Total Number of Variables to be Scored by POE Project Type						**8**	**6**	**5**	**4**	**2**	**1**	**6**
Maximum Points by POE Project Type (to be normalized to 100 points by POE project type)						**24**	**18**	**15**	**12**	**6**	**3**	**18**

Table 4.2
POE Project Evaluation Criteria

				Criteria to be Scored by POE Project Type								
Focus	**Criteria**	**Description**	**Score**	**Existing Passenger POE**	**Existing Cargo POE - Truck**	**Existing Cargo POE - Rail**	**New Passenger POE**	**New Truck POE**	**New Rail POE**	**New Passenger & Cargo POE**	**Weight**	**Maximum Points**
Cost-Effectiveness	16. Project Cost-Effectiveness	Cost of POE project divided by daily number of projected new users (trucks and rail cars for commercial POEs, passenger vehicles and pedestrians for passenger or tourist POEs)	1-5	♦	♦	♦	♦	♦	♦	♦	**6**	**30**
Projected Project Performance	17. Environmental Project Benefit	Environmental benefit of the POE project (air quality, habitat mitigation)	1-3	♦	♦	♦	♦	♦	♦	♦	**5**	**15**
	18. Community and Economic Project Benefit	Community and economic benefit of the POE project (safety, access, job and output creation)	1-3	♦	♦	♦	♦	♦	♦	♦	**5**	**15**
	19. Impact on Other Modes	Positive impact on other modes of transportation or inspection procedures at the subject or adjacent POEs	0-2	♦	♦	♦	♦	♦	♦	♦	**5**	**10**
Project Readiness	20. Current Phase of Project	Conceptual Planning, Advanced Planning (Plans and Specifications), Presidential Permit	1-3	♦	♦	♦	♦	♦	♦	♦	**10**	**30**
											Total Maximum Points	**100**

Transportation Evaluation Criteria

The approved criteria for ranking transportation facility projects includes of set of criteria for roadways and interchanges and another set of criteria for rail/mass transit projects. Appendix F-1 provides details on the scoring and weighting of the proposed criteria. Transportation projects in the early conceptual stages of development for which quantitative and/or qualitative information are not available are inventoried without a priority ranking and are listed in the Project Inventory List for Transportation Projects (Table 4.54 and Appendix H). In addition, some projects were submitted after the submittal deadline. These projects are included in the BMP in the Project Inventory List.

Roadway and Interchange Criteria

The combined score of 11 criteria are used to rank roadway and interchange projects. The 11 criteria are grouped into three criteria types: 1) Congestion/Capacity; 2) Cost-Effectiveness; and 3) Project Readiness, POE Connectivity, and Regional Benefits as shown in Table 4.3. Each criterion is scored separately, weighted by criteria type, and then an overall score for each project is calculated. The project with the highest overall score is listed as first and is considered to be of greatest need compared to the other projects listed. Appendix F-1 includes details information on the scoring and weighting of the proposed criteria.

Table 4.3
Roadway and Interchange Evaluation Criteria by Type

Criteria Type	Criteria	Total Weighted Points
Congestion/Capacity	1. Level of Service 2. Average Annual Daily Traffic Improvement 3. Accident Rate 4. Truck Percent Share 5. POE Congestion	39
Cost-Effectiveness	6. Cost-Effectiveness	33
Project Readiness, POE Connectivity, Regional Benefit	7. Current Phase of Project 8. POE Connection 9. Multimodal Benefit 10. Environmental Benefit 11. Community and Economic Benefit	28
Total		**100**

Rail/Mass Transit Criteria

The combined score of eight criteria are used to rank rail/mass transit projects. The criteria are grouped into three types: 1) Congestion/Capacity; 2) Cost-Effectiveness; and 3) Project Readiness, POE Connectivity, and Regional Benefit, as shown in Table 4.4 below. Each criterion is scored separately, weighted by criteria type, and then an overall score for each project is calculated. The project with the highest overall score is listed as first and it is considered of greatest need relative to other rail/mass transit projects. Missing data elements receive zero "0" points for each criterion. Bus Rapid Transit (BRT) projects and intermodal transportation centers are evaluated as rail/mass transit projects. Appendix F-1 includes detailed information on the scoring, and weighting of the proposed criteria.

Table 4.4
Rail/Mass Transit Evaluation Criteria by Type

Criteria Type	Criteria	Total Weighted Points
Congestion/Capacity	1. Capacity Improvement 2. POE Congestion 3. Local Circulation Congestion	42
Cost Effectiveness	4. Cost Effectiveness	36
Project Readiness, POE Connectivity, Regional Benefit	5. Current Phase of Project 6. POE Connection 7. Environmental Benefit 8. Community and Economic Benefit	22
Total		**100**

INTRODUCTION TO PROJECT RANKINGS AND MAPPING

The remaining sections of this chapter analyze rankings of POE and connecting transportation projects submitted by BMP agencies. Each POE project is individually ranked according to the criteria previously described. The individual POE project rankings are then used to establish a priority order for the POEs. This allows the projects in United States and projects in Mexico to be grouped together and prioritized under one POE.

Transportation projects also are individually ranked. When submitting transportation projects, the BMP agencies designated the POE that is primarily served by the project, allowing transportation projects to be grouped and analyzed for each POE as well. The analysis focuses on the project rankings and also identifies whether planning and implementation of POE and connecting transportation facilities are taking place in a coordinated manner or whether there are any gaps or inconsistencies in the projects and/or project schedules.

Project rankings associated with new POEs are presented first, followed by project rankings for the modernization of existing POEs. The POEs are discussed in priority order. Accompanying each POE section are maps that show the location of the transportation projects connected to the POE. All projects submitted are shown on a map (whether they were ranked or not) except for the short-term operational and minor capital investment projects as these included improvements at POE facilities and only the POE footprints are shown on the maps.

- Ranked POE and Transportation Projects (medium- and long-term)
- POE and Transportation Projects That Were Not Ranked:
  - o Short-Term Projects
  - o Projects Planned to be Under Construction by December 31, 2014
  - o Non-Motorized Modes of Crossborder Travel
  - o Project Inventory List
- Fully Funded Transportation Projects[3]

NEW PORT OF ENTRY PROJECTS

Six projects are included in the New POE category. Two projects are for the proposed Otay Mesa East-Mesa de Otay II POE, two are for the new San Diego-Tijuana Airport Crossborder Facility, and two are for the proposed new Jacumba-Jacumé POE. Only the projects for the Otay Mesa East-Mesa de Otay II POE are ranked. The projects for the San Diego-Tijuana Airport Crossborder Facility are currently in construction with anticipated completion dates in 2014. The port projects for the proposed Jacumba-Jacumé POE are included in the POE Project Inventory as this project is in early conceptual stages of development and quantitative or qualitative data are not available to rank it.

[3] Fully funded projects are ranked but included in separate list entitled, “Expanded List of Ranked Projects” found in Appendix F-11. The purpose of this list is to be able to demonstrate the ranking of the project if a project loses funding and new efforts are needed to pursue funding in the future.

RANK 1: OTAY MESA EAST-MESA DE OTAY II

Caltrans, SANDAG, and SCT, in partnership with SIDUE and federal agencies on both sides of the border, are leading coordination efforts for the development of Otay Mesa East-Mesa de Otay II. This POE will be located approximately two miles east of the existing Otay Mesa-Mesa de Otay POE and will serve both passenger and commercial vehicles.

This new POE project is designed to improve the movement of people and goods between the United States and Mexico. A state-of-the-art POE accessed via a toll road would provide shorter and more predictable crossing times, as the toll amount will vary to help control traffic flows.

Proposed POE Projects for Otay Mesa East-Mesa de Otay II

Table 4.5 lists the two projects that are ranked for this POE. Although in the United States, SR 11 (Segment 1) is under construction and the remaining projects are in the advanced planning stages, while in Mexico the project is in the conceptual planning stage, both governments have been coordinating on the design and implementation of the POE and anticipate opening the POE in 2017.

In the United States, the POE project is divided into three phases or segments. Segment 1 will construct SR 11 from SR 905 to Enrico Fermi Drive. Segment 2 will build the remaining portion of SR 11 (from Enrico Fermi to the POE) and the Commercial Vehicle Enforcement Facility (CVEF) and Segment 3 will construct the POE. The three segments are evaluated as three separate projects in this BMP Update. The POE is shown in Table 4.5. Segment II (SR 11: Four Toll lanes and the CVEF) is included in Table 4.6 with other medium-term roadway projects. Segment 1 is already under construction and is shown in Table 4.9.

Table 4.5
POE Projects
Otay Mesa East-Mesa de Otay II POE

Project No.	Project Name	Project Description	Type	Project Cost (2010 USD)	Phase [1]	Year Open to Traffic	Project Rank	Agency
4020001	Otay Mesa East - New POE	Construct new POE facility	New Passenger and Commercial POE	$350,000,000	AP	2017	1	Caltrans
4070008	Mesa de Otay II - New POE	Construction of new POV, Cargo, and Pedestrian POE	New Passenger and Commercial POE	$134,674,800	CP	2017	2	SCT

[1] *CP=Conceptual Planning; AP=Advanced Planning*

Proposed Transportation Projects for Otay Mesa East-Mesa de Otay II

Transportation projects are individually ranked and then grouped by the POE primarily served by the project. Planned arterial and highway projects serving this POE are shown in Table 4.6, interchange projects are shown in Table 4.7, and rail/mass transit projects in Table 4.8. The projects are listed in priority order. Maps illustrating the location of these projects are shown in Figures 4.2 and 4.3 beginning on page 4-20.

Table 4.6
Roadway Projects
Otay Mesa East-Mesa de Otay II POE

Project No.	Project Name (1)	Limits	Project Description	Project Cost (2010 USD)	Phase (2)	Year Open to Traffic	Rank	Agency
1020048	Widen Britannia Boulevard	Airway Road to 675 feet south of Airway Rd., City of San Diego	Construct 4 Lane Major Arterial.	$200,000	AP	2016	2	City of San Diego
1020041	Widen Siempre Viva Road	Britannia Boulevard to La Media Rd., City of San Diego	Construct 6 Lane Primary Arterial	$12,000,000	AP	2020	3	City of San Diego
1070012	New International Otay II Boulevard	Otay II POE to Toll road from Tijuana to Tecate	Construct 4 km (5 mi) roadway for trucks with 2 lanes each direction for access to Otay II	$8,249,300	AP	2017	5	SIDUE
1020028	New Arterial Lone Star Road	Enrico Fermi Road to Alta Road	Arterial from Enrico Fermi Road to Alta Road	$10,000,000	CP	2030	6	County of San Diego
1020033	Widen Siempre Viva Road	City of San Diego to Alta Road	Arterial from City of SD to Alta Road	$6,000,000	CP	2030	6	County of San Diego
1020047	Widen Heritage Road	Frontage of Otay Rio Business Park to 900 feet north of Otay Rio Business Park	Widen to 6 Lane Primary Arterial	$7,100,000	CP	2020	8	City of San Diego
1020025	New Arterial Lone Star Road	Piper Ranch to Sunroad Boulevard	Arterial from Piper Ranch to Sunroad Boulevard	$15,000,000	CP	2030	9	County of San Diego
1070011	New Las Torres Boulevard	Highway Tijuana - Tecate to Otay II Boulevard	Construction of a 2 km (1.2 mi) roadway with 3 lanes in each direction	$2,749,800	AP	2017	9	SIDUE
1020029	New Arterial Lone Star Road	Otay Mesa Rd. to Siempre Viva Rd.	Arterial from Otay Mesa Rd. to Siempre Viva Rd.	$1,650,000	CP	2030	11	County of San Diego
1020014	Widen Airway Road	City of San Diego to Enrico Fermi Drive	Arterial from City of SD to Enrico Fermi Drive	$3,600,000	CP	2030	14	County of San Diego

Table 4.6 (Cont.)
Roadway Projects
Otay Mesa East-Mesa de Otay II POE

Project No.	Project Name [1]	Limits	Project Description	Project Cost (2010 USD)	Phase [2]	Year Open to Traffic	Rank	Agency
1020052	SR 11+4T and CVEF	Enrico Fermi Drive to US-Mexico Border	Construct 4 Toll Lanes and commercial vehicle enforcement facility (CVEF)	$245,400,000	FD	2017	15	Caltrans
1070021	New International Otay II Boulevard	Tijuana-Tecate Toll road to Alamar Blvd.	Construction of 1km (0.9 mi) arterial from Tijuana-Tecate Toll road to Alamar Blvd.	$7,922,000	AP	2017	18	SIDUE
1020021	New Arterial Enrico Fermi Drive	Lone Star Road to Otay Mesa Road	Arterial from Lone Star Road to Otay Mesa Road	$10,000,000	CP	2030	19	County of San Diego
1020043	Otay Mesa Truck Route	Britannia Boulevard to Drucker Lane	Construct 3 lane road	$6,000,000	FD	2016	22	City of San Diego
1020022	Widen Enrico Fermi Dr.	Otay Mesa Road to SR 11	Enhanced Arterial from Otay Mesa Rd. to SR 11	$5,000,000	CP	2030	23	County of San Diego
1020015	New Arterial Airway Road	Enrico Fermi Road to Alta Road	Arterial from Enrico Fermi Rd. to Alta Rd.	$8,000,000	CP	2030	26	County of San Diego
1020016	New Arterial Airway Road	Alta Rd. to Siempre Viva Rd.	Arterial from Alta Road to Siempre Viva Road	$10,000,000	CP	2030	26	County of San Diego
1020018	Widen Alta Road	Lone Star Road to Otay Mesa Road	Arterial from Lone Star Road to Otay Mesa Rd.	$4,000,000	CP	2030	26	County of San Diego
1020019	New Arterial Alta Road	Otay Mesa Road to Airway Road	Arterial from Otay Mesa Road to Airway Road	$10,000,000	CP	2030	26	County of San Diego
1020020	New Arterial Alta Road	Airway Rd. to Siempre Viva Rd.	Arterial from Airway Rd. to Siempre Viva Rd.	$10,000,000	CP	2030	26	County of San Diego
1020023	Widen Enrico Fermi Dr.	SR 11 to Airway Road	Enhanced Arterial from SR 11 to Airway Road	$5,000,000	CP	2030	32	County of San Diego
1020027	New Arterial Lone Star Road	Vann Center Blvd. to Enrico Fermi Drive	Arterial from Vann Center Blvd. to Enrico Fermi Drive	$10,000,000	CP	2030	32	County of San Diego
1020034	New Arterial Siempre Viva Road	Alta Road to Lone Star Road	Arterial from Alta Road to Lone Star Road	$15,000,000	CP	2030	32	County of San Diego
1020032	New Arterial Otay Mesa Road	Alta Road to Lone Star Road	Arterial from Alta Road to Lone Star Road	$10,000,000	CP	2030	38	County of San Diego

Table 4.6 (Cont.)
Roadway Projects
Otay Mesa East-Mesa de Otay II POE

Project No.	Project Name [1]	Limits	Project Description	Project Cost (2010 USD)	Phase [2]	Year Open to Traffic	Rank	Agency
1020049	Widen Heritage Road	Avenida de las Vistas to Airway Road	Reconstruction of existing road to a 6 - Lane Primary Arterial.	$71,533,000	CP	2025	40	City of San Diego
1020026	New Arterial Lone Star Road	Sunroad Boulevard to Vann Center Boulevard	Arterial from Sunroad Boulevard to Vann Center Boulevard	$5,000,000	CP	2030	42	County of San Diego
1020044	Widen La Media Road	Siempre Viva Road to Otay Mesa Road	Construct 6 Lane Prime and 5 Lane Major Arterial	$32,000,000	CP	2020	49	City of San Diego
1020030	Widen Otay Mesa Road	Sanyo Rd. to Enrico Fermi Rd.	Arterial from Sanyo Road to Enrico Fermi	$18,000,000	CP	2030	55	County of San Diego
1020031	Widen Otay Mesa Road	Enrico Fermi Rd. to Alta Rd.	Arterial from Enrico Fermi Rd. to Alta Rd.	$8,000,000	CP	2030	55	County of San Diego
1020024	Widen Enrico Fermi Dr.	Airway Rd. to Siempre Viva Rd.	Arterial from Airway Rd. to Siempre Viva Rd.	$4,000,000	CP	2030	61	County of San Diego
1020046	Widen Otay Mesa Road	Piper Ranch Road to Sanyo Road	Construct 6 Lane Primary arterial from Piper Ranch Road to Sanyo Road	$750,000	CP	2018	64	City of San Diego

[1] *T=Toll road*
[2] *CP=Conceptual Planning; AP=Advanced Planning; FD=Final Design*

Table 4.7
Interchange Projects
Otay Mesa East-Mesa de Otay II POE

Project No.	Jurisdiction	Project Name	Project Description	Project Cost (2010 USD)	Phase [1]	Year Open to Traffic	Rank	Agency
2020014	San Diego County	SR 905/SR 125/SR 11 Northbound	Construct Freeway to Freeway connectors	$20,000,000	FD	2016	4	Caltrans
2070007	Municipality of Tijuana	International Otay II Boulevard/Alamar	Construction of node at International Otay II Boulevard and Alamar	$2,376,600	CP	2018	6	SIDUE
2070001	Municipality of Tijuana	Tijuana - Tecate Toll Road/ Boulevard de las Torres Bridge	Construction of 40 meter bridge with a 200 meter intersection over the Toll road from Tijuana - Tecate with access to Boulevard de las Torres	$7,332,700	AP	2017	11	SIDUE
2020009	San Diego County	SR 905/SR 125 Southbound	Construct Freeway to Freeway connectors/ Outside lane widening	$40,000,000	FD	2020	13	Caltrans
2020013	San Diego County	SR 11/SR 905 Southbound	Construct freeway to freeway connector	$24,000,000	CP	2018	15	Caltrans
2070006	Municipality of Tijuana	International Otay II Boulevard/Tijuana-Tecate Toll Road	Construction of node connecting Otay II POE to Tijuana-Tecate Toll road for trucks	$10,536,300	FD	2017	19	SIDUE

[1] *CP=Conceptual Planning; AP=Advanced Planning; FD=Final Design*

Table 4.8
Mass Transit Projects
Otay Mesa East-Mesa de Otay II POE

Project No.	Project Name	Limits	Project Description	Project Cost (2010 USD)	Phase [1]	Year Open to Traffic	Rank	Agency
3070001	BRT Route 2	Otay II and Santa Fe	Route from Otay II and Otay I to Santa Fe with three stations	$89,480,900	CP	2017	4	IMPlan

[1] *CP=Conceptual Planning*

Discussion

Binational coordination of planning and implementation activities for the proposed Otay Mesa East-Mesa de Otay II POE and the connecting roads are reported and coordinated through several channels including meetings of the Technical Commission under the San Diego-Tijuana Border Liaison Mechanism, U.S.-Mexico Joint Working Committee (JWC), and Binational Bridges and Border Crossings Group (BBBXG). In addition, separate working groups with key project partners including SCT, SRE, CBP, GSA, Caltrans, SANDAG, and other transportation and community groups are held on a regular basis.

The schedules for completion of the United States and Mexico projects at the Otay Mesa East-Mesa de Otay II POE are well-coordinated. Both countries are planning their projects so the POE opens in 2017. The primary roadways serving the POE in the United States and Mexico are timed to be completed concurrently with the opening of the POE.

In terms of roadway connections, in the United States, the new POE would be linked to State Route (SR) 905 and SR 125 Toll road via the future SR 11, which would be a direct connector to the POE. SR 11 is a four-lane toll road and is divided into two segments. Construction on SR 11 Segment 1 (SR 905 to Enrico Fermi Drive) began in December 2013 (therefore it is not ranked). It is expected to be completed in late 2015 or early 2016. Segment II (Enrico Fermi Drive to the POE) is tied to the construction of the POE and scheduled for completion in 2017. This project includes the construction of the CVEF at the new POE and two intersections at Enrico Fermi Drive and Siempre Viva Road. This POE and SR 11 will connect the United States-Mexico border to key regional, state, and international highways, including Interstate (I) 805, I-5 via SR 905, SR 125, and the Tijuana-Tecate and Tijuana-Ensenada free and toll roads.

Many new local roads in the unincorporated area of the San Diego region are planned to provide routes parallel to SR 11 and primary connections serving the local community. Virtually all of these local roads are scheduled for completion in 2030 with some planned for completion a few years earlier.

Associated with SR 11 are three interchange projects to accommodate northbound and southbound traffic on SR 905, SR 125, and SR 11. The projects have planned completion dates between 2016 and 2020.

In Mexico, two new road segments are planned to provide access to the POE. The first is International Otay II Boulevard, which is divided into two segments. The first segment connects the POE to the Tijuana-Tecate Toll Road and will serve northbound and southbound truck traffic. The second segment connects the toll road to Alamar Vía Rápida, which is a six-lane roadway currently under construction. This segment of International Otay II Boulevard will serve both trucks and passenger vehicles. Both roadway segments will be six lanes and are planned for completion in 2017.

The next roadway project is the six-lane Las Torres Boulevard, which will directly connect to the POE and is planned for completion in 2017. This road will carry northbound and southbound passenger vehicle traffic from the POE to the Tijuana-Tecate Toll Road. Another project directly serving the proposed Otay Mesa East-Mesa de Otay II POE is the extension of International Avenue East, which is an existing four-lane roadway. The extension will improve circulation and provide additional access to the border crossing. This project is not ranked as it is scheduled to be in construction by 2014.

A number of interchanges are planned to facilitate traffic and for the most part, are timed to be completed as the new roads are completed. These interchanges connect the roadways from the POE to other roads that carry traffic between the new POE and the Tecate-Tecate POE and to other local areas. One interchange will connect the Tijuana-Tecate Toll road with Las Torres Boulevard and is timed to be completed in 2017—the same time Las Torres Boulevard is anticipated to be completed. Two new interchange projects on International Otay II Boulevard are scheduled for completion in 2017, the same year the roadway should be open to traffic. The first connects International Otay II Boulevard to the Tijuana-Tecate Toll road. The second connects International Otay II Boulevard to Alamar Vía Rápida.

A BRT project was submitted and evaluated as a rail/mass transit project. The BRT, referred to as Ruta Troncal Número 2, will accommodate passengers from this new POE as well as the existing Otay Mesa-Mesa de Otay POE through Tijuana to the neighborhood of Santa Fe, with three transit stations planned along the route. It is anticipated to be open in 2017.

Transportation Projects That Were Not Ranked

Table 4.9 shows the projects associated with this POE that are planned to be under construction by December 31, 2014. They are included in the map shown in Figure 4.2 on page 4-20. An interchange project included in the inventory list also is shown in Figure 4.2. BMP agencies did not submit short-term, non-motorized modes of crossborder, or short-term operational and minor capital investment projects for this POE. Current POE design is at preliminary stage, thus no active mobility projects are shown.

Table 4.9
Projects Planned to be in Construction by December 31, 2014 (Unranked)
Otay Mesa East-Mesa de Otay II POE

Project No.	Juris-diction	Type	Project Name	Limits	Description	Project Cost (2010 USD)	Phase[1]	Year Opera-tional	Agency
1020005	San Diego County	Road	SR 11+4T Segment 1 [2]	SR 905 to Enrico Fermi Drive	Construct 4 Toll Lanes	$122,000,000	FD	2015	Caltrans
1070008	Tijuana	Road	Extend International Avenue East	Silvestre Revueltas to 12 Norte	Extension of 4-lane roadway for circulation and additional access to Otay II.	$1,833,180	AP	2017	SIDUE

[1] *AP=Advanced Planning; FD=Final Design*
[2] *T=Toll Lane*

Project Inventory List for Transportation Projects

- Interchange at SR 125 and Lonestar Road in San Diego County (2020015) (Table 4.55)

Fully Funded Transportation Projects

No fully funded transportation projects were submitted for this POE.

Figure 4.2: Roadway and Interchange Projects - Otay Mesa East-Mesa de Otay II POE
California-Baja California 2014 Border Master Plan Update

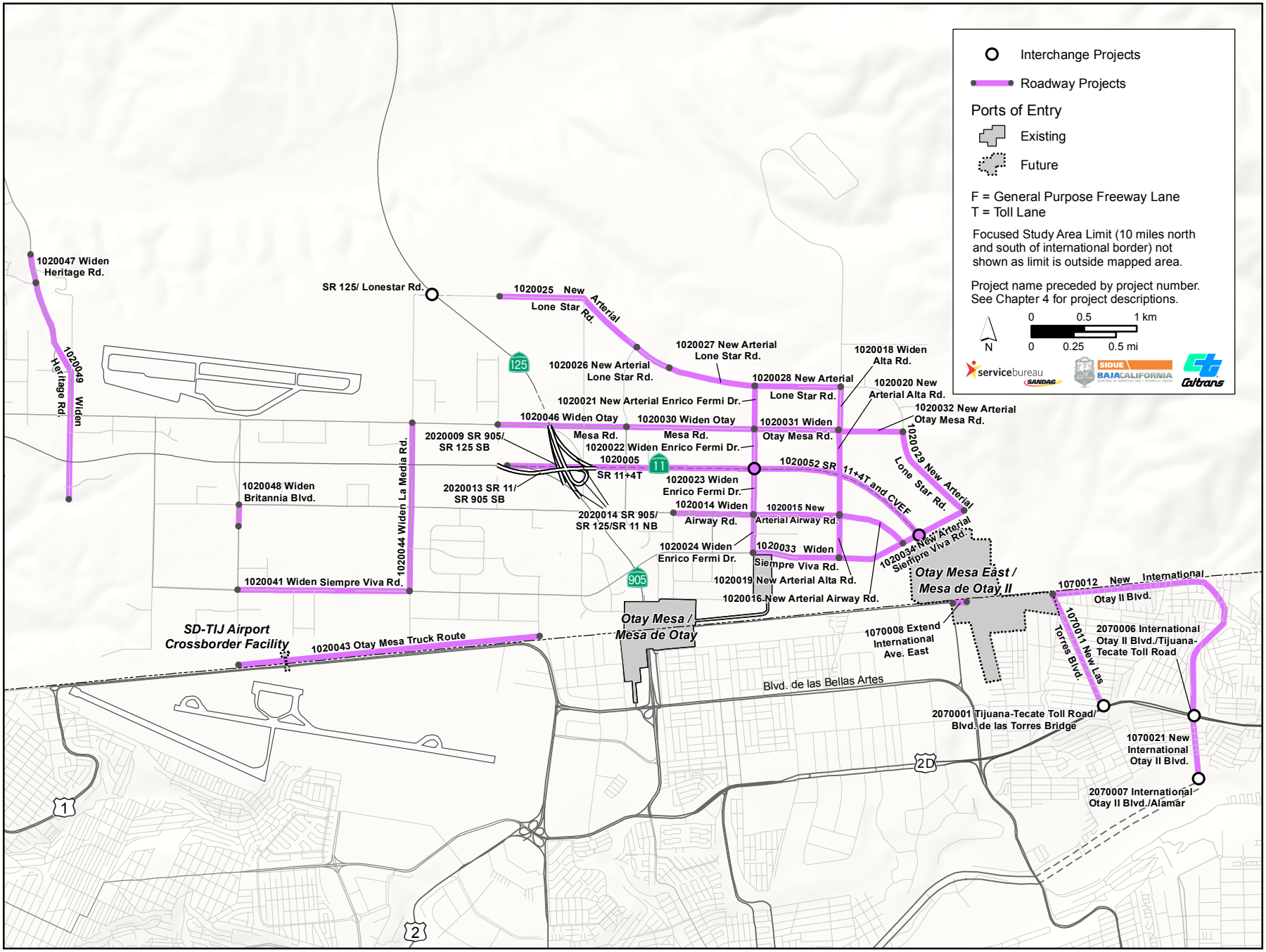
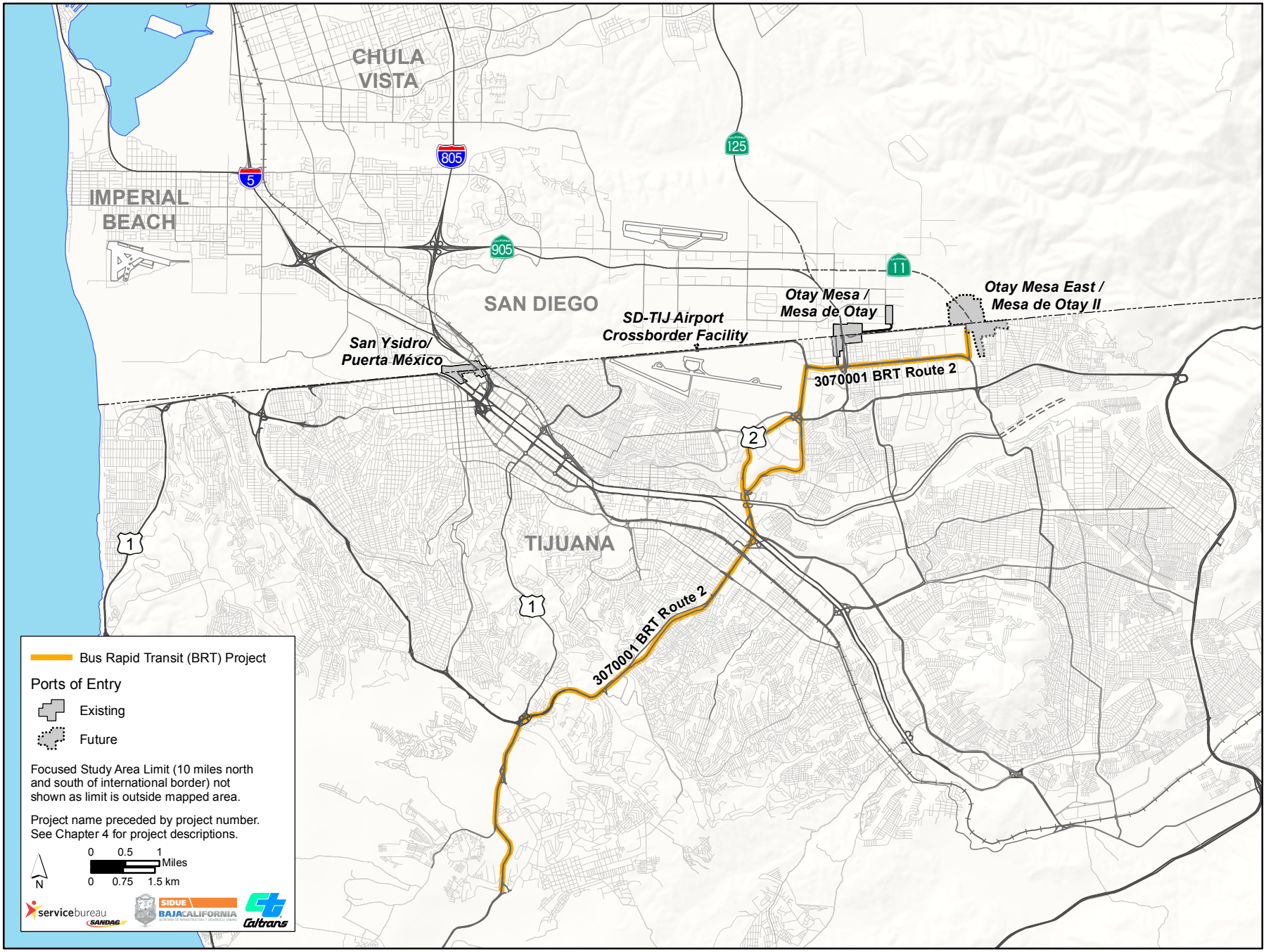


Figure 4.3: Mass Transit Projects - Otay Mesa East-Mesa de Otay II POE
California-Baja California 2014 Border Master Plan Update



NEW PORT OF ENTRY PROJECTS THAT ARE NOT RANKED

Short-Term POE Projects

As described earlier, a new project for the new San Diego-Tijuana Airport Crossborder Facility is included in the BMP Update (Table 4.10). It is currently in construction with anticipated project completion dates in 2014.

Table 4.10
Short-Term POE Projects (Unranked)
Otay Mesa East-Mesa de Otay II POE

Project No.	Project Name	Project Description	Type	Project Cost (2010 USD)	Phase [1]	Year Open to Traffic	Agency
4020008	San Diego-Tijuana Airport Crossborder Facility New POE	Construct New Pedestrian Crossing from Otay Mesa to Tijuana International Airport. Eight lanes.	New Passenger POE	--	AP	2014	CBP
4070009	San Diego-Tijuana Airport Crossborder Facility Access Bridge New POE	Construction of new pedestrian bridge exclusively for passengers with valid boarding pass, which will connect Tijuana International Airport to terminal in Otay Mesa.	New Passenger POE	$6,179,200	AP	2014	SIDUE

[1] *AP=Advanced Planning*

Project Inventory List for POE Projects

The following POE projects are included on the Project Inventory List (Table 4.54 and Appendix H). These projects are in early conceptual planning stages and sufficient data for evaluating the projects is not currently available. The location of the Jacumba-Jacumé POE is shown in Figure 4.7 on page 4-36.

- Jacumba border station in United States (4020015)
- Jacumé border station in Mexico (4060003)

MODERNIZATION OF EXISTING PORTS OF ENTRY

BMP Agencies submitted 21 POE projects for the modernization of existing POEs. Three POE projects are not ranked as one has an anticipated completion data that falls within the short-term time period and the other two are planned to be in construction by December 2014. Five POE projects are included in the Project Inventory List. The remaining projects are individually ranked and then grouped by POE. The individual project rankings are used to establish a priority order for the POEs. The projects are presented in the following ranked order:

Rank	Port of Entry
1	San Ysidro/Virginia Avenue-Puerta México/El Chaparral
2	Calexico-Mexicali I
3	Otay Mesa-Mesa de Otay Passenger
4	Calexico East-Mexicali II Commercial
5	Otay Mesa-Mesa de Otay Commercial
6	Calexico East-Mexicali II Passenger
7	Tecate-Tecate
8	Andrade-Los Algodones

RANK 1: SAN YSIDRO/VIRGINIA AVENUE-PUERTA MÉXICO/EL CHAPARRAL

The San Ysidro/Virginia Avenue-Puerta México/El Chaparral POE is the busiest land border crossing in the western hemisphere, providing service for pedestrians and passenger vehicles, including buses. It does not serve commercial vehicles; however, a rail line crosses at this POE. Approximately 38,000 northbound POVs on average per weekday were processed at this POE in 2010.

The San Ysidro/Virginia Avenue-Puerta México/El Chaparral POE has been undergoing substantial expansion and reconfiguration to alleviate congestion for several years. The projects listed below are future projects and/or projects planned to be in construction in 2014.

Proposed POE Projects for San Ysidro/Virginia Avenue-Puerta México/ El Chaparral

Table 4.11 lists three POE projects. Two projects, Phase II and Phase III in the United States, are to complete the transformation of the POE and are in the advanced planning stage. A project to construct and equip an Intelligent Transportation System (ITS) Traffic Control Center in Mexico is in the conceptual planning stage. Both governments have been coordinating on many aspects of the design and implementation of the POE. Due to funding constraints in the United States, the completion date for the major phases had been anticipated to be completed by 2020, however, in early 2014 GSA announced that funding has recently become available to advance the schedule on Phase III to a 2017 completion date.

Table 4.11
POE Projects
San Ysidro-Puerta México/Virginia Avenue/El Chaparral POE

Project No.	Project Name	Project Description	Type	Project Cost (2010 USD)	Phase [1]	Year Open to Traffic	Rank	Agency
4020013	San Ysidro LPOE – Phase III	Phase III creates a new southbound connection to Mexico, with inspection facilities, and provides 17 additional northbound primary inspection booths. It involves the purchase of site for the realignment of the southbound roadway to enter Mexico at the new El Chaparral facility; installation of southbound inspection facilities; employee parking structure.	Existing Passenger POE	$226,000,000	AP	2017	1 Tied	GSA
4020010	San Ysidro LPOE – Phase II	Phase II replaces the northbound processing buildings not demolished during Phase I, construction of a new administration and pedestrian processing building, renovation of the historic port building, central holding facilities, and the remaining central plant.	Existing Passenger POE	$204,931,000	AP	2020	1 Tied	GSA
4070004	ITS Traffic Control Center	Equipping an ITS Traffic Control Center to serve Puerta México, Otay I, Otay II, and Tecate POE	Existing Passenger POE	--	CP	2015	11	SCT

[1] *CP=Conceptual Planning; AP=Advanced Planning*

The redesign San Ysidro/Virginia Avenue-Puerta México/El Chaparral POE is proposed to alleviate congestion. The United States and Mexico are coordinating in the redesign to convert the existing nine southbound lanes into northbound lanes. When double stacking (two inspection booths per passenger vehicle lane) is taken into account, the POE will increase from 24 northbound inspection booths to 62. It also will include one northbound dedicated bus lane and inspection booth and improved facilities for SENTRI passengers. Pedestrians will be able to cross northbound and southbound through the Virginia Avenue/El Chaparral facility as well as the San Ysidro/Puerta México facility.

As of November 2012, southbound traffic to the El Chaparral facility was redirected through a temporary entrance south of Virginia Avenue and just west of the existing San Ysidro/Puerta México facility. This new southbound facility at El Chaparral has 20 southbound passenger vehicle lanes (including one dedicated bus lane) and includes covered areas for bus and auto inspections. Another project for Express Toll Lanes in Mexico is not ranked as the project falls within the short-term time frame (Table 4.12).

The San Ysidro Pedestrian West Facility and Virginia Avenue Transit Center project also was submitted. Because this project is scheduled to be in construction by December 31, 2014, it is not ranked. It is a bi-directional pedestrian facility adjacent to the new Virginia Avenue/El Chaparral gate. It will include ten dedicated northbound pedestrian lanes and two bi-directional lanes. In addition, it includes the construction of a transit center at Virginia Avenue to replace the transit and drop-off locations lost on Camiones Way due to the new configuration (Table 4.13).

Table 4.12
Short-Term POE Projects (Unranked)
San Ysidro-Puerta México/Virginia Avenue/El Chaparral POE

Project No.	Project Name	Project Description	Type	Project Cost (2010 USD)	Phase [1]	Year Open to Traffic	Agency
4070003	Puerta México Express Lanes	Expansion to full 35-lane northbound capacity including 14 Express Toll lanes. 19 southbound lanes.	Existing Passenger POE	$23,766,100	AP	2014	SCT

[1] *AP=Advanced Planning*

Table 4.13
POE Projects Planned to be in Construction by December 31, 2014 (Unranked)
San Ysidro-Puerta México/Virginia Avenue/El Chaparral POE

Project No.	Project Name	Project Description	Type	Project Cost (2010 USD)	Phase [1]	Year Open to Traffic	Agency
4020014	San Ysidro border station. Pedestrian West facility and Virginia Ave. Transit Center	Bi-directional pedestrian facility adjacent to new El Chaparral. It would include ten dedicated northbound pedestrian lanes and two bi-directional lanes. In addition, GSA will develop a transit center at Virginia Avenue to replace the transit and drop off functions lost on Camiones Way.	Existing Passenger POE	$17,500,000	AP	2015	GSA

[1] *AP=Advanced Planning*

Project Inventory List for POE Projects

The following project is included in Table 4.54 and Appendix H.

- Completion of complementary work at tactical locations at Puerta México Este, El Chaparral, and Otay I facilities (4070011).

Proposed Transportation Projects—San Ysidro/Virginia Avenue-Puerta México/ El Chaparral

Table 4.14 lists the planned arterial and highway projects that are identified to serve San Ysidro/Virginia Avenue-Puerta México/El Chaparral. Table 4.15 lists interchange projects and Table 4.16 shows rail/mass transit projects. The projects are listed in rank order. Maps illustrating the location of these projects are shown in Figures 4.4 through 4.7 beginning on page 4-33.

Table 4.14
Roadway Projects
San Ysidro-Puerta México/El Chaparral POE

Project No.	Project Name	Limits	Project Description	Project Cost (2010 USD)	Phase [1]	Year Open to Traffic	Rank	Agency
1020003	I-5+2 HOV	SR 905 to SR 54	Construct 2 HOV lanes	$295,000,000	CP	2040	4	Caltrans
1070009	Double Deck International Avenue West	Intersection of Via Rápida East to access to Playas de Tijuana	Construction of a double deck for International Avenue west with a length of 10 km. for connection to the Downtown Tijuana areas and the Puerta México border crossing	$146,654,500	AP	2016	12	SIDUE
1020050	SR 54+2 HOV	I-5 to SR 125	Construct 2 HOV lanes	$10,000,000	CP	2020	23	Caltrans
1020009 [2]	I-805+4ML	SR 905 to Palomar Street	Construct 4 Managed Lanes from SR 905 to Palomar Street	$288,000,000	CP	2030	42	Caltrans
1020010 [3]	I-805+4ML	Palomar Street to SR 94	Construct 4 Managed Lanes from Palomar Street to SR 94	$884,000,000	AP	2030	55	Caltrans
1020004	I-5+2F+ 2ML	SR 54 to I-15	Construct 2 Freeway and 2 HOV lanes	$165,000,000	CP	2040	58	Caltrans
1020051	Replace I-5/Dairy Mart Road Ramps	Dairy Mart Ramp to Dairy Mart Ramp	Convert hook ramps to diamond ramps	$9,000,000	CP	2040	60	Caltrans

[1] *CP=Conceptual Planning; AP=Advanced Planning*
[2] *Project No. 1020009, I-805 + 4ML (SR 905 to Palomar St.): This segment will be revised from 8F + 4 ML to 8F + 2 HOV in the SANDAG 2050 RTP Update.*
[3] *Project No. 1020010, I-805 + 4ML (Palomar St. to SR 94): The segment between Palomar St. and SR 54 will be revised from 8F + 4 ML to 8F + 2 HOV in the SANDAG 2050 RTP Update.*

Table 4.15
Interchange Projects
San Ysidro-Puerta México/Virginia Avenue-El Chaparral POE

Project No.	Jurisdiction	Project Name	Project Description	Project Cost (2010 USD)	Phase [1]	Year Open to Traffic	Project Rank	Agency
2020010	San Diego County	I-805/Palm Avenue	Improvements to the interchange system of Palm Avenue/I-805 to accommodate for increase of traffic as a result of improvements to the SR 905.	$12,000,000	AP	2018	1	City of San Diego
2070008	Municipality of Tijuana	Modernize México Bridge	Refurbishing of lanes, signage, rails, pedestrian paths, reinforcements, green areas.	$1,584,400	AP	2015	2	SIDUE
2020003	San Diego County	I-805/Main Street Undercrossing	Revise Interchange	$20,000,000	CP	2015	6	Caltrans

[1] *CP=Conceptual Planning; AP=Advanced Planning*

Table 4.16
Rail and Mass Transit Projects
San Ysidro/Virginia Avenue-Puerta México/El Chaparral POE

Project No.	Project Name	Limits	Project Description	Project Cost (2010 USD)	Phase [1]	Year Open to Traffic	Rank	Agency
3070002	BRT Route 1	Puerta México POE to El Refugio	Route 1 from the Puerta México POE to El Refugio (near Cerro Colorado)	$116,336,600	CP	2015	1	IMPlan
3020023	Blue Line Express (540)	UTC to San Ysidro	Blue Line Express Trolley to San Ysidro via Downtown San Diego. (30.2 miles)	$455,000,000	CP	2040	2	SANDAG
3020024	UTC to San Ysidro (562)	UTC to San Ysidro	Trolley from UTC to San Ysidro via Kearny Mesa, Mission Valley, Mid-City, Southeastern San Diego, National City/Chula Vista via Highland Ave/4th Avenue (32.4 miles)	$2,548,000,000	CP	2040	2	SANDAG
3020021	San Ysidro to Downtown San Diego	San Ysidro to Kearny Mesa	San Ysidro to Downtown San Diego & Kearny Mesa via I-5 shoulder lanes/HOV lanes, Downtown, Hillcrest, Mission Valley (640) (26.5 miles)	$90,000,000	CP	2020	5	SANDAG
3020030	San Ysidro to Otay Mesa (638)	San Ysidro to Otay Mesa	Rapid Bus from San Ysidro to Otay Mesa via Otay along the SR 905 Corridor (Route 638). (12.1 miles)	$53,000,000	CP	2035	6	SANDAG
3020004	Desert Line Improvements	Division to Plaster City	Basic Service	$15,800,000	CP	2035	7	Caltrans
3020032	San Ysidro Intermodal Transportation Center	San Ysidro to San Ysidro	The San Ysidro Intermodal Transportation Center will provide a centralized facility for Trolley, local and long distance bus, taxi, jitney, and bicycle transportation adjacent to the San Ysidro POE.	$175,000,000	CP	2020	9	SANDAG

[1] *CP=Conceptual Planning*

Discussion

Binational coordination of planning and implementation activities for the San Ysidro/Virginia Avenue-Puerta México/El Chaparral POE reconfiguration and expansion is accomplished through the Technical Commission under the Border Liaison Mechanism. Due to funding constraints in the United States, the schedules for completion of the projects at the POE fell out of alignment. Some phases of the project in the United States are now anticipated to be completed in 2018 and 2020 while the corresponding project in Mexico was completed in 2012. However, funding has recently become available for GSA to advance Phase III, which includes constructing a new southbound connection to Mexico, with inspection facilities, and 17 additional northbound primary inspection booths. Implementation of Express Lanes in Mexico is anticipated to be completed by 2015.

There are several planned projects to construct High Occupancy Vehicle (HOV) lanes on SR 54, I-5, and I-805. These projects are designed to improve freeway capacity for crossborder travel as well as serve anticipated population growth in the area. These are long-term projects and have completion dates of 2020 and beyond, however, work on I-805 expansion began in early 2014. In addition, a ramp at Dairy Mart Road is planned for completion in 2040. The interchange projects submitted on the I-805 freeway also are geared to improve capacity through reconfigurations. The interchange projects are scheduled for completion in 2015 and 2018.

In the United States, six rail/mass transit projects are ranked. One is a freight project (Desert Line basic service) while the other five serve passengers. Four are focused on the expansion of trolley service, express trolley service, and rapid bus service. The fifth is the construction of the San Ysidro Intermodal Transportation Center, which will provide a centralized facility for Trolley, local and long distance bus, taxi, jitney, and bicycle transportation adjacent to the POE.

In Mexico, one roadway and one interchange project is planned. The construction of a double deck for International Avenue West from Vía Rápida East to access Playas de Tijuana is scheduled for completion in 2016. An interchange is planned in the vicinity to help facilitate the movement of traffic. It is scheduled for completion in 2015.

A BRT project is also planned. Referred to as Ruta Troncal Número 1 in Spanish, it is a BRT that will serve residents and visitors from the POE to the El Florido community.

Transportation Projects That Were Not Ranked

Tables 4.17 through 4.20 show the projects that are not ranked as part of the BMP Update. Short-term projects, projects planned to be in construction by December 31, 2014, and projects in the inventory list are included in the maps shown in Figures 4.4 through 4.6 beginning on page 4-33. Projects for non-motorized modes of crossborder are shown in Figure 4.8 on page 4-37. As explained previously, short-term operational and minor capital investment projects are not mapped.

Table 4.17
Short-Term Projects (Unranked)
San Ysidro/Virginia Avenue-Puerta México/El Chaparral POE

Project No.	Jurisdiction	Type	Project Name	Limits	Description	Project Cost (2010 USD)	Phase [1]	Year Operational	Agency
3020018	San Diego County	Transit	Blue Line Trolley Service in San Diego	San Ysidro to Downtown San Diego	Increase in Blue Line Trolley Service headways to 7.5 minute peak and 7.5 minute off-peak	$1.6 billion		2014	SANDAG
2070003	Tijuana	Interchange	Cuauhtémoc and Padre Kino Interchange in Tijuana		The interchange will connect the northbound roadway Padre Kino to the Puerta México	$4,582,950		2014	SIDUE

Table 4.18
Projects Planned to be Under Construction by December 31, 2014 (Unranked)
San Ysidro/Virginia Avenue-Puerta México/El Chaparral POE

Project No.	Jurisdic-tion	Type	Project Name	Limits	Description	Project Cost (2010 USD)	Phase [1]	Year Opera-tional	Agency
3020001	San Diego County	Rail	South Line	International border to Broadway	Sidings, passing, and Mexico connectivity	$68,200,000	AP	2015	SANDAG

Table 4.19
Projects for Non-Motorized Modes of Crossborder Travel (Unranked)
San Ysidro/Virginia Avenue-Puerta México/El Chaparral POE

Project No.	Jurisdi-ction	Type	Project Name	Limits	Description	Project Cost (2010 USD)	Phase [1]	Year Opera-tional	Agency
5020001	San Diego County	Bicycle	Bay to Ranch Bikeway	Bayshore Bikeway to Chula Vista Greenbelt Otay River; 7.4 miles	Bayshore Bikeway to Chula Vista Greenbelt Otay River	$502,800	CP	2025	SANDAG
5020002	San Diego County	Bicycle	Border Bike-Share	Tijuana transit nodes to southerly Trolley station	BikeShare program linking Tijuana transit to Trolley on "Bike only" lane (converted from auto only) with "Bike only" customs agent.	$500,000	CP	2015	City of Chula Vista
5020003	San Diego County	Bicycle	Border Bike Lanes	San Ysidro POE	Convert one existing auto lane to "Bike Only" Lane with "Bike Only" Customs agent.	$500,000	CP	2015	City of Chula Vista
5020004	San Diego County	Bicycle	Trolley Bike Train	San Diego to San Ysidro	Convert seating area within existing Trolley to accommodate bikes, similar to Pacific Surfliner or Bart.	$500,000	CP	2015	City of Chula Vista
5020006	San Diego County	Bicycle	Border Access Corridor (Preferred Alternative)	Bayshore Bikeway from San Diego to the San Ysidro Border Crossing.	Bayshore Bikeway from San Diego to the San Ysidro Border Crossing as a preferred alternative. 6.4 miles long	$93,000	CP	2018	SANDAG
5020008	San Diego County	Bicycle	Imperial Beach Connector	Seacoast Drive, Imperial Beach, to Border Access	This project provides direct border access from Seacoast Drive in Imperial Beach. 2.6 miles long	$128,000	CP	2018	SANDAG
5020010	San Diego County	Bicycle	Chula Vista Corridor - Mission Valley	San Diego River Bikeway, SD to Bay to Ranch Bikeway, Chula Vista	Bicycle way--12.5 mile long bikeway	$2,811,800	CP	2022	SANDAG

Table 4.19 (Cont.)
Projects for Non-Motorized Modes of Crossborder Travel (Unranked)
San Ysidro/Virginia Avenue-Puerta México/El Chaparral POE

Project No.	Jurisdi-ction	Type	Project Name	Limits	Description	Project Cost (2010 USD)	Phase [1]	Year Opera-tional	Agency
5020012	San Diego County	Bicycle	Chula Vista Greenbelt, Otay River Preferred Alternative	Bayshore Bikeway, San Diego, to SR 125 Corridor, Chula Vista	This project is part of the Bayshore Bikeway and runs along the Chula Vista Green Belt at Otay River. Project is 5.7 miles long.	$376,500	CP	2040	SANDAG
5020013	San Diego County	Bicycle	Sweetwater River Bikeway	Bayshore Bikeway, National City, to SR 125 Corridor, Chula Vista	This project is part of the Bayshore Bikeway and serves both National City and Chula Vista along the Sweetwater River Bikeway. The total length of the project is 5.2 miles.	$1,584,000	CP	2020	SANDAG
5020015	San Diego County	Bicycle	I-805 Connector		Project is part of the Sweetwater River Bikeway and is used as a connector for the 805 corridor. The project is 1.8 miles.	$4,752,000	CP	2025	SANDAG
5020021	San Diego County	Bicycle	West San Ysidro Blvd. Bikeway	Dairy Mart Road to Southern Terminus of San Ysidro Boulevard	Installation of 5 to 6 foot Class II Bike Lanes	$1,850,000	CP	2018	City of San Diego
5070001	Tijuana	Bicycle	Ciclovia (Bike Lane) Federico Benitez	See description	Phase I: Boulevard Federico Benitez - Prolong. Paseo Heroes. Phase II: Boulevard Paseo Heroes – Zona Centro - bicycle parking Phase III: Public Bicycle Phase IV: feeder routes	$2,218,200	CP	2013	IMPlan
5020018	San Diego County	Ped	Willow Street Pedestrian Over-crossing	Willow Street Bridge; 2 miles	Pedestrian Overcrossing	$2,800,000	CP	2040	Caltrans
5020020	San Diego County	Ped	West Camino De La Plaza Sidewalk	Camino De La Plaza / I-5 Interchange to Virginia Avenue	Installation of missing sidewalks	$1,095,000	CP	2017	City of San Diego

[1] *CP=Conceptual Planning*

Table 4.20
Short-Term Operational and Minor Capital Investment Projects (Unranked)
San Ysidro/Virginia Avenue-Puerta México/El Chaparral POE

Project No.	Juris-diction	Project Name	Description	Project Cost (2010 USD)	Phase [1]	Year Operational	Agency
6020001	San Diego County	Wait Times Detection System at San Ysidro/ Puerta México	Implement Southbound Border Wait Times Detection System at San Ysidro/Puerta México	$900,000	CP	2014	SANDAG

[1] *CP=Conceptual Planning;*

Project Inventory List for Transportation Projects

The following projects are included in Table 4.55 and Appendix H.

- Tijuana Intermodal Transit Center (3070003)
- Tijuana Trolley (3070004)

Fully Funded Transportation Projects

No fully funded transportation projects were submitted.

Figure 4.4: Roadway and Interchange Projects - San Ysidro/Virginia Avenue-Puerta México/El Chaparral POE
California Baja California 2014 Border Master Plan Update

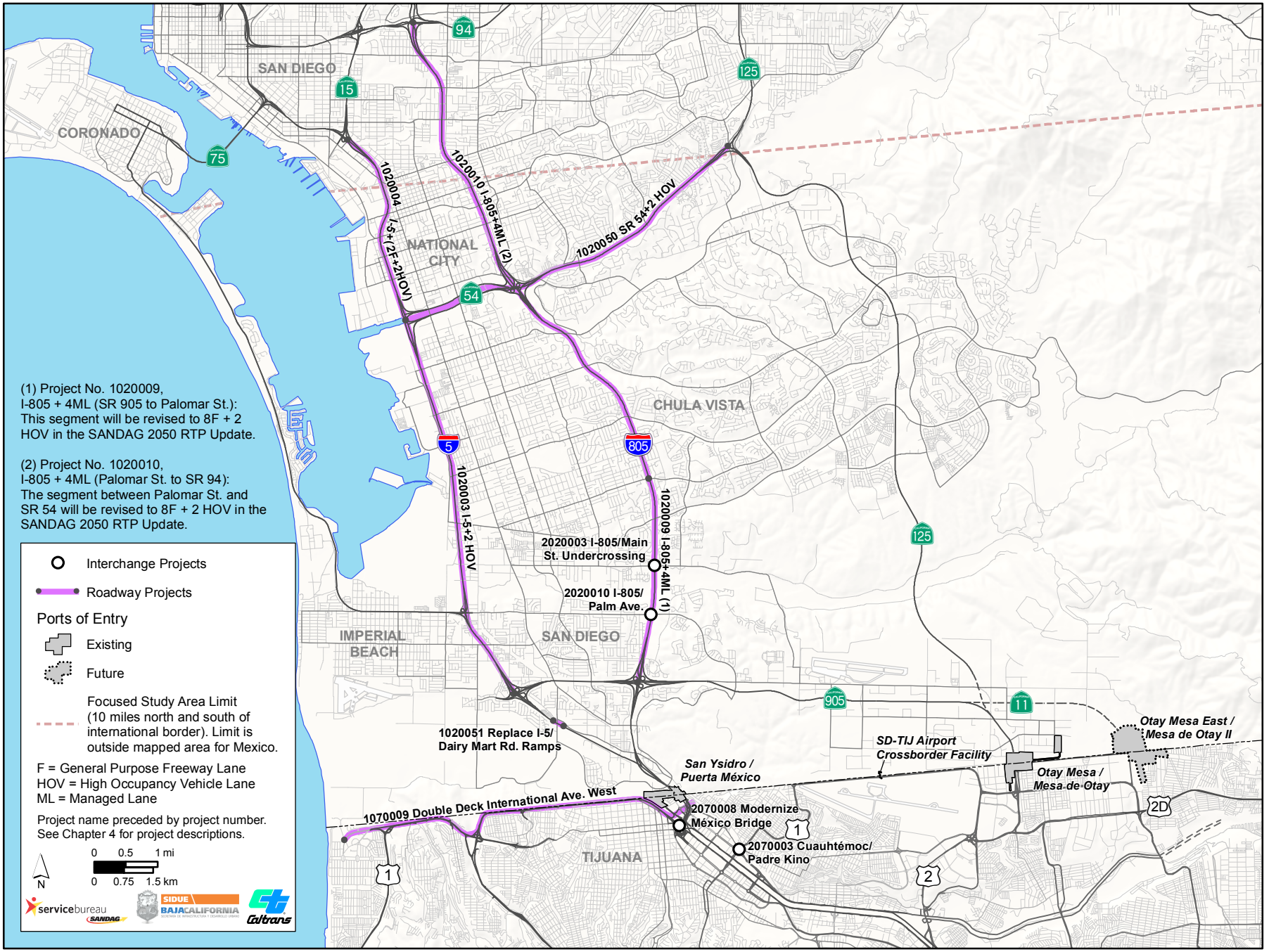
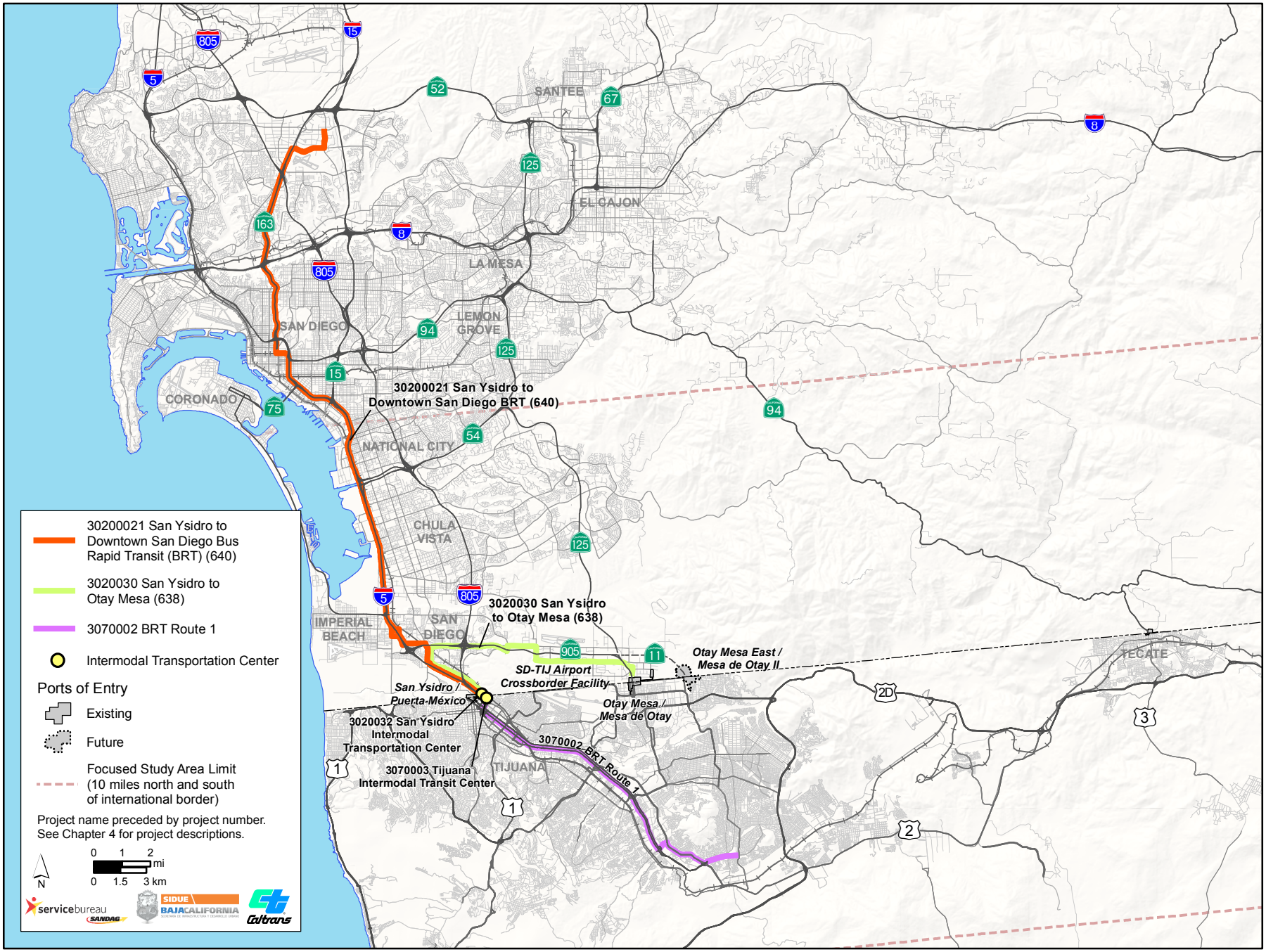


Figure 4.5: Mass Transit Projects (Bus Rapid Transit) - San Ysidro/Virginia Avenue-Puerta México/El Chaparral POE
California-Baja California 2014 Border Master Plan Update



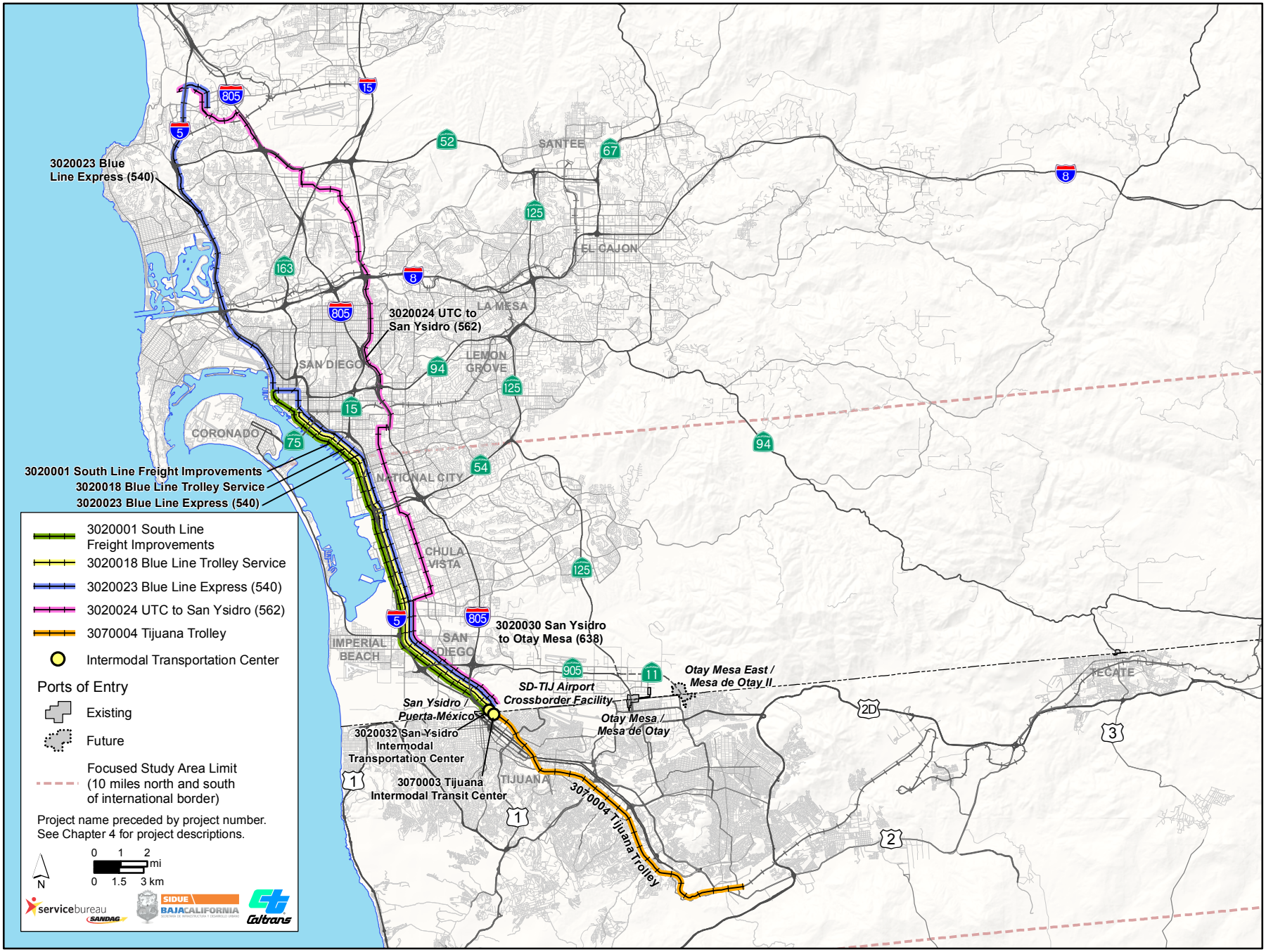

3020023 Blue Line Express (540)
3020024 UTC to San Ysidro (562)
3020001 South Line Freight Improvements
3020018 Blue Line Trolley Service
3020023 Blue Line Express (540)
3020030 San Ysidro to Otay Mesa (638)
3020032 San Ysidro Intermodal Transportation Center
3070003 Tijuana Intermodal Transit Center
3070004 Tijuana Trolley
SD-TIJ Airport Crossborder Facility
San Ysidro / Puerta-México
Otay Mesa / Mesa de Otay
Otay Mesa East / Mesa de Otay II
SANTEE
EL CAJON
LA MESA
LEMON GROVE
SAN DIEGO
CORONADO
NATIONAL CITY
CHULA VISTA
IMPERIAL BEACH
TIJUANA
TECATE
3020001 South Line Freight Improvements
3020018 Blue Line Trolley Service
3020023 Blue Line Express (540)
3020024 UTC to San Ysidro (562)
3070004 Tijuana Trolley
Intermodal Transportation Center
Ports of Entry
Existing
Future
Focused Study Area Limit (10 miles north and south of international border)
Project name preceded by project number.
See Chapter 4 for project descriptions.
0 1 2 mi
0 1.5 3 km
N
servicebureau
SANDAG
SIDUE
BAJACALIFORNIA
Caltrans

Figure 4.7: Freight Rail Projects - San Ysidro/Virginia Avenue-Puerta México/El Chaparral POE
California-Baja California 2014 Border Master Plan Update

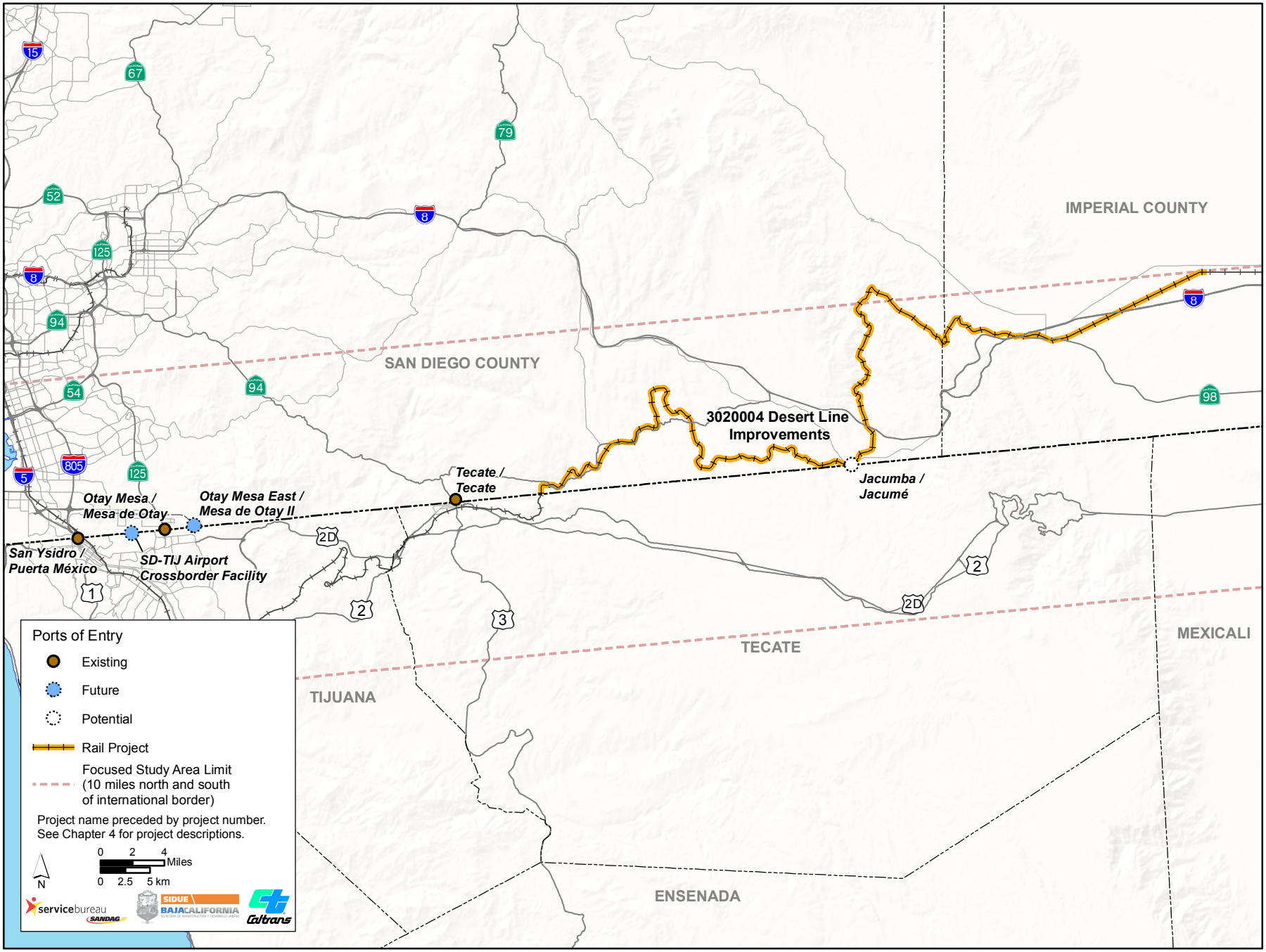
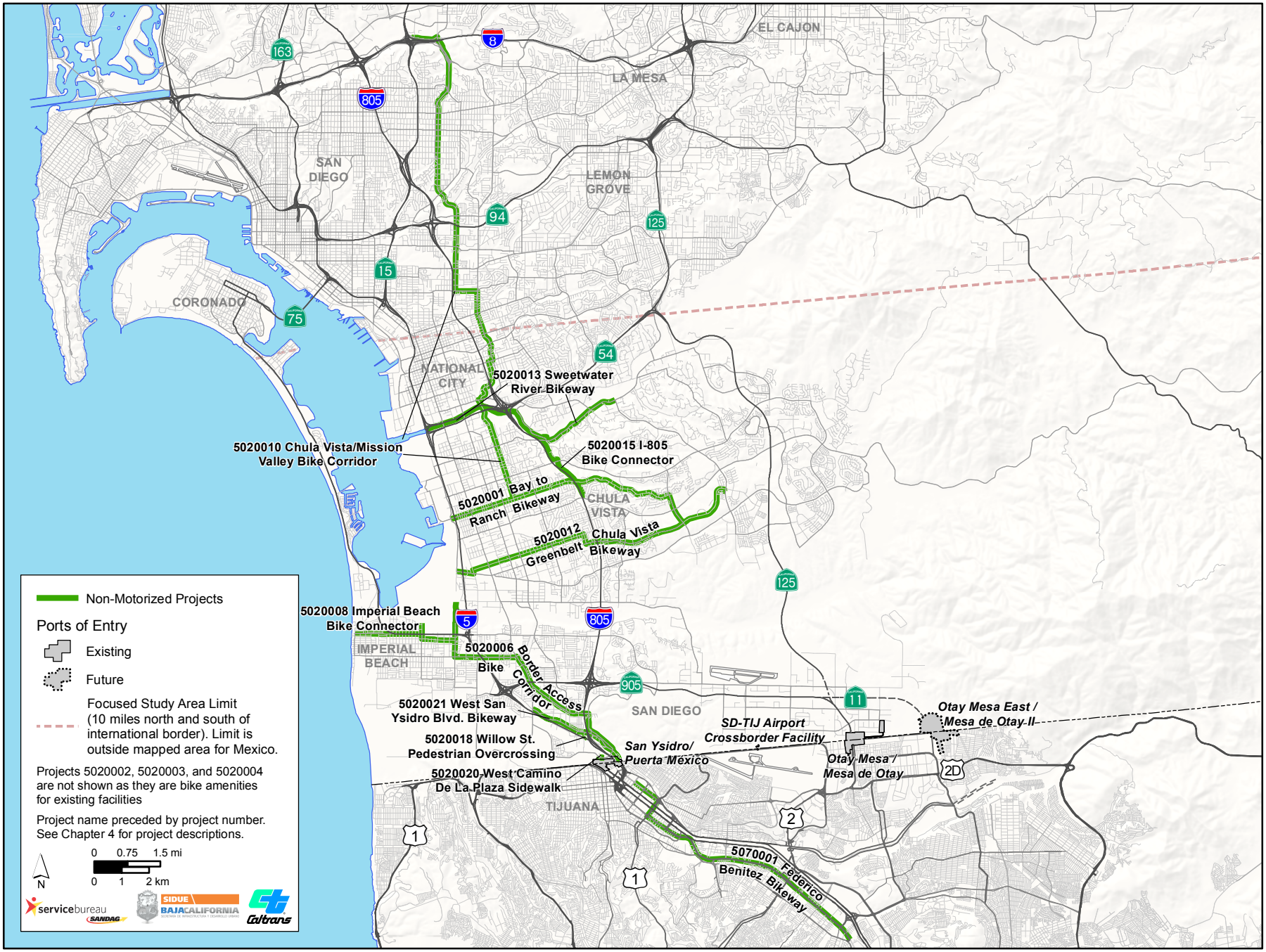


Figure 4.8: Projects for Non-Motorized Modes of Transportation - San Ysidro/Virginia Avenue-Puerta México/El Chaparral POE
California-Baja California 2014 Border Master Plan Update



RANK 2: CALEXICO-MEXICALI I

The Calexico-Mexicali I POE was constructed in 1974 and serves pedestrians and passenger vehicles. No commercial trucks have crossed at this POE since the Calexico East-Mexicali II POE opened in 1996. However, freight rail service operates regularly by Union Pacific in the United States and Ferrocarril Mexicano (FerroMex) in Mexico. Approximately 11,600 northbound POVs on average per weekday entered the United States through this POE in 2010.

Proposed POE Projects for the Calexico-Mexicali I

Table 4.21 lists four POE projects that focus on a planned major modernization of the POE. The existing facilities are undersized relative to existing traffic loads and no longer meet current standards in terms of inspection officer safety and border security.

Table 4.21
POE Projects
Calexico-Mexicali I POE

Project No.	Project Name	Project Description	Type	Project Cost (2010 USD)	Phase [1]	Year Open to Traffic	Project Rank	Agency
4040005	Mexicali I-Pedestrian Processing Facility	Construction of new building to house the Federal agencies that process pedestrians entering Mexico	Existing Passenger POE	$4,357,100	AP	2017	3	SIDUE
4040001	Mexicali I – Expansion and Improvement of the Customs Facilities	Improve and expand the Mexicali – Calexico West border crossing. Includes necessary alignments and reconfiguration for new POV crossing in Mexico.	Existing Passenger POE	$11,883,100	AP	2016	4	SIDUE
4010002	Calexico West – Phase 1 of Major Expansion & Reconfiguration	The project involves construction of new pedestrian and POV inspection facilities, expanding the port onto site of the former commercial facility. The POE's existing structures will be replaced by three buildings. The first phase includes a headhouse, ten of the project's 16 northbound POV inspection lanes, five southbound POV inspection lanes with temporary asphalt paving, and a bridge across the New River for southbound POV traffic.	Existing Passenger POE	$95,000,000	AP	2020	6 Tied	GSA

Table 4.21 (Cont.)
POE Projects
Calexico-Mexicali I POE

Project No.	Project Name	Project Description	Type	Project Cost (2010 USD)	Phase [1]	Year Open to Traffic	Project Rank	Agency
4010003	Calexico West – Phase 2 of Major Expansion & Reconfiguration	The second phase includes construction the remaining six of 16 total northbound POV lanes, southbound POV inspection islands, booths, canopies and concrete paving, an administration building, an employee parking structure and a pedestrian processing building with 12 northbound pedestrian inspection stations.	Existing Passenger POE	$295,000,000	AP	2022	6 Tied	GSA

[1] *AP=Advanced Planning*

The modernization of the POE involves expanding the port onto the site of the former commercial inspection facility west of the railroad tracks. This inspection facility's operations moved to Calexico East-Mexicali II in 1996. The new facility will be used to process northbound POVs and southbound passenger vehicles, including buses. Pedestrians crossing in the northbound and southbound directions will be processed at the existing facility.

In the United States, the POE modernization is divided into two phases. The first phase includes a head house building, ten of the project's 16 northbound POV inspection lanes, five southbound POV inspection lanes with temporary asphalt paving, and a bridge across the New River for southbound POV traffic. The second phase will include construction the remaining six of 16 total northbound POV lanes; southbound POV inspection islands, booths, canopies and concrete paving; an administration building; an employee parking structure; and a pedestrian processing building with 12 northbound pedestrian inspection stations.

In Mexico, two projects are ranked for the modernization and reconfiguration of this POE in Mexicali. They are 1) new POV inspection facilities located west of the railroad tracks that include four southbound lanes that cross into Mexico and then fans out to 17 inspection booths for processing POVs and southbound buses, and 2) construction of a new building for processing pedestrians entering Mexico on the east side of the railroad tracks.

An additional project in the United States is an interim expansion of the existing pedestrian processing facility. This project is planned to be in construction by December 31, 2014 and therefore is not ranked. The project doubles the throughput of the existing pedestrian processing area by increasing the number of inspection stations from six to 12 and is planned for completion in 2017 (Table 4.22).

Table 4.22
POE Projects Planned to be in Construction by December 31, 2014 (Unranked)
Calexico-Mexicali I POE

Project No.	Project Name	Project Description	Type	Project Cost (2010 USD)	Phase [1]	Year Open to Traffic	Agency
4010001	Calexico West—Interim Expansion of Existing Pedestrian Processing Facility	Double throughput of the existing pedestrian processing area at a modest cost, pending funding of the major expansion and reconfiguration of Calexico West. It increases the number of inspection stations from six to 12.	Existing Passenger POE	$2,500,000	CP	2017	GSA

[1] *CP=Conceptual Planning*

Proposed Transportation Projects for Calexico-Mexicali I

Transportation projects are individually ranked and then grouped by the POE that is primarily served by the project. Planned arterial and highway projects serving this POE are shown in Table 4.23 and interchange projects are shown in Table 4.24. Rail/mass transit projects are listed in Table 4.25. The projects are shown in priority order. Maps illustrating the location of these projects are shown in Figures 4.9 and 4.10 on pages 4-46 and 4-47.

Table 4.23
Roadway Projects
Calexico-Mexicali I POE

Project No.	Project Name	Limits	Project Description	Project Cost (2010 USD)	Phase [1]	Year Open to Traffic	Rank	Agency
1010015	Widen Imperial Avenue	I-8 to Aten Road	Improve to 6 lane primary arterial	$26,200,000	CP	2030	15	Caltrans
1010016	Widen 8th Street Overpass	Wake Avenue to Centinela	Widen to 4 lanes	$4,000,000	CP	2030	21	Caltrans
1010011	Widen Dogwood Road	SR 98 to Mead Road	Improve to 5 lane primary arterial	$182,400,000	CP	2030	25	Caltrans
1010027	Widen Forrester Road	I-8 to SR 78/ SR 86	Improve/Construct north-south corridor	$300,000,000	CP	2030	26	Caltrans
1010009	New Arterial Imperial Avenue	McCabe Road to I-8	Improve and construct a 6 lane primary arterial	$28,200,000	CP	2016	32	Caltrans
1010017	SR 98+2F	SR 111 to SR 7	Widen from 2 to 4 lanes on either SR-98 or Jasper Road	$150,000,000	AP	2020	39	Caltrans
1010018	SR 111+2F	SR 98 to I-8	Upgrade 4 lane expressway to 6 lane freeway and inter-changes at Jasper Rd., McCabe Rd., Heber Rd.	$456,000,000	AP	2035	40	Caltrans

Table 4.23 (Cont.)
Roadway Projects
Calexico-Mexicali I POE

Project No.	Project Name	Limits	Project Description	Project Cost (2010 USD)	Phase (1)	Year Open to Traffic	Rank	Agency
1010001	I-8+2F	Forrester Road to SR 111	Add 2 general purpose lanes	$188,700,000	CP	2030	45	Caltrans
1010024	SR 98+2F (Phase 1C)	All American Canal to VV Williams	Phase 1C Widen from 2 lanes to 4 lanes.	$31,000,000	FD	2018	45	Caltrans
1010005	SR 111+2F	I-8 to SR 78	Add 2 general purpose lanes and construct interchanges	$500,000,000	CP	2035	47	Caltrans
1010026	SR 98+2F (Phase 1A)	Ollie to Rockwood	Widen from 4 to 6 lanes.	$11,000,000	FD	2018	51	Caltrans
1010019	SR 98+2F	SR 98 to Cesar Chavez Boulevard	At Grade Railroad Crossing at SR 98 and Cesar Chavez Boulevard widen from 2 to 4 lanes	$50,000,000	CP	2030	53	Caltrans
1010025	SR 98+2F (Phase 2)	Dogwood to All American Canal	Phase 2 Widen from 2 to 4 lanes	$19,000,000	AP	2030	54	Caltrans
1040010	SENTRI Lanes Access Road	Limite Internacional to Puente Reforma	SENTRI Lane access will be relocated to come in through Av. Rio Nuevo	$792,200	FD	2018	61	SIDUE

(1) *CP=Conceptual Planning; AP=Advanced Planning; FD=Final Design*

Table 4.24
Interchange Projects
Calexico-Mexicali I POE

Project No.	Jurisdiction	Project Name	Project Description	Project Cost (2010 USD)	Phase (1)	Year Open to Traffic	Project Rank	Agency
2010004	Imperial County	SR 111 / Jasper Road	Construct new freeway interchange	$43,000,000	AP	2025	4	Caltrans
2040002	Mexicalli	Railway Bridge to U.S.	This overpass will connect northbound traffic to the POE	$6,337,600	FD	2016	8	SIDUE
2040003	Mexicalli	Colón Poniente Avenue Bridge	This bridge will provide northbound POE access to passenger vehicles traveling from the west side of Mexicali through Avenida Colón West.	$6,733,700	FD	2017	8	SIDUE
2040001	Mexicalli	Lopez Mateos Bridge	Vehicle overpass connecting southbound vehicles to regional roadway network through Avenida López Mateos	$3,564,900	FD	2016	14	SIDUE
2010001	Imperial County	I-8 / Austin Road	Construct Interchange at Austin Road/I-8 (LRTP 9)	$30,000,000	CP	2025	15	Caltrans
2010002	Imperial County	I-8 / Bowker Road	Construct interchange at Bowker Rd/I-8 (LRTP 19)	$30,000,000	CP	2025	20	Caltrans
2010006	Imperial County	I-8 / Dogwood Road	Upgrade interchange	$45,000,000	AP	2018	21	Caltrans

(1) *CP=Conceptual Planning; AP=Advanced Planning; FD=Final Design*

Table 4.25
Rail and Mass Transit Projects
Calexico-Mexicali I POE

Project No.	Project Name	Limits	Project Description	Project Cost (2010 USD)	Phase [1]	Year Open to Traffic	Rank	Agency
3010085	Calexico Intermodal Transportation Center	1st Street to Heber Avenue	Construct an Intermodal Transportation Center to facilitate pedestrian access of public and private transit services and taxis	$10,000,000	CP	2017	11	ICTC
3010083	McCabe Road/Dogwood Avenue Grade Separation	Intersection McCabe and Dogwood	Grade Separation of R.R intersection with McCabe Rd and Dogwood Avenue	$30,000,000	CP	2020	12	City of El Centro
3010084	City of El Centro Grade Separations	City of El Centro	Grade Separations at various locations	$16,000,000	CP	2030	12	City of El Centro

[1] *CP=Conceptual Planning*

Discussion

Binational coordination of planning and implementation activities for the proposed Calexico-Mexicali I POE and the connecting roads is conducted through the Technical Commission under the Border Liaison Mechanism. The four POE projects submitted are all in the advanced planning stages. The POE project in Mexicali to accommodate passenger vehicles at the new site is planned to be completed in 2016 and improvements to the pedestrian facility are planned for 2017. In the United States, the corresponding projects are not planned to be open to traffic until 2020 and 2022 due to budget and funding shortfalls. This could potentially be addressed through a Congressional appropriation in the FY 2014-2015 budget for Phase 1. In the meantime, an interim pedestrian processing facility in the United States is planned for completion in 2017, the same year the pedestrian facility in Mexico should be open. The Imperial County and Mexicali stakeholders continue to coordinate dates and interim solutions to facilitate the movement of pedestrians and passenger vehicle traffic.

In the United States, several projects to expand existing roadways are ranked. These include the addition of general purpose lanes on SR 98, SR 111, and I-8. These projects provide access to the Calexico-Mexicali POE and increase capacity to accommodate population growth in Imperial County. They are planned for completion in 2018 and beyond.

Roadway improvement projects on Imperial Avenue, Dogwood Road, and Forrester Road and an overpass at Wake Avenue are designed to improve capacity to serve local population growth and crossborder travel. The projects on Imperial Avenue are planned for completion in 2015 and 2016. Other projects are planned for 2030.

The interchange projects submitted should improve capacity of the roadway system and generally serve population growth in Imperial County. They include Dogwood Road, Austin Road and Bowker Road at I-8 and Jasper Road at SR 111. Dogwood at I-8 is planned for completion in 2018, while the other interchange projects are planned to be open to traffic in 2025.

Rail projects include two rail grade separation projects to alleviate congestion on local roads in the City of El Centro. In addition, a proposed Intermodal Transportation Center in Calexico is planned for 2017. It is designed to facilitate pedestrian access of public and private transit services and taxis at the POE.

In Mexico, several roadway improvements related to the reconfiguration of the POE have been completed or are currently under construction. For instance, Colón Avenue West and Reforma Bridge, a new access road and bridge connecting passenger vehicles from the west side of Mexicali to the POE, was completed in 2012. Necessary alignments of northbound and southbound passenger vehicle traffic through the POE are tied to the construction of the POE, facility and timed for 2016. Another project planned for completion in 2018 is for SENTRI lane access through Avenida Río Nuevo.

Three interchange projects include two overpasses to connect northbound traffic to the POE and a vehicle overpass at López Mateos. These projects are planned for completion in 2016 and 2017, the same time period in which the POE border station in Mexicali will be open to traffic.

The BRT Express Lane 1 is part of a full modernization of the public transportation system in Mexicali. It will connect important roadway corridors in Mexicali and also facilitate movement to and from the United States (This short-term project is not ranked and is shown in Table 4.26.)

Transportation Projects That Were Not Ranked

Tables 4.26 and 4.27 show the projects associated with this POE that are not ranked. Short-term projects and projects planned to be in construction by December 31, 2014 are included in the maps shown in Figures 4.9 and 4.10 beginning on page 4-46. Projects for non-motorized modes of crossborder are shown in Figure 4.11 on page 4-48. The short-term operational and minor capital investment project is not mapped as it is conceptual in nature.

Table 4.26
Short-Term Projects (Unranked)
Calexico-Mexicali I POE

Project No.	Juris-diction	Type	Project Name	Limits	Description	Project Cost (2010 USD)	Phase [1]	Year Operational	Agency
3040001	Mexicali	Transit	BRT Express Line 1 [2]	Mexicali I POE to Calle Sanidina	Implement BRT in three main corridors of city and network of feeder routes. The first stage is Express Line 1.	$65,832,200	FD	2013	IMIP

[1] FD=Final Design
[2] BRT=Bus Rapid Transit

Table 4.27
Projects Planned to be in Construction by December 31, 2014 (Unranked)
Calexico-Mexicali I POE

Project No.	Juris-diction	Type	Project Name	Limits	Description	Project Cost (2010 USD)	Phase[1]	Year Opera-tional	Agency
1010028	Imperial County	Road	Widen Cesar Chavez	2nd Street to SR 98	Widen from 4 to 5 lanes and realign to accommodate traffic due to POE modifications	$8,930,000	AP	2015	ICTC

(1) *AP=Advanced Planning*

Table 4.28
Projects for Non-Motorized Modes of Crossborder Travel (Unranked)
Calexico-Mexicali I POE

Project No.	Juris-diction	Type	Project Name*	Limits	Description	Project Cost (2010 USD)	Phase [1]	Year Opera-tional	Agency
5040003	Mexicali	Bicycle	Río Nuevo Bike Lane Phase I	From Mexicali I border crossing to Calz. Anáhuac	Bike route with two lanes in each direction on Río Nuevo Boulevard starting at the Mexicali I border crossing and ending at Calz. Anáhuac.	$14,300	CP	2014	IMIP
5040004	Mexicali	Bicycle	Non-motorized mobility Plan for Mexicali	U.S. border and Libramiento Ejido Cuernavaca La Rosita to Islas Agrarias and Camino Nacional	Network of bike paths for the cities of Mexicali and San Felipe serving as alternatives for non-motorized urban transportation, integrated into the BRT system and multimodal transport system	$71,300	CP	2014	IMIP
5040001	Mexicali	Ped	Pedestrian Plaza at Mexicali I	International border to Avenida Madero	Open pedestrian plaza to serve as a lobby for people entering Mexico	$1,980,500	FD	2018	SIDUE
5040002	Mexicali	Ped	Pedestrian Path Shade Structures	Callejón Zorrilla to Avenida Madero; 2 miles	Installation of shelters and shade structure over the length of the pedestrian walkway.	$118,800	AP	2014	SIDUE

(1) *CP=Conceptual Planning; AP=Advanced Planning; FD=Final Design*

Table 4.29
Short-Term Operational and Minor Capital Investment Projects (Unranked)
Calexico-Mexicali I POE

Project No.	Juris-diction	Project Name*	Description	Project Cost (2010 USD)	Phase [1]	Year Operational	Agency
6040001	Mexicali	Urban Integration Project connecting the areas of Río Nuevo, Pueblo Nuevo, and Historic Downtown to the Mexicali I International Border Crossing	Urban integration and economic development strategies for the Pueblo Nuevo neighborhood, the Río Nuevo zone, and the historic downtown, serving to connect these areas with the Mexicali border crossing, while improving mobility for non-motorized modes.	$59,400	CP	2014	IMIP

[1] *CP=Conceptual Planning*

Fully Funded Transportation Projects

No fully funded transportation projects were submitted.

Figure 4.9: Roadway and Interchange Projects - Calexico-Mexicali I POE
California-Baja California 2014 Border Master Plan Update

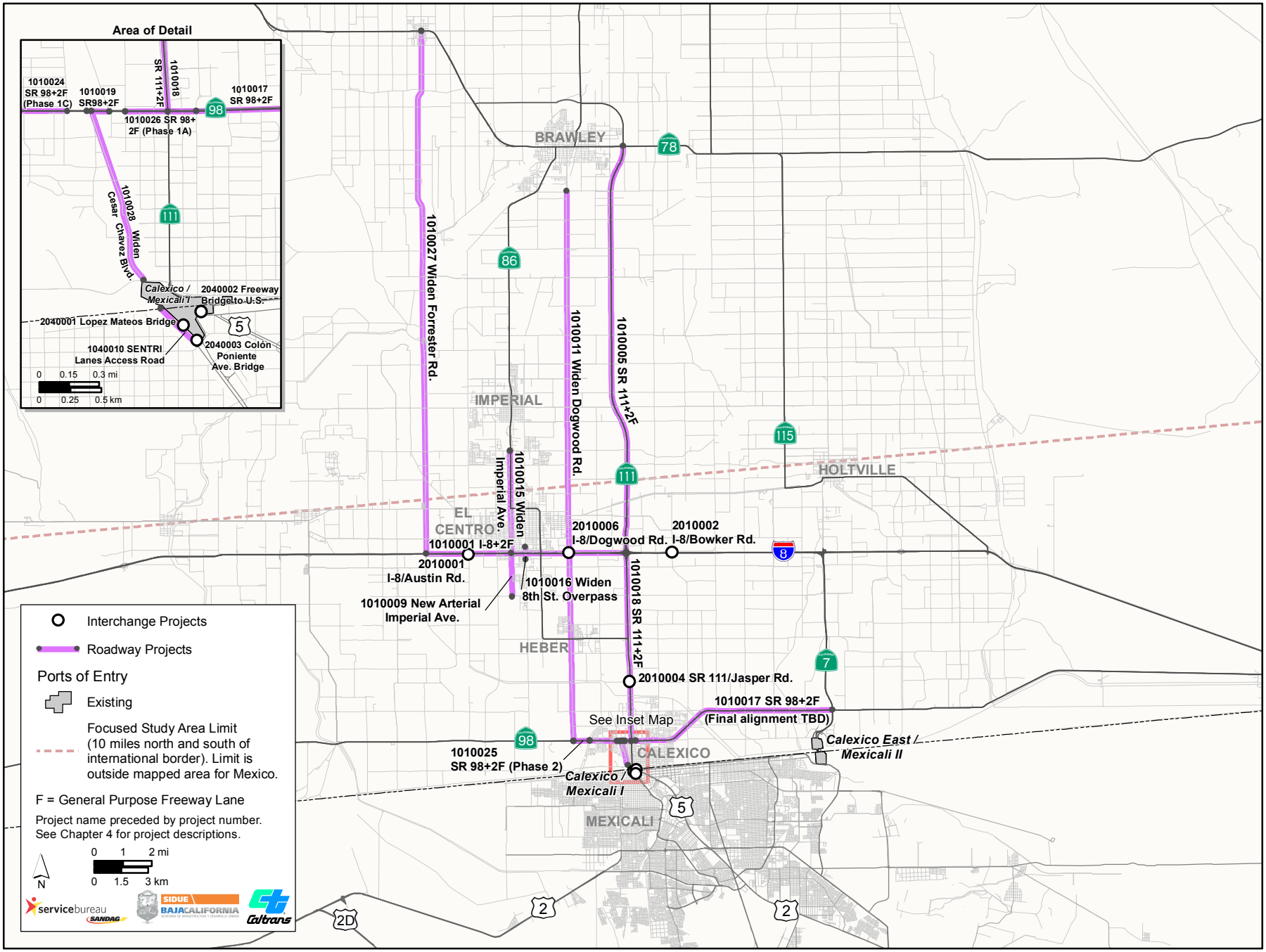


Figure 4.10: Rail and Mass Transit Projects - Calexico-Mexicali I POE
California-Baja California 2014 Border Master Plan Update

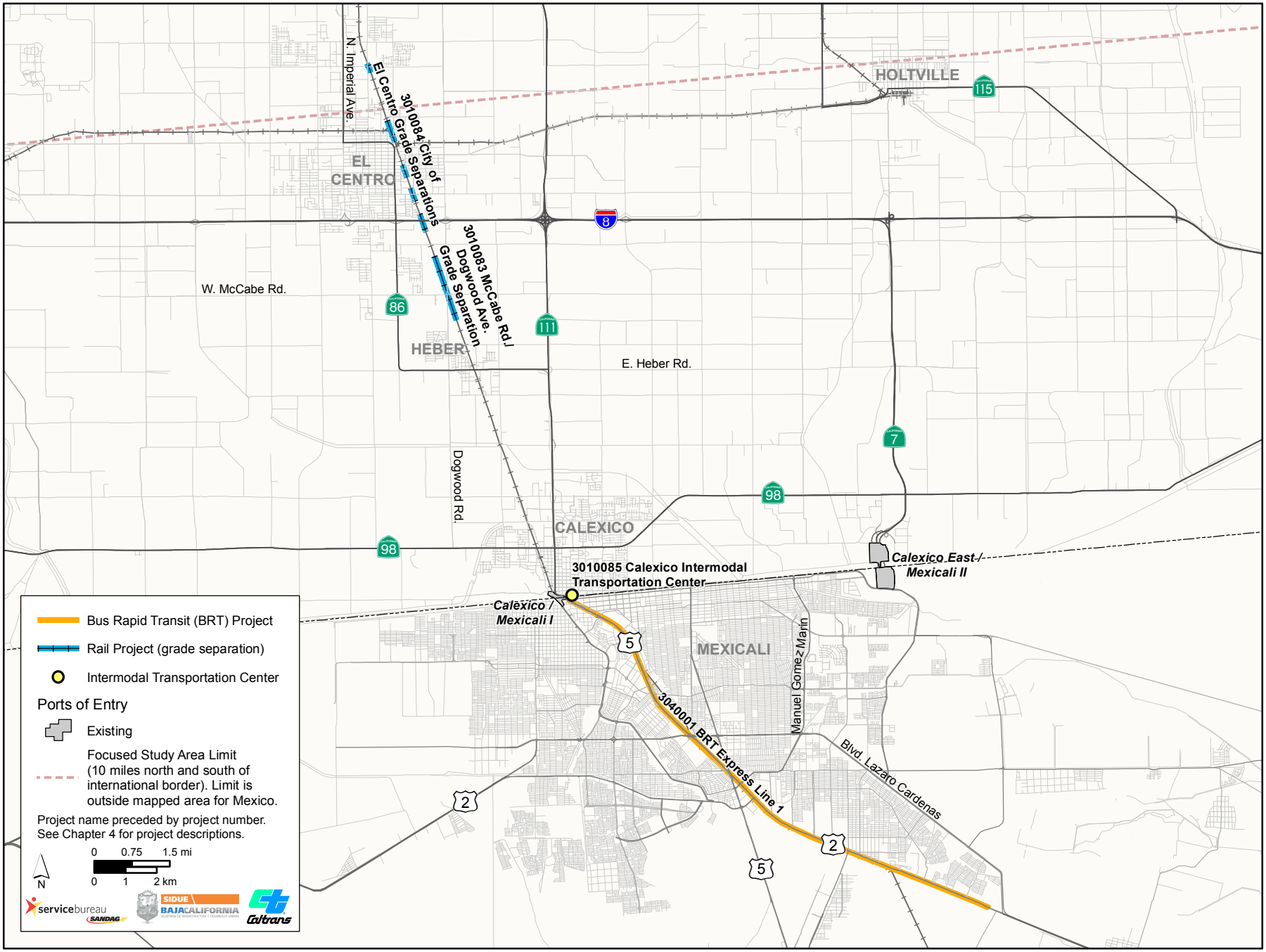
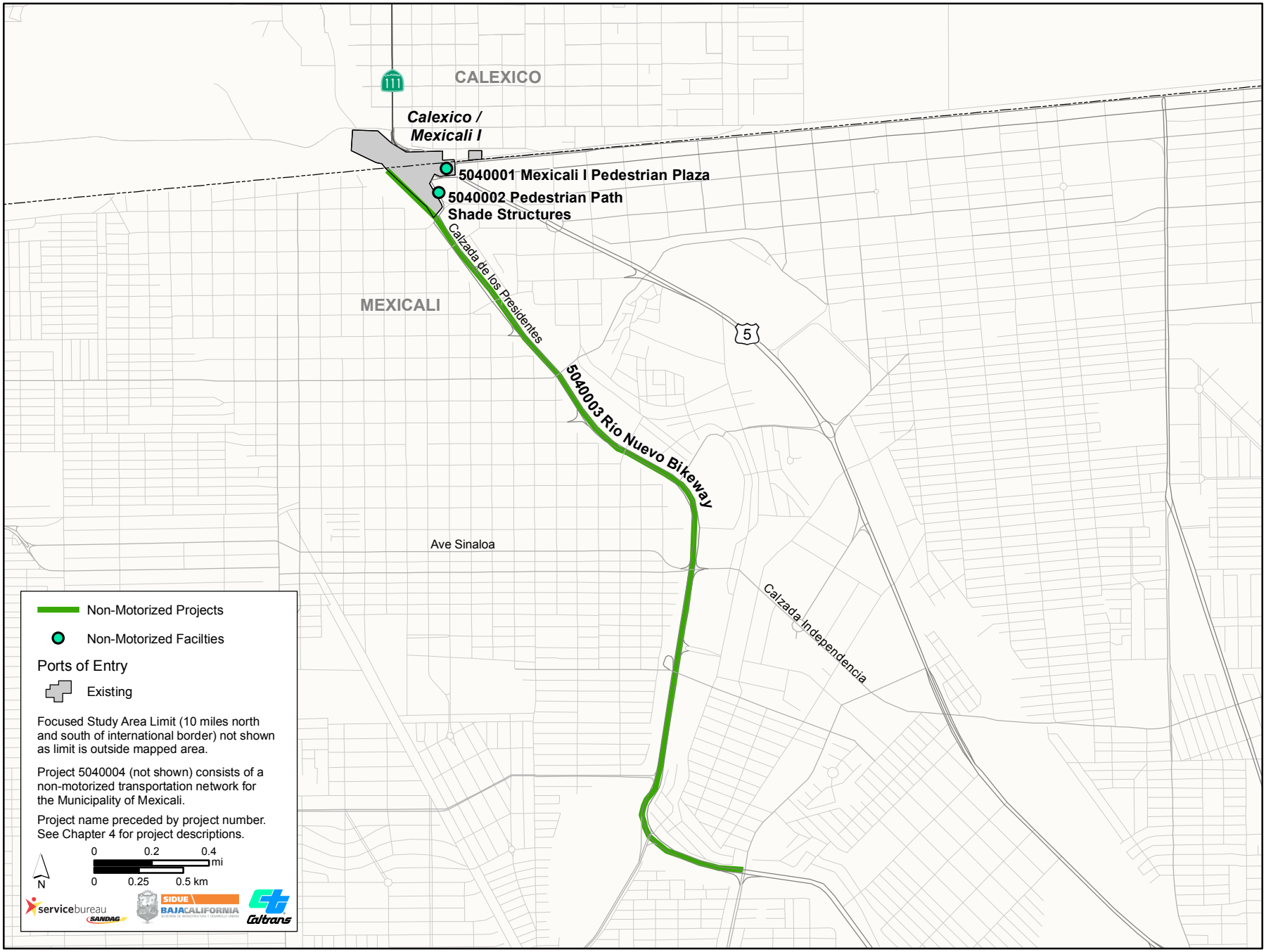


Figure 4.11: Projects for Non-Motorized Modes of Crossborder Travel - Calexico-Mexicali I POE
California-Baja California 2014 Border Master Plan Update



RANK 3: OTAY MESA-MESA DE OTAY PASSENGER

The Otay Mesa-Mesa de Otay POE opened in 1985 for northbound passenger and commercial vehicle traffic and southbound passenger vehicles. (It began processing southbound commercial vehicles in 1994, when the Virginia Avenue-El Chaparral gate ceased operations.) The POE includes separate operations for cargo and passenger vehicles. The passenger crossing facility is open seven days per week, 24 hours per day, and it processed approximately 11,000 POVs on average per weekday in 2010.

Proposed POE Projects for Otay Mesa-Mesa de Otay Passenger

Otay Mesa-Mesa de Otay has separate facilities for cargo and passenger vehicles. These facilities operate independently and therefore proposed projects could be implemented independently. Thus, projects for the passenger facility were ranked separately from projects for the commercial facility. The POE projects for the commercial side are discussed later in this chapter.

Table 4.30 shows one project for the U.S. side of the border. This project is in the conceptual planning stage and is proposed to improve passenger throughput by modernizing the POE, including expanding the number of lanes and constructing a new pedestrian bridge crossing the SR 905 freeway. A project to expand and reorganize both the passenger and cargo facilities in Mexico is included in the Project Inventory List (Table 4.54 and Appendix H) and listed under the section on the Otay Mesa-Mesa de Otay Commercial POE.

Table 4.30
POE Projects
Otay Mesa-Mesa de Otay Passenger POE

Project No.	Project Name	Project Description	Type	Project Cost (2010 USD)	Phase [1]	Year Open to Traffic	Project Rank	Agency
4020012	Otay Mesa Passenger Facilities Modernization	Non-Commercial Modernization anticipates phased demolition of head house and pedestrian building, construction and expansion of N/B primary booths, relocation and expansion of pedestrian building, construction of a new head house and construction of a new pedestrian bridge crossing the 905 freeway.	Existing Passenger POE	$87,000,000	CP	2022	5	GSA

[1] *CP=Conceptual Planning*

Proposed Transportation Projects—Otay Mesa-Mesa de Otay

When submitting transportation projects, BMP agencies were asked to designate the POE that the project primarily serves, but were not asked to distinguish if the project primarily served the passenger side of a POE or the commercial side. Therefore, all transportation facility projects submitted for Otay Mesa-Mesa de Otay are discussed in this section. Table 4.31 lists the roadway and projects that serve the POE.

Interchange and rail/mass transit projects are shown in Tables 4.32 and 4.33, respectively. Maps illustrating the location of these projects are shown in Figures 4.12 and 4.13 beginning on page 4-55.

Table 4.31
Roadway Projects
Otay Mesa-Mesa de Otay POE

Project No.	Project Name	Limits	Project Description	Project Cost (2010 USD)	Phase (1)	Year Open to Traffic	Rank	Agency
1070014	Industrial Boulevard Improvements	Airport access road to Terán Boulevard	Improvement of the primary 6 km (3.7 mi). roadway with access to the Otay I and II border crossings	$1,833,200	AP	2016	12	SIDUE
1020012	SR 905+2F	I-805 to Border	Add 2 general purpose lanes	$200,000,000	CP	2018	19	Caltrans
1020007	SR 125+4T	SR 905 to San Miguel Road	Add 4 Toll lanes from SR 905 to San Miguel Road	$213,930,000	CP	2040	36	Caltrans
1020008	SR 125+4T	San Miguel Road to SR 54	Add 4 Toll lanes from San Miguel Road to SR 54	$21,453,000	CP	2040	36	Caltrans
1020002	Replace Willow Street Bridge	Sweetwater Road to Bonita Road	Widen and replace bridge across Sweetwater River	$19,000,000	AP	2016	63	City of Chula Vista

(1) *CP=Conceptual Planning; AP=Advanced Planning*

Table 4.32
Interchange Projects
Otay Mesa-Mesa de Otay POE

Project No.	Jurisdiction	Project Name	Project Description	Project Cost (2010 USD)	Phase (1)	Year Open to Traffic	Rank	Agency
2070005	Tijuana	Industrial Avenue / Terán Terán	Optimization of Industrial Avenue Intersection -Terán Terán, access to Otay I and II border crossing	$7,922,100	AP	2016	10	SIDUE
2020011	San Diego County	SR 905 / Heritage Road	Construction of 4 ramps from the SR 905 to Heritage Road. The ramps will include 2 off ramps with 2 dedicated left turn lanes and 2 dedicated turn lanes for each ramp. The on ramps shall be 2 lanes with a carpool lane and narrows to a single lane for access to SR 905. Also 2 dedicated left turn lanes and 1 dedicated right turn lane will be added to Heritage Road for the ramps.	$23,200,000	CP	2025	11	City of San Diego
2070002	Tijuana	Bellas Artes Airport Interchange	Construction of Airport - Bellas Artes Node to reduce traffic entering Tijuana from the Otay I border crossing.	$5,499,500	CP	2017	21	SIDUE

(1) *CP=Conceptual Planning; AP=Advanced Planning*

Table 4.33
Mass Transit Projects
Otay Mesa-Mesa de Otay POE

Project No.	Project Name	Limits	Project Description	Project Cost (2010 USD)	Phase (1)	Year Open to Traffic	Rank	Agency
3020020	I-805 Corridor Transit Routes 680, 688, 689	Otay Mesa to Sorrento Mesa	These projects are all listed under one line item because the future projects (688, 689) are overlay projects for peak periods, and all three projects are funded together. Route 680: Otay Mesa to Sorrento Mesa via I-805 Corridor, Otay Ranch/Millenia, National City, Southeastern San Diego, Kearny Mesa (38.1 miles) Route 688: San Ysidro to Sorrento Mesa Express BRT (29.5 miles) Route 689: Bus Rapid Transit (BRT) Millenia/Otay Ranch to UTC/Torrey Pines Express (32.3 miles)	$425,000,000	CP	2018	7	SANDAG

(1) *CP=Conceptual Planning*

Discussion

Modernization of the passenger facility at the Otay Mesa border station includes reconfiguring the existing northbound passenger inspection areas and adding additional passenger vehicle lanes to increase operational efficiencies. In addition, the project includes the relocation and expansion of the pedestrian building, construction of a new head house, and construction of a new pedestrian bridge crossing SR 905. The project is in the conceptual planning stage with a planned completion date of 2022.

Existing development around the Mesa de Otay border station precludes major expansions of the facility in Tijuana. It is located between the Tijuana International Airport and the maquiladoras industrial complex, therefore acreage for expansion is limited. Nonetheless, a project to expand the number of lanes for passenger vehicles is planned in Mexico for 2016. The lane expansion is part of a larger project to reorganize and expand the cargo and passenger facilities. The project is included in the Project Inventory List.

In the United States, two major roadway improvements serving this POE have already been completed. The construction of SR 125, a four-lane toll road from SR 905 to SR 54, opened in late 2007 and is a north-south corridor linking the border area to Chula Vista communities and the rest of the San Diego regional highway network. The construction of SR 905, a six-lane east-west connector providing the only access to the POE, was constructed in phases with the last phase opened to traffic in 2012. Projects listed

in this BMP Update include the future expansion of these roadways. The construction of two managed lanes is planned for SR 905, resulting in an eight-lane freeway by 2018, prior to the expansion of the POE. The addition of four toll lanes is planned for SR 125, resulting in an eight-lane toll facility by 2040.

In addition, Willow Street Bridge and Heritage Road Bridge, which provide alternative access through the City of Chula Vista to the City of San Diego, are planned for 2016 and 2017, respectively. Heritage Road Bridge is the only fully funded project in this BMP Update, and as such, it is not included in the table of ranked roadway projects. However, as explained earlier in the chapter, a ranking was established in case the project loses funding and efforts are needed to pursue funding in the future. The project is listed in Appendix F-11 and is ranked 49. A new interchange at SR 905 and Heritage Road is planned for 2025 and will provide access to local roads.

In Mexico, major expansion on roadways connecting to the Mesa de Otay border station is limited due to existing industrial, commercial, and residential development near the facility. Future transportation projects focus more on improving efficiency rather than increasing capacity. Improvements on Industrial Boulevard to facilitate traffic between Otay Mesa-Mesa de Otay and proposed Otay Mesa East-Mesa de Otay II are scheduled to be completed in 2016.

Two interchanges are proposed in Mexico to improve access to this POE. The construction of an interchange at Industrial Avenue and Terán Terán will improve the flow of traffic on these two roadways and facilitate traffic between the Mesa de Otay and proposed Mesa de Otay II border stations. Similarly, a proposed interchange at Boulevard Aeropuerto and Bellas Artes will help facilitate traffic on Bellas Artes, which runs east and west between the two border stations. The interchanges are planned to be open to traffic in 2016 and 2017, respectively.

Transit projects in the United States include the BRT for Otay Mesa/San Ysidro to Sorrento/Torrey Pines via I-805 Corridor. It combines three projects (Bus Route 680 and Express BRTs 688 and 689). The future Express BRT routes are overlay projects for peak periods and all three projects are funded together. No rail/mass transit projects serving this POE are planned for Mexico.

Transportation Projects That Were Not Ranked

Tables 4.34 through 4.36 show the projects associated with Otay Mesa-Mesa de Otay that are not ranked. The transit project planned to be in construction by December 31, 2014 is included in the map shown in Figure 4.13. Projects for non-motorized modes of crossborder are shown in Figure 4.14. The short-term operational and minor capital investment project is not mapped as the improvement occurs at a POE facility and only the POE footprint is shown on the maps. BMP agencies did not submit any short-term projects for this POE.

Table 4.34
Projects Planned to be in Construction by December 31, 2014 (Unranked)
Otay Mesa-Mesa de Otay POE

Project No.	Juris-diction	Type	Project Name	Limits	Description	Project Cost (2010 USD)	Phase [1]	Year Opera-tional	Agency
3020019	San Diego County	Transit	South Bay BRT (628)[2]	Otay Mesa to Downtown San Diego	South Bay BRT (Otay Mesa-Downtown) via Otay Ranch / Millenia communities (19.1 miles)	$200,000,000	AP	2018	SANDAG

(1) AP=Advanced Planning
(2) BRT=Bus Rapid Transit

Table 4.35
Projects for Non-Motorized Modes of Crossborder Travel (Unranked)
Otay Mesa-Mesa de Otay POE

Project No.	Juris-diction	Type	Project Name	Limits	Description	Project Cost (2010 USD)	Phase [1]	Year Opera-tional	Agency
5020014	San Diego County	Bicycle	SR 125 Corridor	San Diego River Bikeway, Santee, to Otay Mesa Border Crossing, San Diego	Part of the San Diego River Bikeway and provides access to the Otay Mesa border crossing. The project length is 25.1 miles.	$29,579,000	CP	2040	SANDAG
5020016	San Diego County	Bicycle	SR 905 Corridor (Otay Mesa Road)	Border Access Corridor, San Diego, to Future SR 11 and Border Crossing	This project is part of a border access corridor for the future SR-11 border crossing facility along the SR-905 Corridor on Otay Mesa Road. The project is 9.0 miles in length.	$23,760,000	CP	2040	SANDAG

(1) CP=Conceptual Planning

Table 4.36
Short-Term Operational and Minor Capital Investment Projects (Unranked)
Otay Mesa-Mesa de Otay POE

Project No.	Jurisdiction	Project Name	Description	Project Cost (2010 USD)	Phase [1]	Year Opera-tional	Agency
6070001	Tijuana Mesa de Otay POE	Pedestrian bridge and pick-up/drop-off location	Pedestrian bridge over vehicle lanes entering the U.S. and passenger pick-up/drop-off location	$253,500	FD	2014	SIDUE

(1) FD=Final Design

Project Inventory List for Transportation Projects

This project is included on the Project Inventory List (Table 4.55 and Appendix H). This project is a short-term operational and minor capital investment project and is not mapped as the improvement occurs at a POE facility and only the POE footprint is shown on the maps.

- Southbound border wait time detection system at Otay Mesa-Mesa de Otay Passenger POE (6020002)

Fully Funded Transportation Projects

One fully funded project was submitted as part of the BMP Update (Table 4.37). The project is associated with the Otay Mesa-Mesa de Otay POE. The PAC requested fully funded projects receive a ranking in case one were to lose funding and there was a need to demonstrate that it has been evaluated and ranked through the BMP effort. The Heritage Road Bridge project ranks 49. The project is included in Figure 4.12.

Table 4.37
Fully Funded Transportation Project
Otay Mesa-Mesa de Otay POE

Project No.	Type	Project Name	Limits	Description	Project Cost (2010 USD)	Phase [1]	Year Opera-tional	Rank	Agency
1020001	Road	Replace Heritage Rd. Bridge	Main Street to South of Otay River	Regional Vehicular Bridge across Otay Valley	$19,900,000	AP	2017	49	City of Chula Vista

[1] *AP=Advanced Planning*

Figure 4.12: Roadway and Interchange Projects - Otay Mesa-Mesa de Otay POE
California-Baja California 2014 Border Master Plan Update

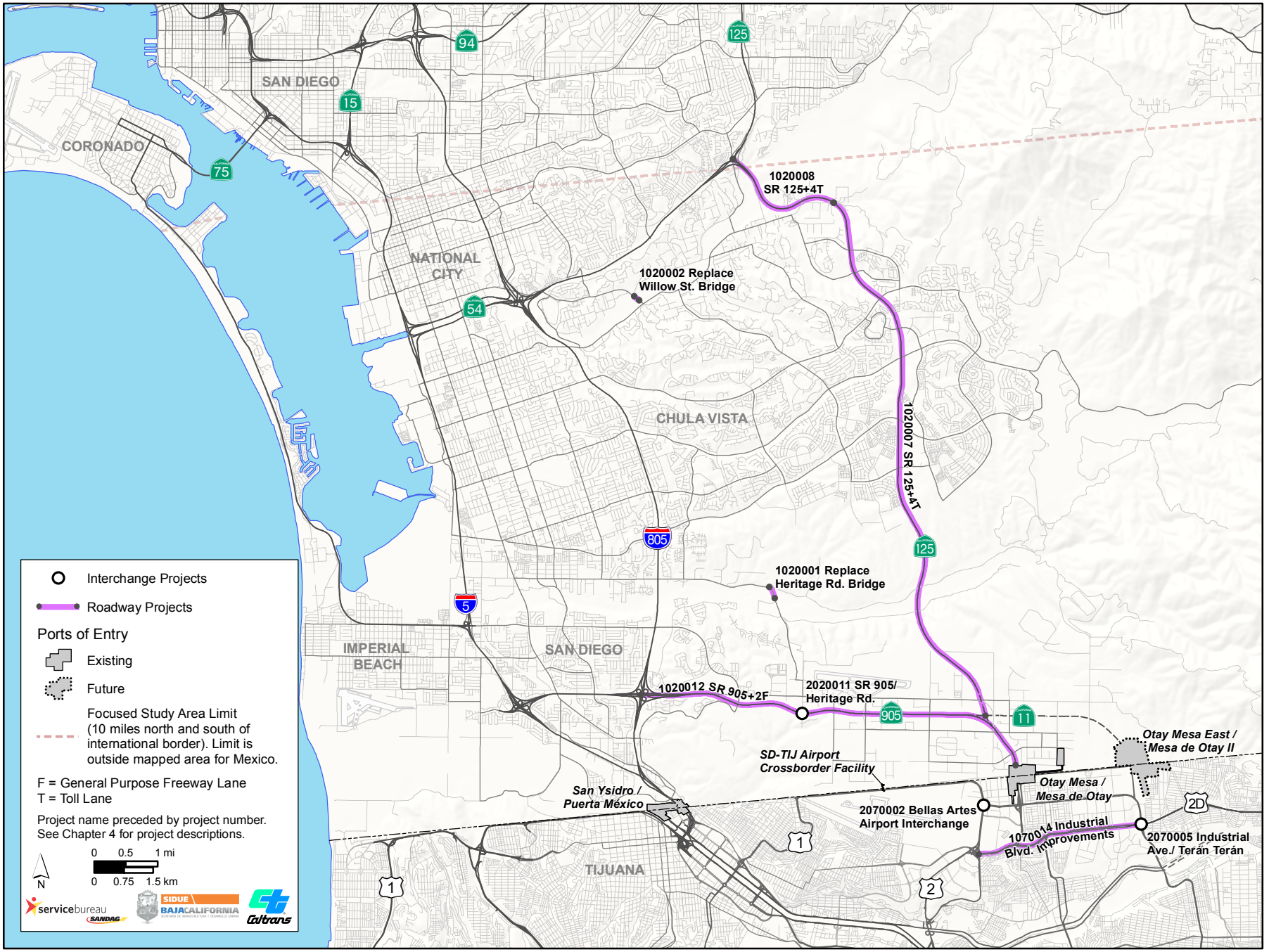


Figure 4.13: Mass Transit Projects - Otay Mesa-Mesa de Otay POE
California-Baja California 2014 Border Master Plan Update

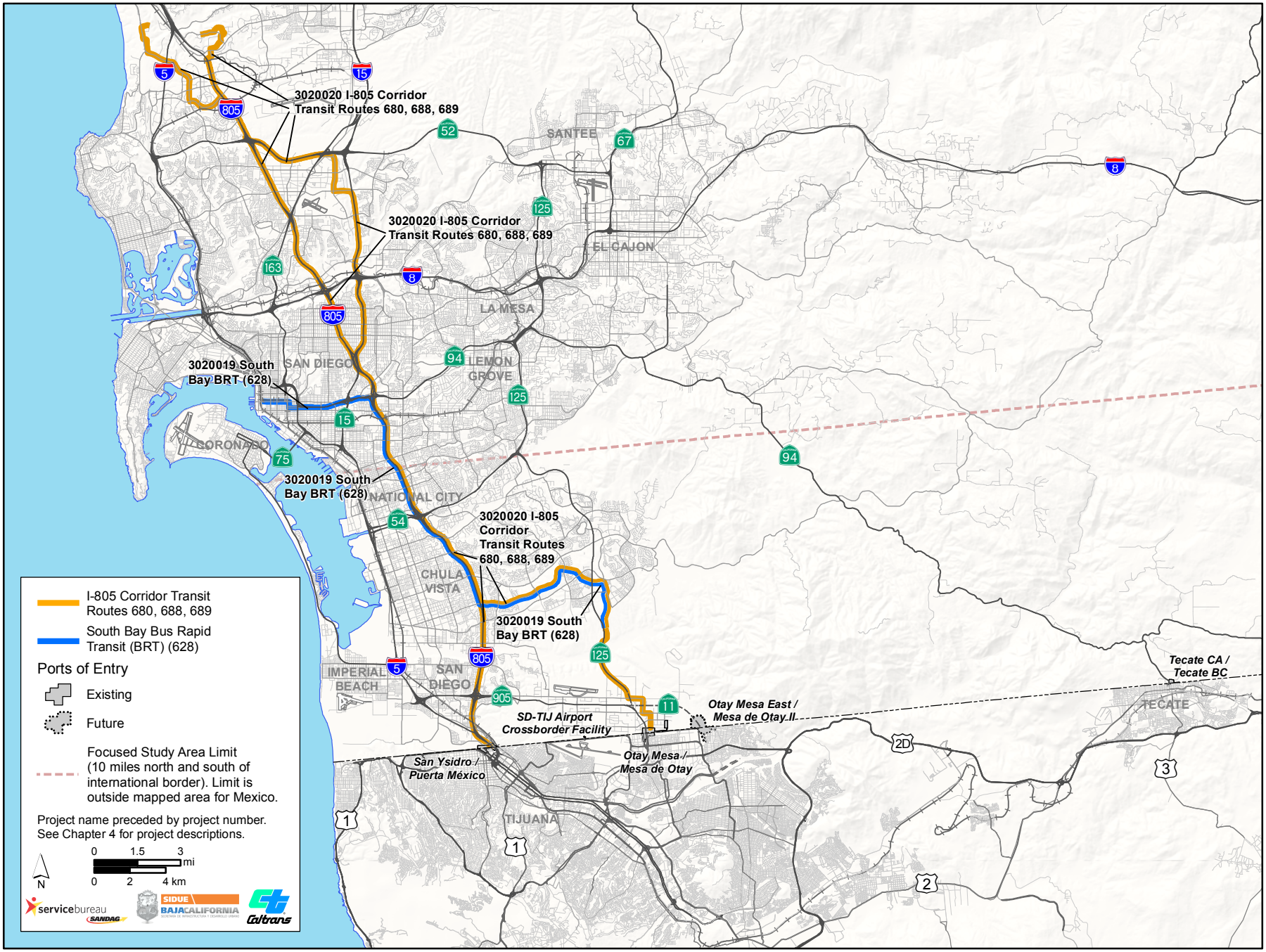
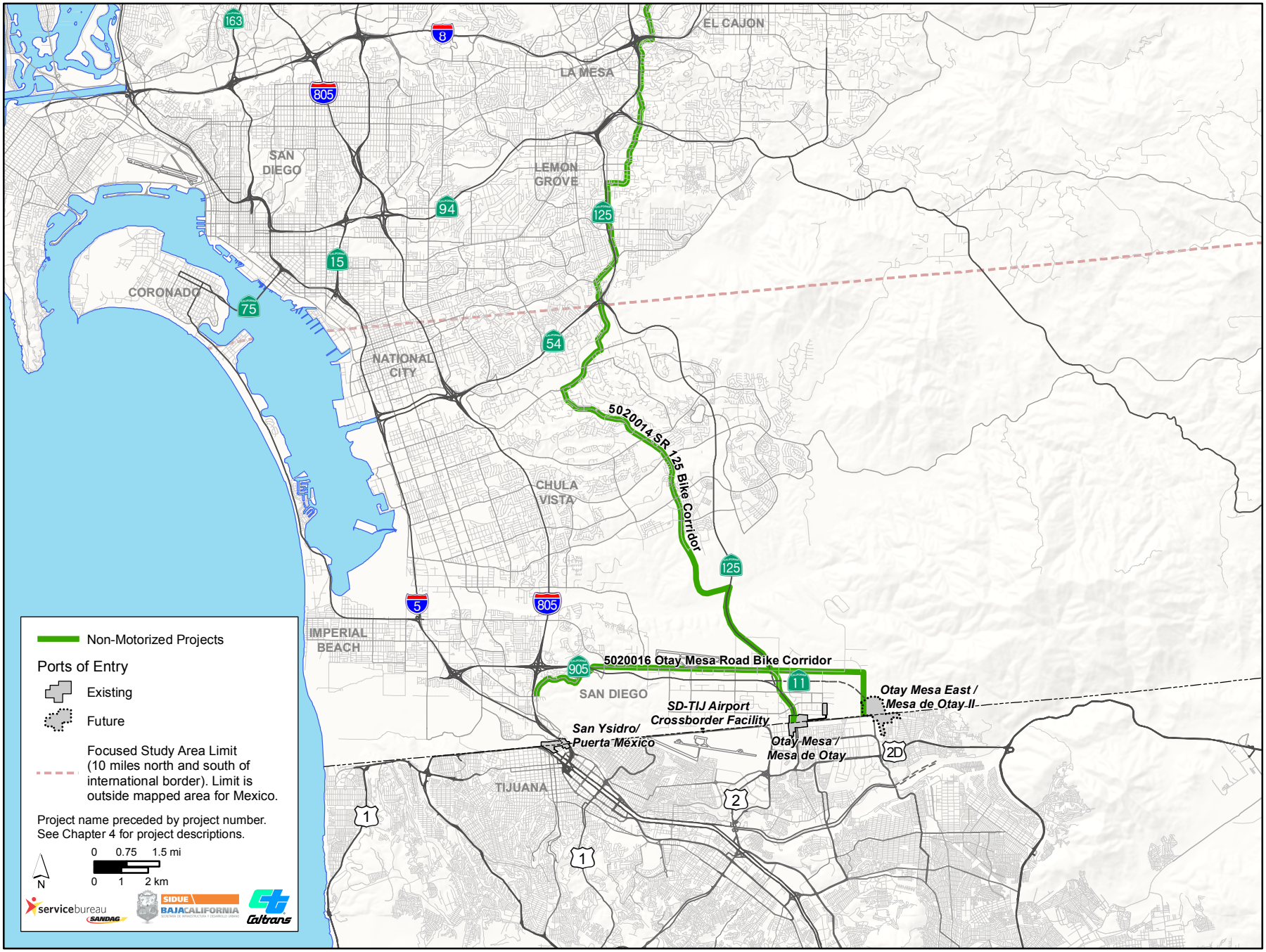


Figure 4.14: Projects for Non-Motorized Modes of Crossborder Travel - Otay Mesa-Mesa de Otay POE
California-Baja California 2014 Border Master Plan Update



RANK 4: CALEXICO EAST-MEXICALI II COMMERCIAL

The Calexico East-Mexicali II POE was opened in 1996. The POE serves pedestrians, passenger vehicle, and commercial truck traffic. It maintains separate operations for cargo and passenger vehicles.

Proposed POE Projects for Calexico East-Mexicali II Commercial

Calexico East-Mexicali II has separate operations for cargo and passenger vehicles. These operations function independently, and proposed projects could be implemented independently as well. Thus, POE projects for the passenger facility are ranked separately from projects for the commercial facility. The POE projects for the passenger side are discussed later in the chapter.

As shown in Table 4.38, one POE project is proposed to improve truck throughput at the Calexico East-Mexicali II Commercial POE. The project proposes to add as many as three northbound commercial truck lanes and primary inspection booths and to make other improvements at the Calexico East Commercial border station. The project is in the conceptual phase and the anticipated completion date is 2030. The corresponding projects planned for Mexico are included in the Project Inventory List (Table 4.54).

Table 4.38
POE Projects
Calexico East-Mexicali II Commercial POE

Project No.	Project Name	Project Description	Type	Project Cost (2010 USD)	Phase [1]	Year Open to Traffic	Project Rank	Agency
4010006	Calexico East – Additional NB Commercial Primary Inspection Lanes & Exit Booth	The project's scope includes three northbound primary truck inspection lanes and booths with associated canopy, electrical service, lighting, HVAC and conduit for license plate readers, VACIS and other IT cabling.	Existing Commercial POE - Truck	$11,300,000	CP	2030	8	GSA

[1] *CP=Conceptual Planning*

Project Inventory List for POE Projects

The following projects are included in Table 4.54 and Appendix H.

- Expansion and reorganization of the cargo import customs facilities (4040006)
- Expansion and reorganization of the cargo export customs facilities (4040007)

Proposed Transportation Projects for Calexico East-Mexicali II

This particular POE has separate processing facilities for passenger vehicles and commercial trucks. When submitting transportation projects, BMP agencies were asked to designate the POE that the project primarily served, but were not asked to distinguish if project primarily served the passenger side of the POE or the commercial side. Therefore, all transportation facility projects are listed and discussed under the Calexico-Mexicali I Passenger POE later in this chapter.

Discussion

The U.S. POE project submitted is designed to improve the flow of northbound commercial vehicle traffic at this POE. The project is in the conceptual phase and planned for completion in 2030. Projects are also planned to expand and reorganize the import and export cargo facilities in Mexico. They are planned for completion in 2015 and 2016.

Transportation Projects That Were Not Ranked

All transportation facility projects are listed and discussed under the Calexico East-Mexicali II Passenger POE.

Fully Funded Transportation Projects

No fully funded transportation projects were submitted.

RANK 5: OTAY MESA-MESA DE OTAY COMMERCIAL

The Otay Mesa-Mesa de Otay POE was opened in 1985 for northbound passenger and commercial vehicle traffic and southbound passenger vehicles. In 1994, it began processing southbound commercial vehicles when the Virginia Avenue-El Chaparral gate ceased operations. The POE includes separate operations for cargo and passenger vehicles.

Proposed POE Project for Otay Mesa-Mesa de Otay Commercial

Since the operations for cargo and passenger vehicles are independent of one another, projects for the passenger facility are ranked separately from projects for the commercial facility. The POE projects for the passenger side are discussed earlier in this chapter under the Otay Mesa-Mesa de Otay Passenger POE.

Table 4.39 shows one project for the United States side. This project is in the conceptual planning stage with a proposed open to traffic date of 2022. The commercial modernization proposed for this facility includes the paving the of the expansion parcel, realignment and expansion of booths, realignment of truck flows within the port, relocation of HAZMAT facilities and development of a commercial annex building. A project to reorganize and expand both the cargo and passenger facility in Mexico also is planned, and is included in the Project Inventory List.

Table 4.39
POE Projects
Otay Mesa-Mesa de Otay Commercial POE

Project No.	Project Name	Project Description	Type	Project Cost (2010 USD)	Phase [1]	Year Open to Traffic	Project Rank	Agency
4020011	Otay Mesa Commercial Facilities Modernization	Commercial Modernizations anticipates the paving the of the expansion parcel, realignment and expansion of booths, realignment of truck flows within the port, relocation of HAZMAT facilities and development of a commercial Annex Building.	Existing Commercial POE - Truck	$63,000,000	CP	2021	9	GSA

[1] *CP=Conceptual Planning*

Project Inventory List for POE Projects

The following project is included in Table 4.54 and Appendix H.

- Expansion and reorganization of the passenger and cargo facilities at Mesa de Otay POE (4070010)

Proposed Transportation Projects for Otay Mesa-Mesa de Otay Commercial

This particular POE has separate facilities for processing passenger vehicles and commercial trucks. When submitting transportation projects, BMP agencies were asked to designate the POE that the project primarily served, but were not asked to designate whether the transportation project primarily served the passenger side of the POE or the commercial side. Therefore, all transportation facility projects are listed and discussed under the Otay Mesa-Mesa de Otay Passenger POE.

Discussion

The U.S. POE project submitted is designed to modernize the commercial facility at this POE. The project is in the conceptual phase and planned for completion in 2022. A project in Mexico to expand and reorganize the cargo facility is planned for 2016. The project also includes improvements to the passenger inspection facilities. The project is listed in the Project Inventory List.

Transportation Projects That Were Not Ranked

All transportation facility projects are listed under the Otay Mesa-Mesa de Otay Passenger POE.

Fully Funded Transportation Projects

No fully funded transportation projects were submitted.

RANK 6: CALEXICO EAST-MEXICALI II PASSENGER

The Calexico East-Mexicali II POE was opened in 1996. The POE serves pedestrians, passenger vehicle, and commercial truck traffic, but it maintains separate operations for cargo and passenger vehicles. Approximately 7,500 northbound POVs on average per weekday were processed at this POE in 2010.

Proposed POE Projects for Calexico East-Mexicali II Passenger

Calexico East-Mexicali II has separate operations for cargo and passenger vehicles. Since the cargo and passenger facilities operate independently, projects serving the passenger facility are ranked separately from projects serving the commercial facility. The POE projects for the commercial side are discussed earlier in this chapter.

Table 4.40 lists one project for the passenger facility on the United States side. This project is in the conceptual planning stage with a planned open to traffic date of 2025. As many as six POV lanes and primary inspections booths are proposed to be added at Calexico East, increasing the port's northbound POV throughput and helping to relieve congestion at nearby Calexico-Mexicali I. No counterpart project is currently planned for Mexico.

Table 4.40
POE Projects
Calexico East-Mexicali II Passenger POE

Project No.	Project Name	Project Description	Type	Project Cost (2010 USD)	Phase [1]	Year Open to Traffic	Project Rank	Agency
4010004	Calexico East – Additional NB POV Primary Inspection Lanes	The project's scope includes six northbound primary POV inspection lanes and prefabricated booths with associated canopy, electrical service, lighting, HVAC and conduit for license plate reader, radiation monitors, and other IT cabling.	Existing Passenger POE	$9,800,000	CP	2025	10	GSA

[1] *CP=Conceptual Planning*

Proposed Transportation Projects for Calexico East-Mexicali II

This particular POE has separate processing facilities for passenger vehicles and commercial trucks. When submitting transportation projects, BMP agencies were asked to designate the POE that the project primarily served, but were not asked to distinguish if a project primarily served the passenger side or the commercial side. Therefore, all transportation facility projects submitted are shown and discussed in this section. Table 4.41 lists the roadway and projects that serve the POE. Interchange and rail/mass transit projects are shown in Tables 4.42 and 4.43, respectively. The projects are shown in priority order. Maps illustrating the location of these projects are shown in Figures 4.15 and 4.16 beginning on page 4-66.

Table 4.41
Roadway Projects
Calexico East-Mexicali II

Project No.	Project Name	Limits	Project Description	Project Cost (2010 USD)	Phase [1]	Year Open to Traffic	Rank	Agency
1040003	New Central Arterial	Lázaro Cárdenas Boulevard to Gómez Morin Road	Construction of a 3.5 km (2.2 mi) primary roadway like the extension of the Rio Nuevo roadway	$5,545,400	AP	2015	1	SIDUE
1010008	SR 115+2F	Evan Hewes Hwy to SR 78	Add to 2 general purpose lanes	$146,800,000	CP	2035	15	Caltrans
1040011	Relocate Tourist Access Road	Calzada Abelardo L. Rodriguez to Limite Internacional	Northbound POV queue lanes to be rearranged so as to not cause traffic jams for local city roads	$3,961,000	AP	2016	44	SIDUE
1010023	SR 115+2F	I-8 to Evan Hewes Highway	Construct 4 lane expressway	$172,000,000	CP	2030	47	Caltrans

[1] *CP=Conceptual Planning; AP=Advanced Planning*

Table 4.42
Interchange Projects
Calexico East-Mexicali II

Project No.	Jurisdiction	Project Name	Project Description	Project Cost (2010 USD)	Phase [1]	Year Open to Traffic	Project Rank	Agency
2010007	Imperial County	SR 7/McCabe Road	Construct new interchange to accommodate future airport	$475,000,000	CP	2025	15	Caltrans

[1] *CP=Conceptual Planning*

Table 4.43
Mass Transit Projects
Calexico East-Mexicali II

Project No.	Project Name	Limits	Project Description	Project Cost (2010 USD)	Phase [1]	Year Open to Traffic	Rank	Agency
3010086	Calexico East Intermodal Transportation Center	Menvielle Road to SR 7	Construct an Intermodal Transportation Center to facilitate pedestrian access of public and private transit services and taxis	$7,000,000	CP	2020	9	ICTC

[1] *CP=Conceptual Planning*

Discussion

One project for the passenger facility is planned for the United States side. This project is in the conceptual planning stage with a planned open to traffic date of 2025. The expansion is designed to increase the port's northbound POV throughput and helping to relieve congestion at nearby Calexico-Mexicali I. No counterpart project is currently planned for Mexico.

In terms of connecting roads in the United States, SR 7 is a four-lane highway that connects the Calexico East border station to SR 98 to I-8. No project enhancements are proposed for this facility.

SR 115 connects to SR 7. Two projects are proposed for SR 115 to increase capacity of the highway to accommodate future growth in Imperial County. It also could provide an alternative route for commercial shipments processed through the POE. The projects are long term with anticipated completion dates 2030 and 2035. One interchange is planned for SR 7 and McCabe Road in 2025.

In Mexico, two roadway projects are proposed to facilitate traffic to the POE and improve connections to the local roadway network in Mexicali. The Central Axis will be extended to with a new four-lane road to connect Lázaro Cárdenas Boulevard to Gómez Morin Road. Gómez Morin Road will be expanded from four to six lanes to improve the flow of traffic from the POE to the San Felipe Highway. This project is planned to be in construction by December 2014, therefore, it is not ranked. In addition, the queue for northbound traffic between Calzada Abelardo L. Rodriguez and the POE will be realigned to minimize traffic congestion on local roads. No interchange projects are currently planned for Mexicali.

A proposed intermodal transportation center is planned for this POE in the United States. It is in the conceptual planning stage and anticipated to be open to traffic in 2020. It is designed to facilitate pedestrian access of public and private transit services and taxis. No rail/mass transit projects were submitted for this POE in Mexico.

Transportation facility projects in the United States are planned for 2020 and beyond to carry future traffic as the population increases and development occurs. The projects in Mexico are more short-term in nature to facilitate immediate needs to relieve congestion and improve flows around the POE.

Transportation Projects That Were Not Ranked

Table 4.44 shows one project associated with this POE that is planned to be under construction by December 31, 2014. This project is included in the map shown in Figure 4.15. Table 4.45 shows short-term operational and minor capital investment projects for this POE. These projects are not mapped. BMP agencies did not submit short-term projects or projects for non-motorized modes of crossborder travel.

Table 4.44
Projects Planned to be in Construction by December 31, 2014 (Unranked)
Calexico East-Mexicali II POE

Project No.	Jurisdiction	Type	Project Name	Limits	Description	Project Cost (2010 USD)	Phase [1]	Year Opera-tional	Agency
1040005	Mexicali	Road	Widen Gómez Morin Road	Cetys Rd. to Mexicali-San Felipe Highway	Improvement on the existing roadway from 4 to 6 lanes	$7,653,500	FD	2015	SIDUE

[1] *FD=Final Design*

Table 4.45
Short-Term Operational and Minor Capital Investment Projects (Unranked)
Calexico East-Mexicali II

Project No.	Jurisdiction	Project Name	Description	Project Cost (2010 USD)	Phase [1]	Year Operational	Agency
6010001	Imperial County Calexico East	Calexico East Transit Services	Daily service with 1 hour headways to and from the Calexico East POE and the City of Calexico	$400,000	CP	2014	ICTC
6040002	Mexicali Mexicali II	Pick-up/ drop-off location	Pick up and drop off area for passenger vehicles and public transit users. Implementation of shade structures in pedestrian path and rehabilitate public restrooms.	$1,188,300	AP	2013	SIDUE

[1] *CP=Conceptual Planning; AP=Advanced Planning*

Fully Funded Transportation Projects

No fully funded transportation projects were submitted.

Figure 4.15: Roadway and Interchange Projects - Calexico East-Mexicali II POE
California-Baja California 2014 Border Master Plan Update

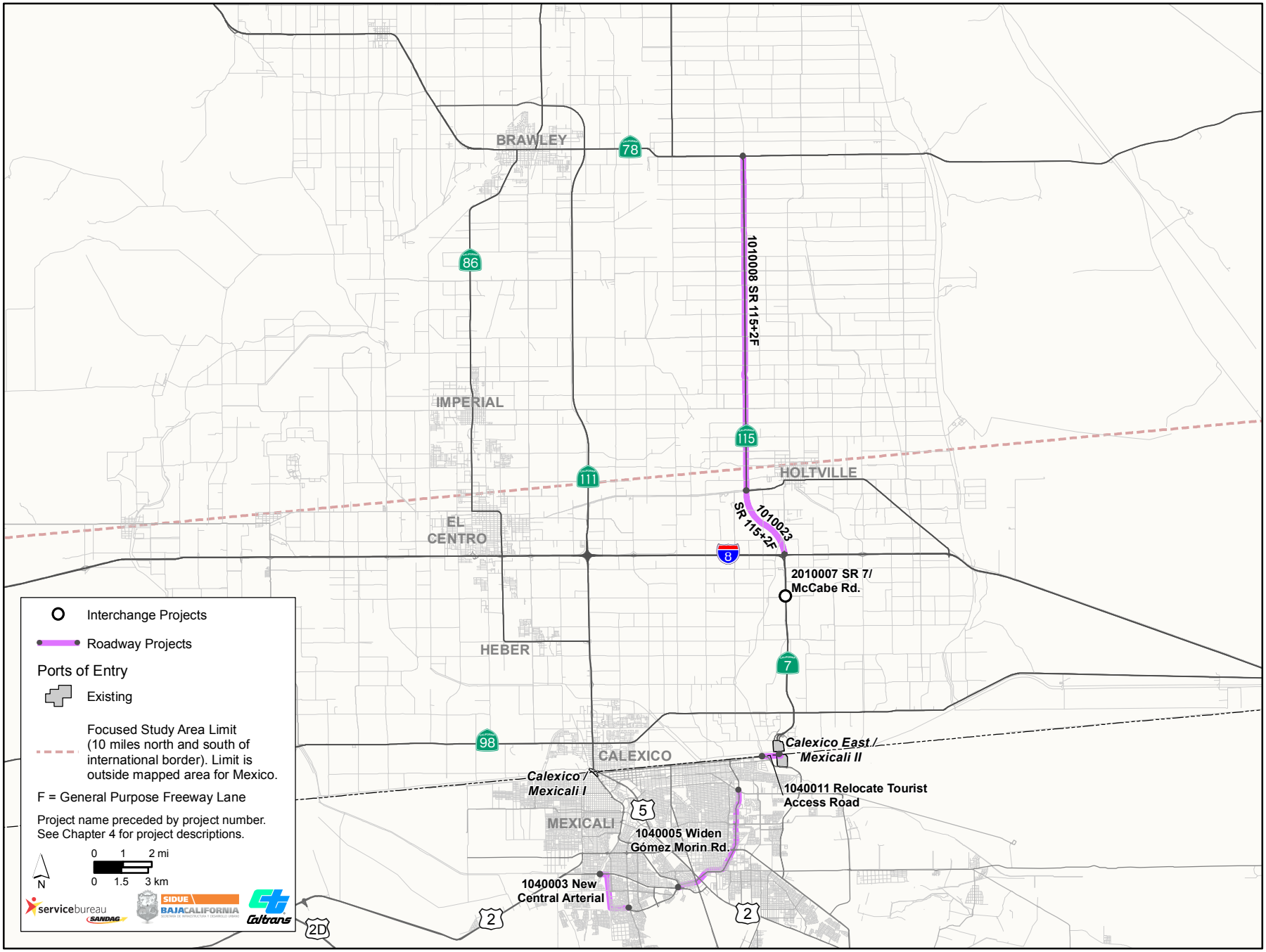
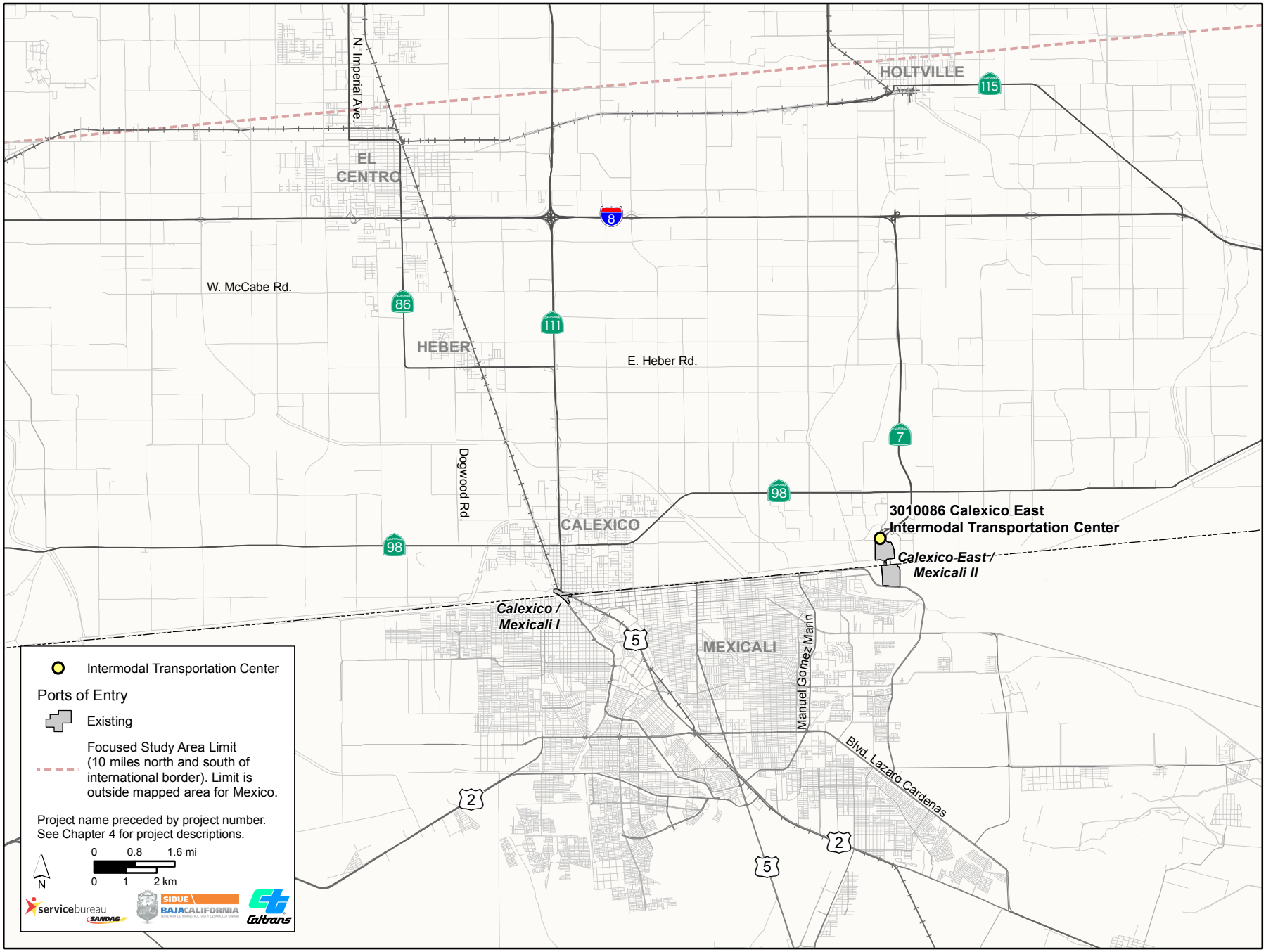


Figure 4.16: Mass Transit Projects - Calexico East-Mexicali II POE
California-Baja California 2014 Border Master Plan Update



RANK 7: TECATE-TECATE

The Tecate-Tecate POE was initially opened in 1932. It provides service for pedestrians, passenger vehicles, commercial vehicles, and rail (the rail line crosses at Campo, located east of the POE). It processed approximately 2,100 northbound POVs on average per weekday at this POE in 2010.

Proposed POE Projects for Tecate-Tecate

Only one POE project is evaluated for the Tecate-Tecate POE. As shown in Table 4.46, the project proposes a new cargo facility be constructed to expand the commercial inspection facility in Mexico. This project is in the advanced planning phase and is anticipated to be open to traffic in 2015. No corresponding project is proposed for the United States. However, major upgrades to the Tecate border station in California were previously completed in 2004 and 2005 and a new commercial vehicle enforcement facility (CVEF) opened in 2008.

Table 4.46
POE Projects
Tecate-Tecate POE

Project No.	Project Name	Project Description	Type	Project Cost (2010 USD)	Phase [1]	Year Open to Traffic	Rank	Agency
4060002	Tecate Baja California-Construction of New Cargo POE	A new Cargo POE to be built on a 5-hectare plot, expanding the cargo inspection facilities	Existing Commercial POE - Truck	$11,883,100	AP	2015	12	SIDUE

[1] *AP=Advanced Planning*

Project Inventory List for POE Projects

The following project is included in Table 4.54 and Appendix H.

- Expansion and reorganization of the cargo and passenger facilities (4060004)

Proposed Transportation Projects for Tecate-Tecate

Transportation projects are individually ranked and then grouped by the POE that is primarily served by the project. Planned roadway and interchange projects serving this POE are shown in Table 4.47 and 4.48. Figure 4.17 illustrates the location of these projects.

Table 4.47
Roadway Projects
Tecate-Tecate POE

Project No.	Project Name	Limits	Project Description	Project Cost (2010 USD)	Phase [1]	Year Open to Traffic	Rank	Agency
1060001	New Tourist Access Road	Avenida Benito Juárez to Avenida Internacional	A roadway will be built to replace current POV access to the Tecate Border Crossing	$950,600	AP	2015	51	SIDUE

[1] *AP=Advanced Planning*

Table 4.48
Interchange Projects
Tecate-Tecate POE

Project No.	Jurisdiction	Project Name	Project Description	Project Cost (2010 USD)	Phase [1]	Year Open to Traffic	Project Rank	Agency
2060002	Tecate, Baja California	Tecate-Tijuana Toll Road Freeway Interchange	Completion of the roadway intersection	$2,772,700	FD	2015	3	SIDUE
2060001	Tecate, Baja California	Tecate-Mexicali Fwy/Las Torres Boulevard	Tecate-Mexicali and Las Torres Boulevard Highway Node	$3,961,000	AP	2016	15	SIDUE

[1] *AP=Advanced Planning; FD=Final Design*

Discussion

One commercial facility project was evaluated for the Tecate-Tecate POE. The project proposes a new cargo facility be constructed to expand the commercial inspection facility in Mexico. This project is in the advanced planning phase and is anticipated to be open to traffic in 2015. Another project to improve the passenger facility and the cargo facility in Mexico is included in the Project Inventory List and planned for completion in 2015. No corresponding project is proposed for the U.S., as the CVEF was completed in 2008. No roadway, interchange, or rail/mass transit projects were submitted in the United States.

In Mexico, a new road, Avenida Mexico, connecting truck traffic to the new cargo facility was completed in 2012. As such, the roadways are ready to accommodate truck traffic to the new cargo facility once opened. The proposed transportation facility projects that are part of this BMP Update primarily serve passenger vehicle traffic. The roadway project is a new access road to replace the current POV access to the border crossing and accommodate future growth. One interchange project will connect the Tecate-Tijuana (libre) with the Tecate-Tijuana Toll road. The second interchange will connect the Tecate-Mexicali (libre) with Las Torres Boulevard. The projects are designed to improve passenger vehicle traffic flows to and from the POE and are planned for completion in 2015 and 2016, respectively. In addition, a freight rail project from Tecate to Ensenada is in the conceptual planning stage, and has an anticipated completion date of 2019.

Transportation Projects That Were Not Ranked

Table 4.49 shows one pedestrian project under the non-motorized modes of crossborder travel category. The location of this project is included in Figure 4.17. BMP agencies did not submit project for the other categories (short-term projects, projects planned to be in construction by December 31, 2014, or short-term operational and minor capital investment projects). One freight rail project is included in the inventory list and is shown in Figure 4.18.

Table 4.49
Projects for Non-Motorized Modes of Crossborder Travel (Unranked)
Tecate-Tecate POE

Jurisdiction	Type	Project No.	Project Name	Limits	Description	Project Cost (2010 USD)	Phase [1]	Year Opera-tional	Agency
Tecate CA	Ped	5020019	Tecate Ped/Transit Facilities	U.S-Mexico Border to SR 188; .002 miles	Pedestrian / Transit Facilities at the Tecate POE/SR 188	$1,550,000	CP	2017	Caltrans

[1] *CP=Conceptual Planning*

Project Inventory List for Transportation Projects

The following freight rail project is shown in Table 4.55 and is included in Appendix H.

- Tecate-Ensenada Rail (3030001)

Fully Funded Transportation Projects

No fully funded transportation projects were submitted.

Figure 4.17: Roadway and Interchange and Non-Motorized Modes of Crossborder Travel Projects - Tecate-Tecate POE
California-Baja California 2014 Border Master Plan Update

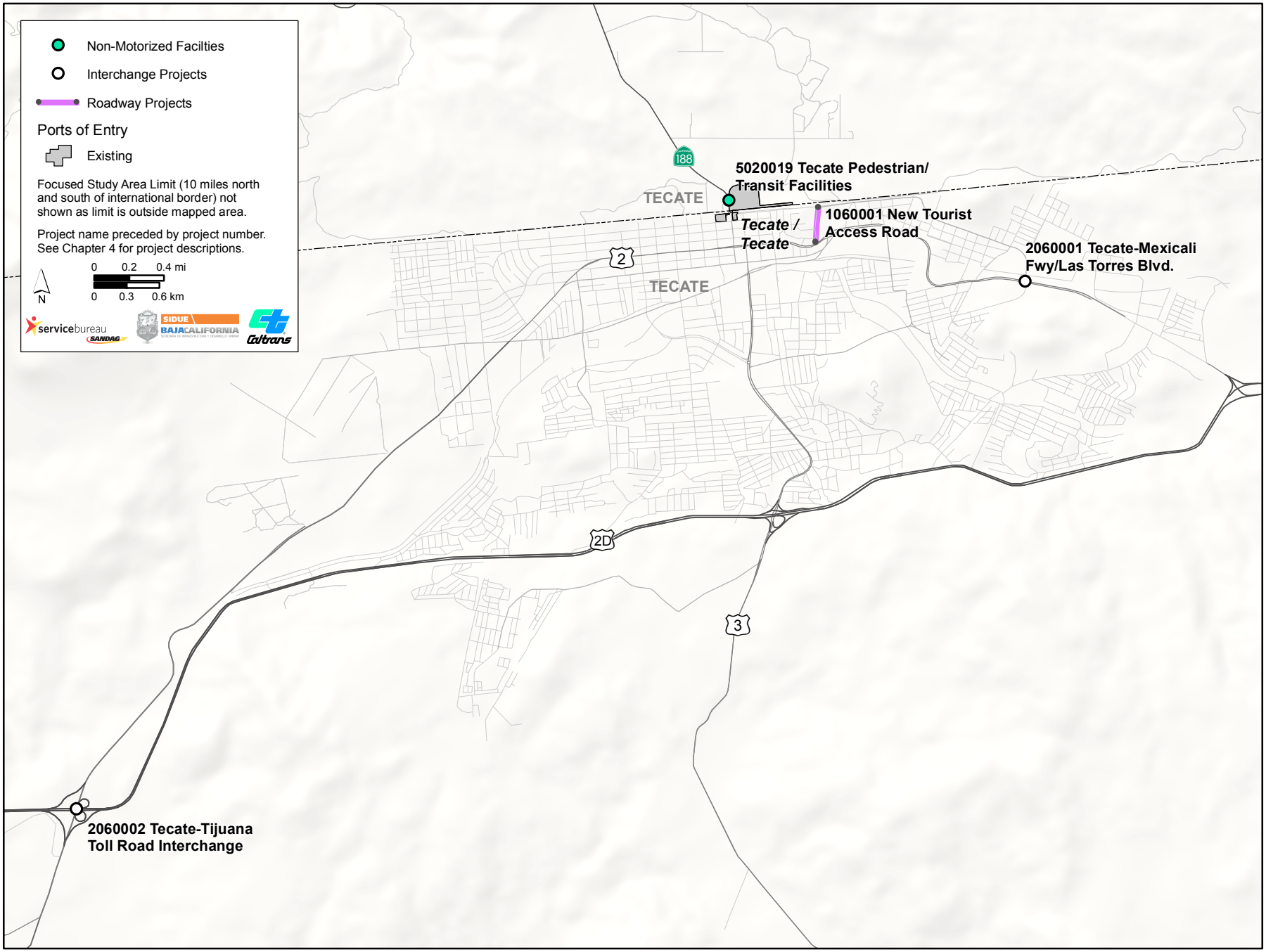
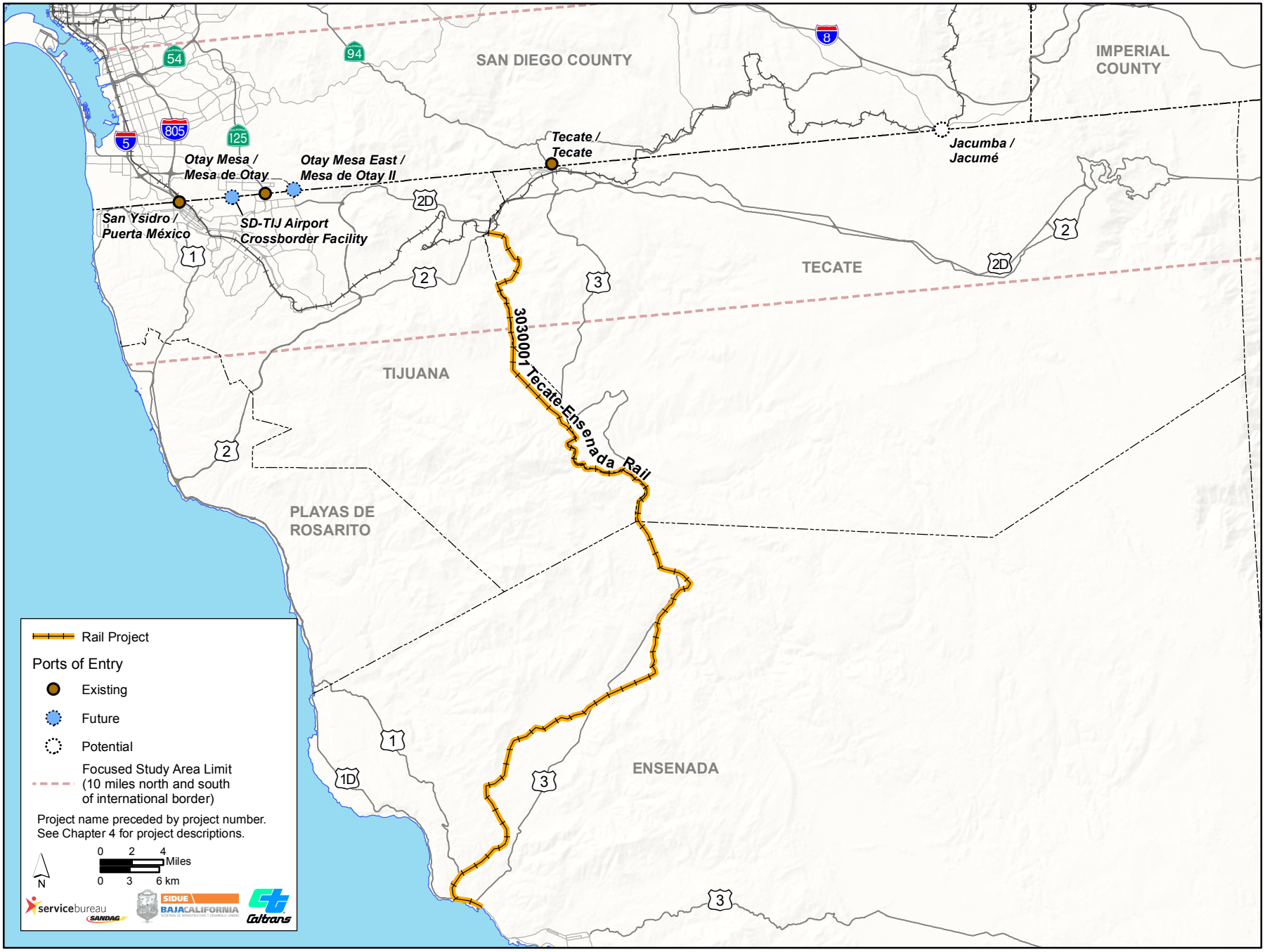


Figure 4.18: Freight Rail Projects – Tecate-Tecate POE
California-Baja California 2014 Border Master Plan Update



RANK 8: ANDRADE-LOS ALGODONES

The Andrade-Los Algodones POE was built in 1970 and serves pedestrians and passenger vehicles. It stopped processing commercial trucks several years ago. The POE, which is located in Imperial County and eastern Mexicali, processed approximately 1,100 northbound POVs on average per weekday. It experiences higher volumes during the winter months, when many visitors come to the area from Canada and cold-weather states in the United States and utilize services through this POE.

Proposed POE Projects for Andrade-Los Algodones

Table 4.50 shows one project for the modernization of the POE. It is in the conceptual planning stage and planned for completion in 2017.

Table 4.50
POE Projects
Andrade-Los Algodones POE

Project No.	Project Name	Project Description	Type	Project Cost (2010 USD)	Phase [1]	Year Open to Traffic	Project Rank	Agency
4040004	Los Algodones - Andrade Tourist Crossing Modernization	Modernize the tourist border crossing facilities at Los Algodones - Andrade	Existing Passenger POE	$1,584,400	CP	2017	13	SIDUE

[1] *CP=Conceptual Planning*

Proposed Transportation Projects for Andrade-Los Algodones

Table 4.51 and 4.52 show the roadway and interchange projects for this POE. The projects are shown in priority order. A map illustrating the location of these projects is shown in Figures 4.19.

Table 4.51
Roadway Projects
Andrade-Los Algodones POE

Project No.	Project Name	Limits	Project Description	Project Cost (2010 USD)	Phase [1]	Year Open to Traffic	Rank	Agency
1040009	New Access Road in Los Algodones	Carretera a San Luis Rio Colorado to Limite Internacional	Construction of access roads to relocate northbound vehicle access to Los Algodones POE	$3,168,800	FD	2015	58	SIDUE

[1] *FD=Final Design*

Table 4.52
Interchange Projects
Andrade-Los Algodones POE

Project No.	Jurisdiction	Project Name	Project Description	Project Cost (2010 USD)	Phase [1]	Year Open to Traffic	Project Rank	Agency
2010005	Imperial County	I-8/SR 186	Upgrade interchange	$55,000,000	CP	2030	23	Caltrans

[1] *CP=Conceptual Planning*

Discussion

The Andrade-Los Algodones POE modernization project is in the conceptual planning phase in Mexico and planned for 2017. No counterpart project was submitted in the United States

In the United States, SR 186 is a two lane conventional highway in the United States that connects to the POE and provides access to I-8. An upgrade to an existing interchange at SR 186 and I-8 is planned for 2030. In Algodones, local roadways connect traffic to Mexicali or the State of Sonora (MX-2). The construction of a new access road from San Luis Rio Colorado highway to the POE is planned to relocate northbound vehicle access to the POE.

Transportation Projects That Were Not Ranked

Table 4.53 shows one pedestrian project under the non-motorized modes of crossborder travel category. The location of this project also is included in Figure 4.19. BMP agencies did not submit projects for the other categories (short-term projects, projects planned to be in construction by December 31, 2014, or short-term operational and minor capital investment projects).

Table 4.53
Projects for Non-Motorized Modes of Crossborder Travel (Unranked)
Andrade-Los Algodones POE

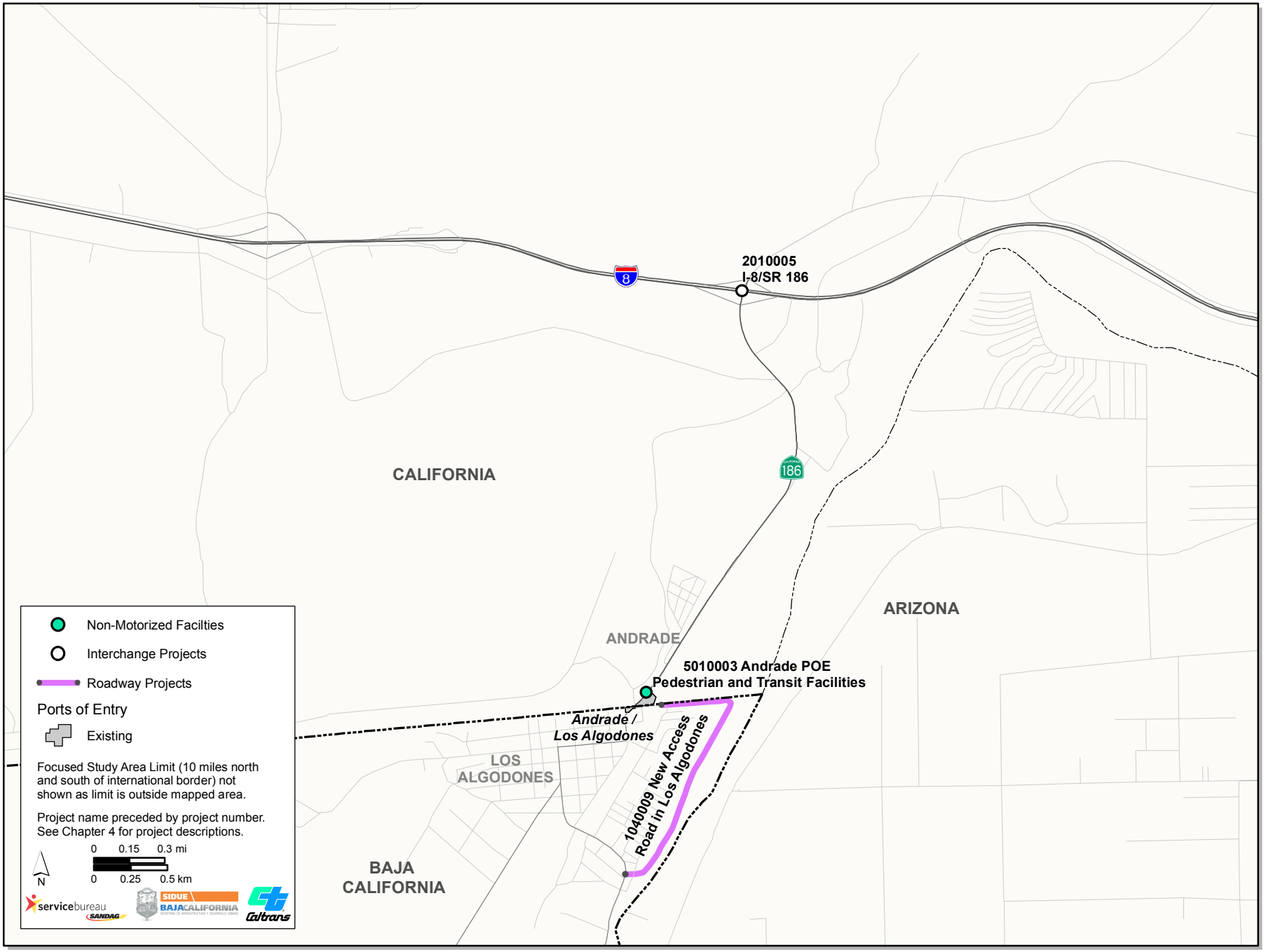
Jurisdiction	Type	Project No.	Project Name	Limits	Description	Project Cost (2010 USD)	Phase [1]	Year Opera-tional	Agency
Imperial County	Ped	5010003	Andrade POE Ped/Transit Facilities	U.S-Mexico Border to SR 186	Pedestrian friendly path with lighting	$1,535,000	CP	2017	Caltrans

[1] *CP=Conceptual Planning*

Fully Funded Transportation Projects

No fully funded transportation projects were submitted.

Figure 4.19: Roadway, Interchange, and Non-Motorized Mode of Crossborder Travel Projects - Andrade-Los Algodones POE
California-Baja California 2014 Border Master Plan Update



SUMMARY

Development of a new POE or improvements to an existing POE and related transportation facilities are complex and lengthy undertakings that require close coordination and collaboration with governmental agencies on both sides of the border. The BMP Update includes POE projects and roadways, interchanges, and rail/mass transit projects connecting POEs to the regional transportation networks. Projects for non-motorized modes of crossborder travel and short-term operational and minor capital outlay to reduce border wait times also are included. The California-Baja California Border Master Plan process is used to help prioritize infrastructure projects and enhance coordination of planning and implementation of POE and transportation projects in both the United States and Mexico.

Binational coordination of planning and implementation activities takes place on several levels. For the proposed Otay Mesa East-Mesa de Otay II POE, the San Ysidro/Virginia Avenue-Puerta México/El Chaparral POE, and the Calexico-Mexicali POE, coordination is accomplished through the Technical Commissions for Infrastructure and Ports of Entry Committee of the Border Liaison Mechanism. In addition, other efforts for coordinating the activities of the proposed Otay Mesa East-Mesa de Otay II POE and connecting roads are accomplished through several channels including meetings of the U.S.-Mexico JWC and BBBXG. Also, separate working groups with key project partners including SCT, SRE, CBP, GSA, Caltrans, SANDAG, and other transportation and community groups are held on a regular basis.

A brief summary of the POE and transportation projects discussed in this report follows:

Otay Mesa East-Mesa de Otay II POE. Two POE projects are planned for this proposed new POE. The schedules for completion of the United States and Mexico projects at this POE are fully coordinated. Both countries are planning their projects so the POE opens 2017. The primary roadways serving the POE in the United States and Mexico are timed to be completed concurrently with the opening of the POE.

San Ysidro/Virginia Avenue-Puerta México/El Chaparral POE. Due to funding constraints in the United States, the schedules for completion of the projects at the San Ysidro/Virginia Avenue-Puerta México/ El Chaparral POE fell out of alignment since some phases of the project in the United States are anticipated to be completed in 2018 and 2020 while the corresponding project in Mexico was completed in 2012. However, funding has recently become available for GSA to advance Phase III, which includes constructing a new southbound connection to Mexico with inspection facilities and 17 additional northbound primary inspection booths.

In the United States, roadway projects are proposed to improve freeway capacity for crossborder travel as well as serve anticipated population growth in the area. These are longer term projects for 2020 and beyond. In Mexico, transportation projects to improve access to the POE, Downtown Tijuana, and an interchange in the vicinity are planned to be open to traffic in 2016 and 2017. In addition, both countries are planning to construct projects that focus on improving transit services through expanded trolley and rapid bus service. In Mexico the BRT project is planned for 2015. The Tijuana Trolley is in the conceptual planning stage and also is anticipated to be completed in 2015. In the United States, transit projects are planned for 2020 and beyond.

Calexico-Mexicali I POE. At the Calexico-Mexicali I POE, four POE modernization projects are in the advanced planning stages. The POE project in Mexicali to accommodate passenger vehicles at the new

site west of the railroad tracks is planned to be completed in 2016 and plans for improvements to the pedestrian facility are planned for 2017. In the United States, the corresponding projects are not planned to be open to traffic until 2020 and 2022 due to budget and funding shortfalls. This could potentially be addressed through a Congressional appropriation in the FY 2014-2015 budget for Phase 1. In the meantime, an interim pedestrian processing facility in the United States is planned for completion in 2017, the same year the pedestrian facility in Mexico should be open. The Imperial and Mexicali stakeholders continue to coordinate dates and interim solutions to facilitate the movement of pedestrians and passenger vehicle traffic.

The associated roadway improvements in the United States are designed to serve crossborder traffic as well as population growth in the local communities. In Mexico, several of the necessary roadway improvement projects related to the reconfiguration of the POE have been completed or are under construction. Future projects on roadways and arterials focus on capacity improvements connecting the Mexicali I and the Mexicali II border stations. The projects in Mexico appear to be aligned with Mexico's planned POE opening date of 2016.

A proposed Intermodal Transportation Center in Calexico is planned for 2017, the same time the pedestrian facility should be completed. It is designed to facilitate pedestrian access of public and private transit services and taxis at the POE. In Mexico, the BRT Express Lane 1, a short-term project that connects important roadway corridors in Mexicali and also facilitates movement to and from the United States is under development.

Otay Mesa-Mesa de Otay Passenger POE. A project for the modernization of the passenger facility at the Otay Mesa border station in the United States is planned at the Otay Mesa-Mesa de Otay Passenger POE. The project is in the conceptual planning stage with a planned completion date of 2022. Existing development around the Mesa de Otay border station precludes major expansions of the facility in Tijuana. Nonetheless, Mexico plans to improve both the passenger and cargo facilities by 2016. The project is in the Project Inventory List.

In the United States, two major roadway improvements serving this POE already have been completed. They are SR 125, a four-lane toll road from SR 905 to SR 54, and SR 905, a six-lane east-west connector providing the only access to the POE. Projects listed in this BMP Update include the future expansion of these roadways to accommodate population growth and future crossborder traffic in the area. They are scheduled to be completed in 2018 and beyond. Improvements to local arterials and interchanges and expanded BRT service are also planned to facilitate mobility in the area. In Mexico, future transportation projects focus more on improving efficiency rather than increasing capacity. New interchanges and improvements on Industrial Boulevard to facilitate travel between Otay Mesa-Mesa de Otay and proposed Otay Mesa East-Mesa de Otay II are planned for 2016 and 2017.

Calexico East-Mexicali II Commercial POE. The U.S. POE project for the Calexico East-Mexicali II Commercial POE is aimed at improving the flow of northbound commercial vehicle traffic. This U.S. project is in the conceptual phase and planned for completion in 2030. Two projects to expand and reorganize the commercial facility in Mexico are planned for 2015 and 2016. The projects are included in the Project Inventory List. Transportation facility projects are summarized under the discussion for the Calexico East-Mexicali II Passenger POE.

Otay Mesa-Mesa de Otay Commercial POE. One project for the United States side is ranked as part of the BMP Update. This project is in the conceptual planning stage with a proposed open to traffic date of 2022. The commercial modernization proposed for this facility includes paving a recently acquired parcel, realignment and expansion of booths, realignment of truck flows within the port, relocation of HAZMAT facilities and the development of a commercial annex building. A project to expand both the passenger and commercial facilities in Mexico is planned for 2016. The project is included in the Project Inventory List. Transportation facility projects are summarized under the discussion for the Otay Mesa-Mesa de Otay Passenger POE.

Calexico East-Mexicali II Passenger POE. One project for the Calexico East-Mexicali II Passenger POE is planned for the U.S. side. This project is in the conceptual planning stage with a planned open to traffic date of 2025. The expansion is designed to increase the port's northbound POV throughput and helping to relieve congestion at nearby Calexico-Mexicali I. No counterpart project was submitted for Mexico. Transportation facility projects in the United States are planned for 2020 and beyond to accommodate future traffic as the population grows and development occurs. The projects in Mexico are more short-term in nature to facilitate immediate needs to relieve congestion and improve traffic flows around the POE. A proposed intermodal transportation center in the United State is anticipated to be open in 2020 and is designed to facilitate pedestrian access of public and private transit services and taxis. No rail/mass transit projects were submitted for Mexicali.

Tecate-Tecate POE. The construction of a commercial facility is proposed at the Tecate, Baja California border station. The project is in the advanced planning phase and is anticipated to be open to traffic in 2015. Improvements were made to the Tecate border station in the United States in 2004 and 2005 and the new CVEF facility was completed in 2008, therefore, no counterpart project in the United States is planned.

In Mexico, a new road, Avenida México, connecting truck traffic to the new cargo facility was completed in 2012. The proposed transportation facility projects that are part of this BMP Update primarily serve passenger vehicle traffic. A freight rail project from Tecate to Ensenada is in the conceptual planning stage, and has an anticipated completion date of 2019. No roadway, interchange, or rail/mass transit projects were submitted in the United States.

Andrade-Los Algodones POE. This modernization project is in the conceptual planning phase in Mexico and planned for completion in 2017. No counterpart project was submitted in the United States. An upgrade to an existing interchange at SR 186 and I-8 is planned for 2030 in the United States. In Mexico, the construction of a new access road from San Luis Rio Colorado highway to the POE is planned to relocate northbound vehicle access to the POE.

Table 4.54
Project Inventory List—Port of Entry Projects
California-Baja California 2014 BMP Update

Project No.	Jurisdiction	Project Name	Project Description	Phase	Project Costs (2010 USD)	Year Open to Traffic	POE Type	POE Primarily Served	Agency
4020015	San Diego County	Jacumba New POE	Future passenger vehicle, pedestrian, and truck port of entry.	Conceptual Planning	--	2040	New Passenger and Commercial POE	Jacumba	SANDAG
4060003	Tecate, BC	Jacumé New POE	The location of the project is approximately 40 km east of Tecate. This POE will serve both passenger vehicles and trucks and rail freight cargo. It is a new POE.	Conceptual Planning	--	2030	New Passenger and Commercial POE	Jacumé	SIDUE
4060004	Municipality of Tecate	Expansion and reorganization of the Tecate cargo and passenger facilities.	Developing the final design to construct the cargo facilities (import and export) in a 5.4 hectares federal compound, to reorganize and expand the passenger vehicles area including remodeling administrative offices in the pedestrian area and establishing the fiscal route lane which will connect the cargo area and the passenger vehicles.	Advanced Planning	$403,800	2015	Existing Passenger and Commercial POE	Tecate	Aduanas
4040006	Municipality of Mexicali	Expansion and reorganization of the cargo import customs facilities in Mexicali II	Expand the cargo import area, fiscal route lanes, patios, inspection facilities and a new lane to import vehicles.	Advanced Planning	$403,800	2015	Existing Commercial POE - Truck	Mexicali II	Aduanas
4040007	Municipality of Mexicali	Expansion and reorganization of the cargo export customs facilities in Mexicali II	Expand and reorganize the cargo export facilities, fiscal route lanes, patios, and the inspection platform. A new regular cargo lane and booth will be added to facilitate entry to the facilities.	Presidential Permit	$13,326,100	2016	Existing Commercial POE - Truck	Mexicali II	Aduanas

Table 4.54 (Cont.)
Project Inventory List—Port of Entry Projects
California-Baja California 2014 BMP Update

Project No.	Jurisdiction	Project Name	Project Description	Phase	Project Costs (2010 USD)	Year Open to Traffic	POE Type	POE Primarily Served	Agency
4070010	Municipality of Tijuana	Expansion and reorganization of the cargo and passenger facilities at Mesa de Otay, Tijuana.	The project considers a new layout of the cargo import facilities and the expansion from 6 to 9 entry booths, from 3 to 6 exit booths, patios, fiscal route lanes and increasing the inspection platform from 18 to 35 positions. Passenger vehicles will increase 1 lane and the inspection area will have 5 more positions. It is worth mentioning this area will be relocated since it obstructs the fiscal vehicle route. The project considers a parking area for trucks. The pedestrian portion of the project will consider establishing a new southbound pathway since vehicles and pedestrian flows are not separated.	Presidential Permit	$55,224,800	2016	Existing Passenger and Commercial POE	Mesa de Otay	Aduanas
4070011	Municipality of Tijuana	Completion of complementary work at tactical locations at the Puerta México Este, El Chaparral and Otay I facilities.	*Puerta México Este Pedestrian POE—Complementary works in electrical installations, common and private customs areas. *El Chaparral POE—Installing shades in pedestrian pathway. *Mesa de Otay Pre-clearance—Construction of exclusive roadway for certified company program.	Presidential Permit	$447,900	2014	Existing Passenger and Commercial POE	Puerta México-El Chaparral and Mesa de Otay	Aduanas

Table 4.55
Project Inventory List--Transportation Projects
California-Baja California 2014 BMP Update

Project No.	Jurisdiction	Project Name	Project Description	Phase	Project Costs (2010 USD)	Year Open to Traffic	POE Primarily Served	Agency
INTERCHANGE PROJECTS								
2070015	San Diego County	SR 125 / Lonestar Interchange	New interchange	Conceptual Planning	–	–	Otay Mesa East	Caltrans
RAIL PROJECTS								
3030001	Ensenada	Tecate-Ensenada Rail	This project spans two municipal jurisdictions, originating from the Municipality of Ensenada toward Tecate. Intended to build 115 km of railroad from the Puerto Fronterizo El Sauzal (Border Port El Sauzal) in Ensenada to the Border Crossing (POE) of Tecate, for commercial cargo movement.	Conceptual Planning	$178,246,100	2019	Tecate, BC	SIDUE
3070003	Tijuana	Intermodal Transit Center	An intermodal transit center building and a commercial development will take place in the Colonia Cuauhtémoc area. Transit center will provide service for pedestrian, buses, and taxis, and the commercial building will have a hotel and shopping area. Two buildings connected as a comprehensive project.	Conceptual Planning	$50,000,000	2016	Puerta México-El Chaparral	SIDUE
3070004	Tijuana	Tijuana Trolley	Upgrading and retrofitting of 20 km of railroad infrastructure on the railway named Vía Corta Tijuana-Tecate (Tijuana-Tecate short line), within the municipality's urban zone for the coexistence of cargo transportation and a trolley with capacity to transport up to 65,000 daily passengers. (Project limits are from Colonia Cuauhtémoc to El Florido.)	Conceptual Planning	$205,973,200	2015	Puerta México-El Chaparral	SIDUE
SHORT-TERM OPERATIONAL AND MINOR CAPITAL INVESTMENT PROJECTS								
6020002	San Diego County	Southbound border wait times detection system at Otay Mesa POE	Provide baseline data and more accurate and comprehensive wait times for existing crossings	Conceptual Planning	$900,000	2015	Otay Mesa Passenger POE	SANDAG

CHAPTER 5
FRAMEWORK FOR FUTURE TRANSPORTATION MODEL TO CONDUCT POE SENSITIVITY ANALYSIS

INTRODUCTION

This chapter describes a transportation modeling framework for use in the future to conduct port of entry (POE) sensitivity analyses for capital improvements in a system of POEs in a binational metropolitan area. It identifies the key performance metrics that would be used to evaluate the outcomes of infrastructure investments. In addition, it assesses whether the existing POE and transportation models can adequately generate those metrics, identifies gaps between existing transportation/POE models and the modeling capabilities envisioned in the framework, recommends strategies, and estimates the funding needed to move toward the goal of an integrated binational approach for these efforts.

The last section of the chapter provides background information about current transportation and POE modeling efforts in the California-Baja California border region. Several meetings were held in 2012 to help inform this Chapter. They include a focus group, an overview of specific modeling efforts in Mexico, and a peer exchange. Appendices A-8, A-9, and A-10 contain agendas and summaries from these meetings.

VISION FOR A BINATIONAL MODEL

Transportation modeling is an important component of any long-term planning process. It has been used in the California-Baja California region since the 1970s to inform decisions about the development and management of transportation systems, facilities, and policies. Historically, modeling and data collection efforts have been conducted by a number of agencies on both sides of the border for specific project needs. It is envisioned that the BMP effort will work toward a coordinated, integrated approach to developing tools to assess the impact and sensitivity of future POE and transportation infrastructure investments such as connecting roads, rail and transit services, and pedestrian and bicycle facilities.

While the technical components of transportation models are clearly critical, the importance of the quality of the data that are used as inputs to the models cannot be overstated. The availability of consistent, timely, and accurate local data, collected in a coordinated fashion by all participating agencies, is key to successfully developing and maintaining any model or set of models. Some examples of the types of data required for BMP modeling efforts are population and employment estimates, land use forecasts, volume of border crossings by mode (passenger vehicles, buses, pedestrians, trucks, rail cars), transit boardings, travel surveys, and vehicle counts.

The collection of these data, while expensive, should be specifically tailored to the framework of the model. Regularly collecting and maintaining the required data elements must be an ongoing and institutionalized process for the model to be calibrated, maintained, and used over the course of several planning cycles. Without this ongoing commitment, models quickly fall out of a calibrated state and it requires an enormous effort to bring the models back into working condition.

RECOMMENDATION

Recommended actions to move toward a truly binational, coordinated structure of transportation modeling and sensitivity analysis fall into two areas: (1) actions necessary to develop the models and common definitions of data elements required by the models (modeling framework), and (2) actions needed to ensure ongoing, binational collaboration during the development of the models and into the future (coordination).

Modeling Framework

Two options have been identified to develop binational travel demand modeling capabilities. Option 1 focuses on the long-term goal of developing two binational models—one for the Imperial–Mexicali metropolitan area and the other for the San Diego–Tijuana/Tecate metropolitan area. For Option 2, existing U.S. and Mexico travel demand models would be connected, or "stitched", using agreed-upon data and methods to forecast crossborder trips for each POE by mode of travel.

The modeling framework for Option 1 includes the following overarching tasks that would lead to two activity based binational models:

1. Develop a common land inventory system to maintain parcel level data in a common location for each binational metropolitan area.
2. Develop a small area forecast program for the Baja California study area (área geoestadística básica or AGEB).
3. Conduct a travel behavior survey for the Baja California study area.
4. Develop a transportation network for the Baja California study area.
5. Conduct estimation and calibration of the San Diego and Imperial Counties activity based models for the California-Baja California study area.

The modeling framework for Option 1 should build upon the best practices in the region and extend the geographic scope to include Northern Baja California and Southern California as one model for each binational metropolitan area. This initiative will require significant work to overcome data issues and develop a mutual understanding of transportation behavior in both countries. However, it would result in a comprehensive view of the border that is more in line with interdependencies between Southern California and Baja California. Also, it is important to note that while traditional transportation models are generally calibrated to replicate user's current travel behavior, the future binational border model should provide opportunities to model, via sensitivity analysis, changes in national policies impacting future cross border movements of people and goods.

The cost to develop the model for each binational metropolitan area would be comparable to the Activity Based Model (ABM) developed at both SANDAG and Southern California Association of Governments (SCAG) that have each cost more than $1 million USD. It should be noted that cost estimates do not include data development and acquisition costs. Additional needed travel surveys and other data may represent a substantial additional cost to model development.

The modeling framework for Option 2 includes two phases that would lead to the integration, or stitching, of existing travel demand models. Phase 1 includes the development of an econometric model to forecast the volume of border crossings (Category I performance measures). Phase 2 includes the development of modeling tools to forecast wait times by POE, roadway and transit performance, air quality, and economic performance (Categories II through V performance measures). Table 5.1 provides a list of performance measures by category.

Coordination

A closer and continuing collaboration of the technical staffs at SANDAG, SCAG, Metropolitan Planning Institute of Tijuana (IMPlan), Municipal Planning Institute of Mexicali (IMIP), California Department of Transportation (Caltrans), and Secretariat of Infrastructure and Urban Development of Baja California (SIDUE) is key to ensuring a coordinated modeling effort. The technical staffs of these organizations should meet on a regular basis to exchange ideas and data related to regional and transportation planning in the border region. Effectively modeling the border requires close coordination of the strong technical staffs of each of these organizations. A binational peer exchange program where staffs from each side of the border engage in modeling work at their counterpart agencies also is recommended to expand skills and develop an ongoing crossborder relationship.

An ongoing commitment to invest in staff and technical resources also is required for successful coordination. Simple steps like investing in passports, Secure Electronic Network for Travelers Rapid Inspection (SENTRI)[1] cards, and work visas for key technical staff should not be overlooked. These minor investments that will facilitate crossborder travel will help build binational expertise regarding travel behavior and land use issues.

ASSESSMENT OF KEY PERFORMANCE MEASURES

As capacity and operational transportation improvements are evaluated, it is important to develop a consistent set of performance metrics to evaluate the outcomes of the investments. The California-Baja California BMP Policy Advisory Committee (PAC) approved 20 performance measures to assess northbound and southbound travel. The performance measures are grouped into five categories as shown in Table 5.1.

[1] SENTRI is a land border-crossing program that provides expedited Customs and Border Protection processing for pre-approved low-risk travelers.

Table 5.1
Performance Measures by Category

Category I Crossings by POE: Performance Measures 1 - 7	Category II Wait Times by POE: Performance Measures 8 - 11	Category III Roadway and Transit Performance: Performance Measures 12 - 15	Category IV Air Quality: Performance Measures 16 - 17	Category V Economic Indicators Performance Measures 18 - 20
1. Person Crossings By Privately Owned Vehicle (POV) And Buses By POE	8. Wait Time by POV Regular, SENTRI, and Ready Lanes by POE	12. Level of Service of Federal and State Highways in Study Area	16. Community level air quality	18. Regional gross domestic product
2. Pedestrian Crossings By POE	9. Wait Time by Commercial Vehicle Regular and FAST / Empresa Certificada Lane by POE	13. Level of Service of Prime Arterials in Immediate Vicinity of POEs	17. Greenhouse Gas Emissions	19. Job Creation from Project Investment
3. POV Crossings by POE	10. Wait Time for Pedestrian Regular and Ready Lane by POE	14. Boardings and Alightings by Transit Station Near POEs		20. Average Wage of Jobs Created
4. Bus Crossings by POE	11. Queue Length by Travel Mode (Passenger, Commercial, Pedestrian)	15. Transit Level of Service at Station and Routes Serving POEs		
5. Commercial Truck Crossings by POE				
6. Commercial Twenty-Foot Equivalent Unit Crossings by POE				
7. Value of Commodity Crossings by POE				

The performance measures within each category are described below, including a definition of the measure, the current data availability, current forecasting methods, planned enhancements, gaps, and recommendations for future modeling and data collection efforts.

A summary of recommendations for addressing gaps and deficiencies as well as the data points required for the future model framework for all measures in each of the five categories is provided at the end of each section. An estimated cost of these efforts also is included.

I. CROSSINGS BY POE (PERFORMANCE MEASURES 1-7)

1. Person Crossings by Privately Owned Vehicle (POV) and Bus by POE

Definition

The total number of persons crossing the border during a given time period using a vehicle, excluding commercial (freight) crossings. For example, a loaded passenger bus may have 40 people crossing for each vehicle crossing. A single occupant automobile would have one person crossing for each vehicle crossing.

Current Data Availability

The U.S. Bureau of Transportation Statistics (BTS) Border crossing/entry data provides summary statistics for northbound crossings at the U.S.-Mexico border at the port level. Data are available for passenger crossings in POVs, passenger crossings on buses, and pedestrians entering the U.S. Border crossing data are collected at border ports by U.S. Customs and Border Protection (CBP). CBP does not collect comparable data on southbound crossings.[2] BTS provides a website where northbound person crossings can be obtained by month dating back to 1995.

The United States and Mexico do not report southbound person crossings at the U.S.-Mexico border at the port level. Aduanas does not report southbound person crossing information on a regular basis.

Current Forecasting Methods

No government entity currently projects total person crossings by POV and bus by POE on an ongoing basis. The current transportation models employed in the United States by SANDAG, SCAG, and Caltrans are primarily focused on forecasting infrastructure needs for vehicle-based trips and thus project only vehicle crossings and transit boardings near the POE.

Planned Enhancements

The SANDAG ABM provides weekday person crossings for the entire San Diego-Tijuana/Tecate border region. The ABM allocates total person crossings to a mode, either automobile or pedestrian, and occupancy if the mode is automobile. It also allocates the total trips to each POE in San Diego County based on proximity to the POE, wait times, trip purpose, and other factors. The ABM identifies SENTRI and non-SENTRI crossings for the automobile mode. However, Ready Lanes are not included. This modeling framework is based on observed preferences revealed in the 2010 Cross-Border Travel Behavior Survey conducted by SANDAG. Person crossing counts and SENTRI usage for the entire San Diego-Tijuana/Tecate border system are exogenous variables to the ABM.

[2] Text extracted generally from Bureau of Transportation Statistics website.
<http://www.bts.gov/programs/international/transborder/TBDR_BC/TBDR_BC_Index.html>

SCAG is developing an ABM that will have the capability of forecasting crossborder trips by mode, trip purpose, and time period. The SCAG Cross-Border Survey and the California Household Travel Survey are the primary data sources used in the development of the crossborder element of the SCAG ABM. In addition, the SCAG Heavy-Duty Truck Model will be updated using survey results obtained from the SCAG Goods Movement Border Crossing Survey. SCAG also plans to develop a new dynamic traffic assignment component, which will help to produce more reliable traffic forecasts in the vicinity of border crossings.[3]

SCAG, in cooperation with Imperial County Transportation Commission (ICTC) and Caltrans, also has developed and maintains the Imperial County Model. This trip-based model has a crossborder component developed using travel data gathered in the SCAG Crossborder Survey (June 2007). The Imperial County Model maintains a macro-level zone system in Mexicali to support crossborder trip estimation. Existing year trip tables for autos and trucks were built based on the Cross-Border Survey. Future year trip tables were estimated based on expected auto/truck traffic growth at each of the three border crossings and the changes in socioeconomic variables.

Gap Analysis

Forecasts of total person crossings have been done for specific projects in both Mexico and the United States, but no ongoing framework exists to forecast person crossings (northbound or southbound) for any time period identified above.

The United States and Mexico do not report southbound person crossings at the U.S.-Mexico border at the port level.

Recommendations

Forecasts of person crossings by POE can vary widely in complexity and long-term accuracy. The easiest approach is a linear extrapolation, and it provides a reasonable projection of border crossings. However, linear extrapolation provides little ability to test sensitivity to certain policy changes, infrastructure investment decisions, or future land use developments.

This report recommends a more complex econometric model for forecasting future person crossings based on demographic, economic, and policy indicators and data from both sides of the border. This would allow policymakers and researchers to test the impact of policy choices on border crossings and infrastructure. In the short term, this common forecast could be used in the SANDAG and SCAG regional travel models, and in the long term, this forecast could be used as an input into an integrated binational travel model.

Any border crossing demand model needs to include robust feedback with total POE capacity to properly address the impacts of significant border wait times and presumed latent demand that currently exists.

[3] SANDAG is implementing a dynamic traffic assignment model that will provide increased sensitivity of the travel model system to congestion and delay, as well as address several key policy needs, such as managed lanes and corridor management and operational strategies. Dynamic traffic assignment is a disaggregated simulation assignment process using detailed trip, time, and network detail that replaces aggregate static equilibrium assignment methods that have been used for several decades.

Redefining time measurements to provide hourly time of day crossings as opposed to peak hour or period to more fully understand queuing and residual queue delay throughout the day also is recommended. Hourly distributions in combination with a dynamic traffic assignment would allow for a better understanding of time shifting by border crossers.

Finally, it should not be assumed that southbound flows are symmetrical to northbound flows. Border crossers choose their crossing location, mode, and time based on a number of factors that are not symmetrical by direction. For example, a resident in western Tijuana who drives to San Diego may choose to cross the border northbound at Otay Mesa-Mesa de Otay to avoid delays at San Ysidro-Puerta México, but cross southbound at San Ysidro- Puerta México because of the relatively small southbound delay.

Additional data (daily and hourly demand) is needed from Aduanas on southbound flows to properly calibrate a southbound person crossing forecast.

2. Pedestrian Crossings by POE

Definition

The total number of people walking across the border during the given time period. This measurement also includes the total number of bicyclists crossing the border who currently are required to dismount and walk through the border inspection facility.

Current Data Availability

BTS border crossing/entry data provides summary statistics for northbound pedestrian crossings at the U.S.-Mexico border at the port level. Border crossing data are collected at border ports by CBP. The data reflect the number of pedestrians entering the United States CBP does not collect comparable data on outbound crossings.[4] BTS provides a website where northbound crossings can be obtained by month, dating back to 1995.

The United States and Mexico do not report southbound pedestrian crossings at the U.S.-Mexico border at the port level.

Current Forecasting Methods

Total pedestrian crossings by POE are not currently available from any government entity on an ongoing basis. The existing transportation models used in the United States by SANDAG, SCAG, and Caltrans focus on providing appropriate infrastructure for vehicle-based trips. Therefore the U.S. transportation models focus on projecting vehicle crossings and transit boardings near the POE.

In the current SANDAG model, increased pedestrian traffic is accounted for in the transit boardings at stations near the POE. While this technique is adequate for forecasting future transit demand near the POE, it is not an appropriate proxy for total pedestrian traffic at the POE because not all pedestrians crossing the border into the United States use transit to reach their destinations.

[4] Text from Bureau of Transportation Statistics website.
<http://www.bts.gov/programs/international/transborder/TBDR_BC/TBDR_BC_Index.html>

Planned Enhancements

In the SANDAG ABM, pedestrian crossings are provided for the entire San Diego-Tijuana/Tecate border system. It is important to highlight that the number of pedestrian crossings is still an exogenous variable used as an input, and it is not forecasted by the SANDAG ABM. It also is important to note that the SANDAG ABM does not identify pedestrian crossing by SENTRI and non-SENTRI lanes. The model allocates total person crossings to a mode (auto or pedestrian). The ABM also allocates the total trips to each POE in San Diego County based on proximity to the POE, wait times, trip purpose, and other factors. This robust modeling framework is based on observed preferences revealed in the 2010 Cross-Border Travel Behavior Survey conducted by SANDAG.

The new SCAG ABM will have the capability of forecasting crossborder trips by mode, trip purpose, and time period for the Calexico-Mexicali, Calexico East-Mexicali II, and the Andrade-Los Algodones POEs. SCAG's Cross-Border Survey and the California Household Travel Survey are the primary data sources used in the development of the crossborder element of the ABM. Pedestrian border crossings will be forecasted outside of the ABM modeling process. The resulting crossborder pedestrian trips will be integrated into the model to produce estimates of non-motorized travel and assigned to other travel modes within Imperial County, such as transit trips, which will then be loaded onto the transit network.

Gap Analysis

No ongoing framework exists to forecast pedestrian travel for any time period.

Current northbound forecasts are linear extrapolations of historic trends and do not provide any real degree of sensitivity to economic, demographic, infrastructure, and policy changes.

The United States and Mexico do not report southbound pedestrian crossings at the U.S.-Mexico border at the port level.

Recommendations

Linear extrapolation provides a reasonable projection of border crossings. However, that method provides little ability to test sensitivity to certain policy, infrastructure investment decisions, or future land use developments.

The previously-proposed complex econometric model would forecast future person crossings based on demographic, economic, and policy indicators and data from both sides of the border, providing policymakers and researchers the ability to test the impact of policy choices on border crossings and infrastructure.

Future pedestrian crossings resulting from this analysis would then be assigned to a POE based on socioeconomic factors, trip purpose, border delays, and other factors. For the San Diego-Tijuana/Tecate POEs, this is how the SANDAG ABM forecasts future pedestrian crossings. Expanding this framework to the SCAG ABM or to an Imperial Valley model derived from the SCAG ABM for the eastern POEs is recommended.

Any border crossing demand model needs to include robust feedback with total POE capacity to properly address the impacts of significant border wait times and presumed latent demand that currently exists.

For southbound data collection, it is recommended that an entity within the United States place pedestrian counters near the existing ports of entry to provide an ongoing source of information about the total number of pedestrians entering Mexico from the United States.

3. POV Crossings by POE

Definition

The total number of non-commercial vehicles crossing the border during the given time period. Non-commercial vehicles may include passenger automobiles, light-duty trucks, motorcycles, and motor homes. In essence, this metric includes any vehicle that does not cross via a commercial POE or bus inspection facility.

Current Data Availability

BTS Border Crossing/Entry Data provides summary statistics for northbound POV crossings at the U.S.-Mexico international border at the port level. Data are available for privately-owned vehicles and their passengers. Border crossing data are collected at border ports by CBP and reflect the number of vehicles and their passengers entering the United States CBP does not collect comparable data on outbound crossings.[5] BTS provides a website where northbound personal vehicle crossings can be obtained by month dating back to 1995.

In addition to United States collection efforts, the Mexico Secretariat of Communications and Transportation (SCT) collects northbound traffic counts and flows at the POEs on an as needed basis for project work. These data are used by SIDUE and local planning entities in the municipalities along the California-Baja California border.

The United States and Mexico do not report southbound crossings at the U.S.-Mexico border at the port level. However, Aduanas does collect it on a regular basis and has provided southbound vehicle crossing information in the past for border transportation and economic development studies.

Current Forecasting Methods

SANDAG, Caltrans, and SCAG all use varying levels of sophistication to project total POV crossings into the future. SANDAG, SCAG and Caltrans use a near-linear extrapolation technique to estimate future POV crossings. In the SANDAG four-step travel demand model, future year POV crossings represent average weekday crossings and are provided as an exogenous variable for each POE (San Ysidro-Puerta México, Otay Mesa-Mesa de Otay, planned Otay Mesa East-Mesa de Otay II, Tecate-Tecate, and potential Jacumba-Jacumé). Average peak period and average peak hour data can be derived from average weekday crossings.

[5] Text extracted directly from Bureau of Transportation Statistics website.
<http://www.bts.gov/programs/international/transborder/TBDR_BC/TBDR_BC_Index.html>

Future year POV crossings for the Calexico-Mexicali, Calexico East-Mexicali II, and Andrade-Algodones POEs are estimated by SCAG. SCAG uses a similar process to SANDAG to estimate future demand entering the SCAG region from Mexico.

Caltrans, as a user of the SANDAG and SCAG models, employs the same techniques as those organizations. SCT forecasts northbound passenger vehicle traffic for five-year periods on an as-needed basis for project studies.

Planned Enhancements

In the SANDAG ABM, POV crossings are provided for the entire San Diego-Tijuana/Tecate border system. Total POV crossings are an exogenous variable to the ABM. As described above, the ABM allocates total person crossings to a mode (auto or pedestrian), and occupancy when the mode is auto. This step estimates the number of POV crossings at each POE. The model also allocates the total trips to each POE in San Diego County based on proximity to the POE, wait times, trip purpose, and other factors. The ABM identifies SENTRI and non-SENTRI crossings for the auto mode. This robust modeling framework is based on observed preferences revealed in a 2010 Cross-Border Travel Behavior Survey conducted by SANDAG. It is important to highlight that total POV crossings is an exogenous variable used as an input, and it is not forecasted by the SANDAG ABM.

The SCAG ABM will have the capability of forecasting crossborder trips by mode, trip purpose, and time period. The model will forecast travel demand for the Calexico-Mexicali, Calexico East-Mexicali II, and the Andrade-Los Algodones POEs. SCAG's Cross-Border Survey and the California Household Travel Survey will be the primary data sources used in the development of the crossborder auto element of the model. SCAG's Cross-Border Survey provided detailed origin/destination (O/D) data, demographic data, trip type, and travel characteristics for each of the three Imperial Valley-Mexicali crossings by direction and time of day. The auto portion of this survey is comprehensive and will provide excellent data to support the development of the ABM crossborder component. Border crossing trips by auto will be forecasted outside of the ABM modeling process and integrated into the ABM, ultimately being assigned to the network using a dynamic traffic assignment.

Gap Analysis

No ongoing framework exists to forecast southbound vehicles for any time period.

Most current northbound forecasts are linear extrapolations of historic trends and do not provide a great deal of sensitivity to economic, demographic, infrastructure, and policy changes.

Recommendations

Similar to person POV/bus crossings and pedestrian crossings, forecasts of POV crossings by POE currently are prepared using linear extrapolation. However, linear extrapolation provides little ability to test sensitivity to certain policy, infrastructure investment decisions, or future land use developments.

This report recommends a more complex econometric model for forecasting future POV crossing based on demographic, economic, and policy indicators and data from both sides of the border, providing policymakers and researchers the ability to test the impact of policy choices on border crossings and infrastructure.

Future POV crossings can then be assigned to a POE based on socioeconomic factors, trip purpose, border crossing delays, and other factors. For the San Diego-Tijuana/Tecate POEs, this is how the SANDAG ABM forecasts passenger vehicle crossings. This report recommends expanding this framework to the SCAG ABM or to an Imperial Valley model derived from the SCAG ABM for the eastern POEs.

Any border crossing demand model needs to include a robust feedback with total POE capacity to properly address the impacts of significant border wait times and presumed northbound latent demand that currently exists.

Finally, as previously discussed, it should not be assumed that southbound flows are symmetrical to northbound flows. Border crossers choose their crossing location, mode and time based on a number of factors that are not symmetrical by direction. Additional data is needed from Aduanas on southbound flows to properly calibrate a southbound vehicle crossing forecast.

For southbound data collection, it is recommended that Caltrans expand the Highway Performance Measurement System (PeMS) near the existing POEs to provide an ongoing source of information about the total number of passenger vehicles entering Mexico from the United States. Caltrans already has some monitoring on the urban freeways (Interstate (I) 5, I-805, and State Route (SR) 905); however, the sensors are too far from the POE to provide accurate information on border traffic flows. Caltrans has no PeMS detection on the rural highways (SR 188, SR 111, SR 7, and SR 186) near the Tecate, Calexico, Calexico East, and Andrade border stations. PeMS detection would need to be expanded onto the rural highways to address the operational and forecasting needs of the border.

4. Bus Crossings by POE

Definition

The total number of passenger buses or coaches crossing the border during the given time period. This measurement includes short, medium and long-distance charter coaches.

Current Data Availability

BTS Border crossing/entry data provides summary statistics for northbound bus crossings at the U.S.-Mexico border at the port level. Border crossing data are collected at border ports by CBP and reflect the number of buses and their passengers entering the United States CBP does not collect comparable data on outbound crossings.[6] BTS provides a website where northbound bus crossings can be obtained by month, dating back to 1995. The United States and Mexico do not report southbound bus crossings at the U.S.-Mexico border.

Current Forecasting Methods

No explicit forecasting of commercial coaches is known to exist.

[6] Text from Bureau of Transportation Statistics website.
<http://www.bts.gov/programs/international/transborder/TBDR_BC/TBDR_BC_Index.html>

Planned Enhancements

Unlike pedestrian crossings, the existing modeling systems have little ability to project this type of crossing into the future. While coach traffic at the border is important for understanding wait time and queues, commercial coach service only represents a small share of traffic in the U.S. regional models, and it is not explicitly modeled. An additional mode would need to be added to the regional models to account for this type of traffic at the border.

Gap Analysis

No explicit forecasting of commercial coaches is known to exist.

Recommendations

Since the amount of commercial coach service represents only a small share of total crossings in comparison to total crossings, future bus crossings should be derived from the econometric forecast of total person crossings explained earlier and set aside as an input for BorderWizard™, and SimFronteras. BorderWizard™ is a U.S. model that simulates U.S. federal inspection activities, including customs, immigration, freight, and security procedures at any land border station to determine infrastructure, facility, and operational needs. SimFronteras is a similar model developed by SCT that assesses the operational efficiency of land border stations in Mexico through simulation of commercial vehicle, passenger vehicle, bus, and pedestrian traffic. BorderWizard™ and SimFronteras could use the data as input and forecast future year queue lengths and wait times which could then be used in regional models on either side of the border.

5. Commercial Truck Crossings by POE

Definition

The total number of commercial trucks crossing the border during the given time period. This measurement includes both loaded and empty commercial trucks that move through the international commercial vehicle crossings (Otay Mesa-Mesa de Otay, Tecate-Tecate, and Calexico East-Mexicali II). Commercial truck crossings for planned or future POEs also could be forecasted (planned Otay Mesa East-Mesa de Otay II and potential Jacumba-Jacumé).

Current Data Availability

BTS Border crossing/entry data provides summary statistics for northbound crossings at the U.S.-Mexico border at the port level. Data are available for trucks and containers (separated by loaded and empty). Border crossing data are collected by CBP. The data reflect the number of trucks and containers entering the U.S. CBP does not collect comparable data on outbound crossings.[7] BTS provides a website where northbound truck crossings can be obtained by month, dating back to 1995.

[7] Text from Bureau of Transportation Statistics website.
<http://www.bts.gov/programs/international/transborder/TBDR_BC/TBDR_BC_Index.html>

The U.S. and Mexico do not report southbound truck crossings at the U.S.-Mexico border at the port level. However, Aduanas has provided southbound commercial truck crossing information in the past for border transportation and economic development studies.

Current Forecasting Methods

SANDAG and SCAG both have truck models that use exogenous demand variables for truck trips arriving into and departing out of the respective regions via Mexico. The exogenous variable is obtained from the U.S. Federal Highway Administration (FHWA) Freight Analysis Framework 2 (FAF2).

In 2012, SCT initiated the development of a macro (nationwide) truck and freight model capable of predicting truck flows at the port system level (aggregated to all San Diego County-Tijuana/Tecate POEs and all Imperial County-Mexicali POEs).

Planned Enhancements

SANDAG and Caltrans are developing an econometrically-driven commercial vehicle demand model as part of the SR 11 and planned Otay Mesa East POE Traffic and Revenue Study. This will provide northbound and southbound commercial vehicle crossing forecasts for Otay Mesa-Mesa de Otay and Otay Mesa East-Mesa de Otay II.

SCAG will be performing a comprehensive update to the Heavy-Duty Truck Model. In preparation for this model improvement, SCAG, in cooperation with ICTC, conducted the Goods Movement Cross-Border Study. The primary purpose of the study was to gather and synthesize information on goods movement across the U.S.-Mexico border in Imperial County to assist SCAG in its assessment of current infrastructure needs and tool building, and to support ICTC's and SCAG's planning programs. Origin-destination (O/D) surveys and measurements of wait times at the border were collected at the two main POEs—Calexico West-Mexicali and Calexico East-Mexicali II. In addition, truck movements through the crossing were carefully tracked to ensure transfer points were properly located and that the supply chain was accurately represented.

Data from the U.S. Department of Transportation show 98 percent of the total value of goods traded with Mexico through POEs located in Imperial-Mexicali Valley is transported by truck. As such, the most important supply chains in the study area rely heavily on this mode of transportation. Given the future markets for goods moving though the crossing, SCAG does not expect to see a large increase in the share of goods moving through the Imperial County-Mexicali crossings via rail.

Gap Analysis

No ongoing framework exists to forecast southbound trucks for any time period.

Most current northbound forecasts are linear extrapolations of historic trends (e.g., FAF, Freight Gateway Study) and do not provide much sensitivity to economic, demographic, infrastructure, and policy changes at the POE level.

Recommendations

This report recommends deriving commercial truck crossings from a borderwide econometric forecast of freight commodity crossings derived from FAF2 and other similar data sources. This regional econometric forecast should be consistent with respected national trade forecasts between the United States and Mexico. In many ways, this expanded forecast would build upon the SANDAG San Diego and Imperial Valley Gateway Study completed in 2010. The results of a more complex model would provide policymakers and researchers the ability to test the impact of policy choices on border crossings and infrastructure.

Any commercial border crossing demand model needs to include a robust feedback with total POE capacity to properly address the impacts of significant border wait times and presumed economic benefit of reducing commercial congestion at the border.

For southbound data collection, it is recommended that Caltrans expand the PeMS and Weight in Motion (WIM) detection near the existing POEs to provide an ongoing source of information about the total number of trucks, empty and loaded, entering Mexico from the United States. Caltrans already has some monitoring on the urban freeways; however, the sensors are too far from the POE to provide precise information on border traffic flows and splits between commercial and non-commercial traffic. Caltrans has limited PeMS and WIM detection on the rural highways near the Tecate and Calexico East border stations.

6. Commercial Twenty-Foot Equivalent Unit Crossings by POE

Definition

An approximation of the total number of intermodal containers projected to cross at the commercial border crossings in a given time period. Twenty-foot equivalent unit (TEU) is an approximation of the capacity of a standard twenty-foot intermodal container. Since most goods are shipped in standard intermodal containers, TEU is a good proxy for understanding the total volume of goods crossing at a POE and comparing a land POE to a seaport or airport.

Current Data Availability

Historic TEU information is not available from any source for either direction.

Current Forecasting Methods

No ongoing framework exists to forecast TEUs at the U.S. – Mexico Land POEs for any time period.

Planned Enhancements

In 2012, SCT initiated the development of a macro (nationwide) truck and freight model capable of predicting truck flows at the port system level (e.g., aggregated to all San Diego-Tijuana/Tecate POEs and all Imperial County-Mexicali POEs).

SANDAG and Caltrans are developing an econometrically driven commercial vehicle demand model as part of the SR 11 and planned Otay Mesa East POE Traffic and Revenue (T&R) Study. This will provide northbound and southbound commercial vehicle crossing forecasts for Otay Mesa-Mesa de Otay and Otay Mesa East-Mesa de Otay II.

Gap Analysis

No ongoing framework exists to forecast TEUs at the U.S. – Mexico Land POEs for any time period.

Recommendations

This report recommends deriving TEU crossings from a borderwide econometric forecast of freight commodity crossings consistent with the commercial truck crossings explained above. Deriving TEUs from a freight flow forecast would require a procedure to convert total freight flows into a TEU measure based on commodity type and monetary value. This regional econometric forecast should be consistent with respected national trade forecasts between the United States and Mexico. The results of a more complex model would provide policymakers and researchers the ability to test the impact of policy choices on border crossings and infrastructure.

7. Value of Commodity Crossings by POE

Definition

Dollar value of freight that crosses the border by truck. Import and export value provide a good indication of how a specific POE compares to other POEs beyond the total number of vehicle crossings and TEU.

Current Data Availability

Since 1993, BTS has contracted with the Census Bureau to provide previously unpublished transportation data by mode for U.S. import and export trade with Canada and Mexico. This dataset is referred to as the North American TransBorder Freight Data, and begins with data for April 1993. Under the contract, the Census Bureau processes and summarizes the data, and then provides two sets of data tables to BTS. One provides detailed transportation flows while the other is commodity based without as much transportation detail. The data consist of import and export value of various commodities identified by the specific POE and mode of transportation. The BTS statistics are available by month or annual average. [8] One of the branches of Aduanas, Administración Central de Competencias y Modernización Aduanera (ACCMA), produces information on the value of imports and exports (Balanza Comercial). Annual average information is available by special request to Aduanas.

Current Forecasting Methods

SCT has just completed a nationwide truck and freight model capable of predicting commodity values at the port system level (e.g., aggregated to all San Diego-Tijuana/Tecate POEs and all Imperial County-Mexicali POEs).

Planned Enhancements

SANDAG and SCAG are currently updating the San Diego and Imperial Valley Gateway Study. The update is expected to be completed in 2014. Modeling processes are being refined to incorporate commodity value flows for international trade.

[8] U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics. TransBorder Freight Data Program Documentation, accessed at http://www.bts.gov/programs/international/transborder/PDF/TransBorderFreightDataProgram.pdf , on June 23, 2012.

Gap Analysis

Periodic forecasts of the value of commodities crossing at the California-Baja California POEs have been conducted. However, no ongoing forecasting framework exists.

Recommendations

Updating models to derive the value of commodity crossings from a borderwide econometric forecast of freight commodity crossings consistent with commercial truck crossings is recommended. This regional econometric forecast should be consistent with respected national trade forecasts between the United States and Mexico. A more complex model would provide policymakers and researchers the ability to test the impact of policy choices on border crossings and infrastructure.

Summary Recommendations and Estimated Cost, Category I: Crossings by POE (Performance Measures 1 – 7)

Building on the extensive work of the SANDAG SR 11/Otay Mesa East Traffic and Revenue (T&R) Study and the companion report from SCT would greatly enhance information related to crossings by POE. For the T&R study, an econometric model is being developed that will forecast passenger vehicles and commercial traffic at the San Diego/Baja California border, and the SANDAG ABM crossborder module will identify the mode and location of crossing. This econometric and diversion model would need to be extended to include Imperial/Baja California crossings as well. The diversion model will also need to be expanded to include more sensitivity to pedestrians. Once the foundation is established, one-month full time equivalent (FTE) staff position at each of the four regional planning agencies (SANDAG, SCAG, IMPlan, and IMIP) would be needed to update the model framework and data on an annual basis.

As shown in Table 5.2, fairly detailed information in terms of data points would be required on an ongoing basis for five of the seven measures in this category.

Table 5.2
Data Points Required for Performance Measures 1-7

	I. Crossings by POE	Weekday	Peak Period	Peak Hour	Peak Hour (Seasonal)	Weekend	Annual
1	Person Crossings by POV and Bus Crossings by POE	X	X	X	X	X	
2	Pedestrian Crossings by POE	X	X	X	X	X	
3	POV Crossings by POE	X	X	X	X	X	
4	Bus Crossings by POE	X	X	X	X	X	
5	Commercial Truck Crossings by POE	X	X	X	X	X	
6	Commercial 20-foot Equivalent Unit Crossings by POE						X
7	Value of Commodity Crossings by POE						X

Estimated Cost: Approximately $250,000 initial investment, $35,000 annually (2013 USD)

II. WAIT TIMES BY POE (PERFORMANCE MEASURES 8-11)

8. Wait Time by Privately Owned Vehicles by POE (Regular, SENTRI, and Ready Lanes)

Definition

The wait time from the end of the queue to primary inspection. In the northbound direction, this measurement will indicate the wait time by POV by POE by regular, SENTRI, and Ready[9] lanes. In the southbound direction, this measurement will indicate the wait time by southbound passenger vehicles by POE by regular lanes. (The SENTRI and Ready Lane equivalent programs do not exist for entry into Mexico.)

Current Data Availability

Northbound POV border crossing wait times at POEs along the U.S.-Mexico border are gathered and reported by CBP. CBP posts current border wait times at all POEs for all modes of transportation on its website. Border wait time information includes wait times by hour, number of inspection lanes open, and capacity in terms of maximum number of inspection lanes. The information also includes border wait times segregated by different CBP administered programs, such as SENTRI and Ready Lanes.

Historical wait time information (October 2011 to current) is available from SANDAG for northbound crossing times at POEs in the California-Baja California region. SANDAG regularly scans the CBP reported wait time information from the CBP website and stores it in a database for future needs.

Southbound POV border crossing wait times at POEs along the U.S.-Mexico border are not collected. However, approximate wait times could be derived for Otay Mesa-Mesa de Otay and San Ysidro-Puerta México from the Caltrans Highway PeMS. The PeMS system provides information on traffic speed and congestion on Caltrans facilities on a minute-by-minute basis. Historical information is available from 2001. PeMS data are not currently available for the rural highways near the POEs in San Diego and Imperial counties.

Current Forecasting Methods

Currently, the SANDAG ABM cannot forecast POE wait times. The General Services Administration (GSA) BorderWizard™ model can provide estimated northbound throughput of a POE based on POE configuration and anticipated inspection processing time. Mexico can provide estimated southbound throughput using SimFronteras. This information can be combined with long range forecasts of POE demand and wait times could be derived based on traffic queuing theory or more complex microsimulation modeling.

[9] Ready lanes are dedicated primary vehicle lanes for travelers entering the U.S. at land border POEs. Travelers who obtain and travel with a Western Hemisphere Travel Initiative (WHTI) compliant Radio Frequency Identification (RFID) enabled travel document may receive the benefits of utilizing a Ready Lane to expedite the inspection process while crossing the border.

Planned Enhancements

Since the SR 11/Otay Mesa East POE project will be developed largely based on users' willingness to pay for a more reliable and shorter wait, Caltrans and SANDAG are developing a methodology that will be integrated into the regional model.

Gap Analysis

BorderWizard™ and SimFronteras project border wait times and queue lengths, but these tools are not integrated into the regional model systems used by Metropolitan Planning Organizations (MPOs) in California or planning agencies in Mexico.

Recommendations

Based on the econometric and border diversion model recommended in many of the "Crossing by POE" indicators, estimated wait times can be derived using modeled BorderWizard™ throughput or based on sketch throughput configuration of the POE. General queuing theory (e.g., Little's Law [10]) uses service rate (inspections per hour) and arrival rate (people/cars entering the queue per hour) of the POE. General queuing theory works well until the POE reaches saturation (more arrivals than departures). Once the POE exceeds saturation, or more complex sensitivity such as engineering related impacts (e.g., road alignment, turn angles) is needed, focused microsimulation models would need to be developed to fully understand the queuing impacts of these decisions.

For southbound data collection, it is recommended that Caltrans expand the Highway PeMS near the existing POEs to provide an ongoing source of information about the total number of POVs entering Mexico from the United States and amount of time spent in the queue. Caltrans already conducts some monitoring on the urban freeways (I-5, I-805, and SR 905); however, the sensors are too far from the POE to provide concise information on border traffic flows or wait times. Caltrans has limited PeMS detection on the rural highways (SR 188, SR 111, SR 7, and SR 186) near the Tecate, Calexico, Calexico East, and Andrade border stations.

9. Wait Time by Commercial Vehicle by POE (Regular and FAST/Empresa Certificada Lanes)

Definition

Commercial vehicle wait time is defined as the time from the end of the queue to primary inspection. For northbound traffic, this measurement indicates the wait time of commercial vehicles by POE in regular lanes and Fast and Secure Trade Program (FAST)[11] lanes. In the southbound direction, the measurement indicates the wait time of southbound commercial vehicles by POE in regular and Empresa Certificada lanes.

[10] "Little's Law says that, under steady state conditions, the average number of items in a queuing system equals the average rate at which items arrive multiplied by the average time that an item spends in the system." Little, John D.C. and Stephen C. Graves, Massachusetts Institute of Technology. From: http://web.mit.edu/sgraves/www/papers/Little's%20Law-Published.pdf

[11] FAST is a land border crossing commercial program offering expedited clearance to pre-approved carriers and importers.

Current Data Availability

Northbound commercial vehicle border crossing wait times at POEs along the U.S.-Mexico border are collected and reported by CBP. CBP posts current border wait times at all POEs for all modes of transportation on its public website. Border wait time information includes wait times by hour, number of inspection lanes open, and capacity in terms of maximum number of inspection lanes. The information also includes border wait times segregated by different CBP-administered programs such as FAST.

Historical wait time information (October 2011 to current) is available from SANDAG for northbound crossing times at POEs in the California-Baja California region. SANDAG regularly scans the CBP reported wait time information from the CBP Website and stores it in a database for future needs.

Southbound commercial border crossing wait times at POEs along the U.S.-Mexico border are not collected.

Current Forecasting Methods

Currently, the SANDAG ABM cannot forecast POE wait times. The GSA BorderWizard™ model can provide estimated northbound throughput of a POE based on POE configuration and anticipated inspection processing time. Mexico can provide estimated southbound throughput using SimFronteras. This information can be combined with long range forecasts of POE demand and wait times could be derived based on traffic queuing theory or more complex microsimulation modeling.

Planned Enhancements

The development of the SR 11/Otay Mesa East Port of Entry will be largely based on users willingness to pay for a more reliable and shorter wait. Caltrans and SANDAG are developing a methodology that will be integrated into the regional model.

Gap Analysis

BorderWizard™ and SimFronteras project border wait times and queue lengths, but these tools are not integrated into the regional model systems used by Metropolitan Planning Organizations (MPOs) in California or planning agencies in Mexico.

Recommendations

Using the econometric and border diversion model recommended in many of the Crossing by POE indicators, estimated wait times can be derived either from BorderWizard™/SimFronteras or based on the commercial throughput configuration of the POE. For example, using Little's Law average wait times can be derived with the service rate (inspections per hour) and arrival rate (people/cars entering the queue per hour) of the POE. This analysis can be further broken down by facility type such as SENTRI, Ready, or regular lanes.

In cases where more detailed information about how engineering-related impacts (e.g., road alignment, turn radius) affect queues is needed, focused microsimulation models would need to be developed to fully understand the queuing impacts of these decisions.

For southbound data collection, expanding Caltrans' Highway PeMS near existing POEs to provide an ongoing source of information about the total number of commercial vehicles entering Mexico from the United States and amount of time spent in the queue is recommended. Caltrans conducts some monitoring on the urban freeways, however, the sensors are too far from the POE to provide precise information on border traffic flows or wait times. Caltrans has no PeMS detection on the rural highways near the Tecate and Calexico East border stations. For commercial vehicles, some monitoring may need to be added on local arterials used to approach the commercial inspection facilities.

10. Wait Time for Pedestrians by POE (Regular, SENTRI, and Ready Lanes)

Definition

Pedestrian wait time is defined as the time from the end of the queue to primary inspection. In the northbound direction, this measurement indicates the wait time for pedestrians by regular, SENTRI, and Ready lanes.

In the southbound direction, this measurement indicates the wait time for southbound pedestrians by POE by regular lanes.

Current Data Availability

Northbound pedestrian border crossing wait times at POEs along the U.S.-Mexico border are collected and reported by CBP. CBP posts current border wait times at all POEs for all modes of transportation on its public website. Border wait time information includes wait times by hour, number of inspection lanes open, and capacity in terms of maximum number of inspection lanes. The information also includes border wait times for regular and Ready Lanes. Currently it does not include data for SENTRI lanes.

Historical wait times information (October 2011 to current) is available from SANDAG for northbound crossing times at POEs in the California-Baja California region. On a regular basis, SANDAG scans the CBP reported wait time information from the CBP website and stores it in a database for future needs.

Southbound pedestrian border crossing wait times at POEs along the U.S.-Mexico border are not collected.

Current Forecasting Methods

Currently, the SANDAG ABM cannot forecast POE wait times. The GSA BorderWizard™ model can provide estimated northbound throughput of a POE based on POE configuration, number of crossings by mode, and anticipated inspection processing time. Mexico can provide estimated southbound throughput using SimFronteras. This information can be combined with long range forecasts of POE demand and wait times could be derived based on queuing theory or more complex microsimulation modeling.

Planned Enhancements

There are no pedestrian crossing or wait time model enhancements under development.

Gap Analysis

BorderWizard™ and SimFronteras project border wait times and queue lengths, but these tools are not integrated into the regional model systems used by MPOs in California or planning agencies in Mexico.

Recommendations

Using the econometric and border diversion model recommended in many of the Crossing by POE items, estimated wait times could be derived either from BorderWizard™/SimFronteras or based on the pedestrian throughput configuration of the POE. For example, using Little's Law average wait times can be derived with the service rate (inspections per hour) and arrival rate (people/cars entering the queue per hour) of the POE. This analysis can be further analyzed by facility type such as SENTRI or general lanes.

In cases where more detailed information about engineering related impacts (e.g., sidewalk alignment) affecting queues is needed, focused microsimulation models would need to be developed to fully understand the queuing impacts of these decisions.

For southbound data collection, it is recommended that an entity within the United States place pedestrian counters near existing POEs to provide an ongoing source of information about the total number of pedestrians entering Mexico from the U.S.

11. Queue Length by Travel Mode (Passenger Vehicle, Commercial, and Pedestrian)

Definition

The length of queues at the POE during the peak period and peak hour for the selected transportation mode.

Current Data Availability

No official information is collected on queue length by mode in either the northbound or southbound direction. Rough historical estimations could be made using historical northbound border wait times and PeMS data for southbound vehicle queues.

Current Forecasting Methods

BorderWizard™ and SimFronteras project border wait times and queue lengths, but these tools are not integrated into the regional model systems used by SANDAG, SCAG, and Caltrans in California or by planning agencies in Mexico.

Planned Enhancements

An Intelligent Transportation Systems (ITS) is planned for implementation in Mexico. This system is being planned to have a focus on northbound and southbound border crossings and also measure wait times and queue lengths.

Gap Analysis

BorderWizard™ and SimFronteras project border wait times and queue lengths, but these tools are not integrated into the regional model systems used by MPOs in California or planning agencies in Mexico.

Recommendations

The SANDAG ABM cannot forecast POE wait times currently. The ability to forecast POE wait times by mode is dependent on federal agencies maintaining and further developing the BorderWizard™ model. The need for training and local calibration might also arise in order for MPO/Caltrans staff to adequately impute future wait times from BorderWizard™ into the SANDAG ABM. The future binational model for each metropolitan area intends to forecast POE wait times by mode.

Using the econometric and border diversion model recommended in many of the Crossing by POE performance measures, estimated wait times could be derived either from BorderWizard™ or SimFronteras based on anticipated demand and the configuration of the POE. For example, using Little's Law, average wait times can be derived with the service rate (inspections per hour) and arrival rate (people entering the queue per hour) of the POE. This analysis can be further analyzed by facility type such as SENTRI or regular lanes.

As is the case with the Wait Times for Pedestrians performance measure, in cases where more detailed information about engineering related affecting queues is needed, focused microsimulation models would need to be developed to fully understand the queuing impacts of these decisions.

For southbound vehicular data collection, expanding Caltrans' Highway PeMS near existing POEs to provide an ongoing source of information about the total number of passenger and commercial vehicles entering Mexico from the United States and amount of time spent in the queue is recommended. Caltrans already has some monitoring on the urban freeways; however, the sensors are too far from the POE to provide concise information on border traffic flows or wait times. Caltrans has no PeMS detection on the rural highways near the Tecate, Calexico, Calexico East, and Andrade border stations. For commercial vehicles, some monitoring may need to be added on local arterials used to approach the commercial inspection facilities.

For southbound pedestrian data collection, it is recommended that an entity within the United States place pedestrian counters near the existing Ports of Entry to provide an ongoing source of information about the total number of pedestrians entering Mexico from the United States and time spent queuing.

Summary Recommendations and Estimated Cost, Category II: Wait Times by POE (Performance Measures 8 - 11)

Expanding BorderWizard™ and SimFronteras to a larger group of stakeholders including the MPOs and planning agencies in Mexico that could use these border simulations to inform regional travel demand models, this action would open the door to develop more fully integrated models from United States and Mexican agencies. This action would require a comprehensive peer review, detailed methodological review, and extensive validation testing. Once these two models are available to the MPOs and Mexican agencies such as SCT and SIDUE, these agencies could work together to integrate the simulation models into the existing modeling framework.

Expanding Caltrans loop detection (or radar stations) on SR 7, SR 111, SR 186, SR 188, SR 905, I-5, and I-805 would more adequately capture border wait times and queue lengths for southbound traffic into Mexico.

Table 5.3 shows the data points required for Performance Measures 8-11. With the exception of performance measure 11, all performance measures in this category would require average peak period, peak hour, and weekend data.

Table 5.3
Data Points Required for Performance Measures 8-11

Performance Measure		Data Point - Average:					
II. Wait times by POE		**Weekday**	**Peak Period**	**Peak Hour**	**Peak Hour (Seasonal)**	**Weekend**	**Annual**
8	Wait Time by Privately-Owned Vehicles by POE (Regular, SENTRI, and Ready Lanes)		X	X		X	
9	Wait Time by Commercial Vehicle by POE (Regular and FAST/Empresa Certificada Lanes)		X	X		X	
10	Wait Time for Pedestrians by POE (Regular and Ready Lanes)		X	X		X	
11	Queue Length by Travel Mode (Passenger, Vehicle, Commercial, and Pedestrian)		X	X			

Estimated Cost: BorderWizard™/SimFronteras Integration with SANDAG/SCAG/SCT: $225,000 (2013 USD)

Estimated Cost: Minimum of $2,500,000, plus $150,000 annually for maintenance of infrastructure and sensors (2013 USD)

III. ROADWAY AND TRANSIT PERFORMANCE (PERFORMANCE MEASURES 12-15)

12. Level of Service on Federal and State Highways in Study Area

Definition

In the United States, this measurement will use the Transportation Research Board's Highway Capacity Manual's definition of highway level of service (LOS) to measure the impacts of POE investments. In Mexico, this measurement will use the definition of LOS included in state and federal guidelines to measure the impacts of POE investments. This metric could be revisited as the model is developed to determine if it is still a valid measure given California State legislation Senate Bill (SB) 743. This bill creates a process to change the way that transportation impacts are analyzed under California

Environmental Quality Act that includes providing an alternative to measuring LOS as a basis for determining significant impacts.[12].

Current Data Availability

Historic information in the United States is available from 2001 onward from Caltrans' PeMS for state highways in the urban areas near POEs. Limited information on LOS is available on state highways in rural areas from the local MPOs.

In Mexico, SCT conducts regular traffic counts on roads leading to the POE. Traffic count information can be used to derive LOS on Mexican federal and state highways. Baja California uses guidelines in "Normas técnicas de proyecto y construcción para obras de vialidades del Estado de Baja California"[13] for LOS on state highways in Mexico.

Current Forecasting Methods

LOS is a well-understood and key indicator in regional travel demand models both in the U.S. and Mexico. Once flows across the border are forecasted, the data can be incorporated into existing regional models to calculate future LOS.

Planned Enhancements

SCAG is planning to implement dynamic traffic assignment into its regional model. SANDAG anticipates adding dynamic traffic assignment within the next five years.

Gap Analysis

None.

Recommendations

A more precise analysis of LOS should be conducted using dynamic traffic assignment in the regional models. Dynamic traffic assignment will allow for a more thorough understanding of distribution during the peak travel hours and dynamic tolling analysis.

13. Level of Service on Prime Arterials in Immediate Vicinity of POE

Definition

In the United States, this measurement will use the Transportation Research Board's Highway Capacity Manual's definition of arterial LOS to measure the impacts of POE investments. This metric could be revisited as the model is developed to determine if it is still a valid measure given California State legislation SB 743. In Mexico, additional research is needed to determine the measurement that would be used.

[12] State of California, Governor's Office of Planning and Research, accessed on May 15, 2014 at http://www.opr.ca.gov/s_sb743.php.
[13] Normas Técnicas de proyecto y construcción para obras de vialidades del Estado de Baja California, 2001, Chapter 2.3.05 Estudios de Ingeniería de Tránsito, Section A.07 Análisis de Capacidad y Niveles de Tránsito,

Current Data Availability

Historic information in the United States is available on a limited basis from the local jurisdictions or regional planning agency whose jurisdiction covers the facility.

Current Forecasting Methods

LOS is a well-understood and key indicator in regional travel demand models both in the United States and Mexico. Once flows across the border are forecasted, these forecasts can easily be inputted into existing regional models to calculate future level of service.

Planned Enhancements

SCAG is planning to implement dynamic traffic assignment into its regional model. SANDAG anticipates adding dynamic traffic assignment within the next five years.

Gap Analysis

None.

Recommendations

A more precise analysis of LOS should be conducted using dynamic traffic assignment in the regional models. Dynamic traffic assignment will allow for a more thorough understanding of spreading during the peak travel hours and dynamic tolling analysis.

14. Boardings and Alightings by Transit Station near POEs

Definition

The total number of people boarding or alighting transit near a POE during the given time period.

Current Data Availability

In the United States, the Metropolitan Transit System (MTS) and Imperial Valley Transit (IVT) provide historical transit boardings and alightings for the San Diego Trolley and local buses serving the border region.

In Mexico, IMPlan of Tijuana and IMIP of Mexicali provide historical transit boardings and alightings for all licensed buses and jitneys near the border region.

Current Forecasting Methods

The current regional models used in the United States and Mexico are capable of forecasting future transit ridership near the POE if provided with appropriate forecasts of pedestrians using the POE.

Planned Enhancements

The SANDAG ABM has implemented a more comprehensive mode choice component in its crossborder module to more completely model pedestrian traffic across the border and the use of transit near the POE.

SCAG's ABM model will incorporate a comprehensive mode choice component and will better integrate the border related trips into the Imperial County-Mexicali transit systems.

Gap Analysis

None.

Recommendations

This report recommends expanding the methodologies for mode choice analysis being developed as part of the SANDAG ABM in its crossborder model to the entire border region.

15. Transit Level of Service at Station and Routes Serving POEs

Definition

This measurement will use the Transportation Research Board's (TRB) Highway Capacity Manual's definitions of transit quality of service to measure the impacts of POE investments. This measure is based on methodologies outlined in TRB's *Transit Cooperative Research Program Report 100: Transit Capacity and Quality of Service Manual, 2nd Edition*. This report outlines deriving a comprehensive transit LOS based on transit accessibility, frequency, and load.

Current Data Availability

No agency provides a comprehensive, single transit LOS indicator, however, most transit operators provide some components of LOS, such as frequency and load factors.

Current Forecasting Methods

While no agency provides a comprehensive, single transit LOS indicator, most transit operators and MPOs forecast metrics to derive some components of quality of service, including frequency and load factors.

Planned Enhancements

No work is underway to expand transit LOS indicators.

Gap Analysis

A more defined, comprehensive list of transit indicators to include in the transit LOS is needed.

Recommendations

Using the TRB Highway Capacity Manual (HCM), future BMP Updates should further define the transit indicators to include in a comprehensive LOS variable. Most of the information needed to calculate HCM indicators is already readily available from the existing modeling frameworks.

Summary Recommendations and Estimated Cost, Category III: Roadway and Transit Performance (Performance Measures 12 - 15)

When transit LOS is needed, future BMP updates will need to define the metrics of transit LOS more clearly. The data already exist to measure transit LOS in a number of different ways. A more detailed analysis of LOS should be conducted using dynamic traffic assignment in the regional models to allow for a more thorough understanding of spreading during the peak travel hours and dynamic tolling analysis.

All of the performance measures in this category would require average peak period and peak hour data. The two transit-related measures also would require average weekday, weekend, and annual data. (Table 5.4)

Table 5.4
Data Points Required for Performance Measures 12-15

Performance Measure		Data Point--Average:					
III. Roadway and Transit Performance		Weekday	Peak Period	Peak Hour	Peak Hour (Seasonal)	Weekend	Annual
12	Level of Service on Federal and State Highways in Study Area		X	X			
13	Level of Service on Prime Arterials in Immediate Vicinity of POE		X	X			
14	Boardings and Alightings by Transit Station Near POE	X	X	X		X	
15	Transit Level of Service at Station and Routes Serving POEs	X	X	X		X	

Estimated Cost: None

IV. AIR QUALITY (PERFORMANCE MEASURES 16-17)

16. Community Air Quality

Definition

A measurement of the average daily amount of criteria pollutants (e.g., ozone, particulate matter, carbon monoxide (CO), nitrogen oxides (NOx), and sulfur oxides) and Mobile Source Air Toxins (MSAT) produced by the on-road transportation sector before and after the POE investment. This measurement will gauge the air quality near a proposed project.

Current Data Availability

Researchers at San Diego State University (SDSU) have performed localized air quality assessments in Tijuana near the San Ysidro-Puerta México POE. Researchers identified higher localized air pollution near the POE than in the City of Tijuana as a whole.[14] Data collection used in-vehicle and on-person pedestrian monitors.

In Mexico, the Secretariat of the Environment and Natural Resources (SEMARNAT) has done extensive monitoring and analysis of air quality near POE and in the surrounding border communities to better understand the connection between wait times, fleet type, and local air quality.[15]

The San Diego Air Pollution Control District (APCD) has an air quality monitoring station located in the parking lot east of the Otay Mesa border station (Otay Mesa-Paseo International). This station is within 200 meters of the passenger vehicle portion of the POE and 50 meters from the truck POE. In 2012, this site reported no days of ozone above the national standard compared to the Alpine station which recorded seven days above the national standard. There was insufficient or no data available to determine PM 2.5 or PM_{10} values for the Otay Mesa-Paseo International Monitoring Station.

Current Forecasting Methods

Using a variety of tools such as the U.S. Environmental Protection Agency (EPA) Motor Vehicle Emission Simulator (MOVES) and ARB EMFAC (an emission tool used by ARB), researchers have attempted to quantify the amount of criteria pollutants and air toxins produced at the border region. However, these tools produce regional emissions estimates and there are no ongoing techniques to isolate forecasts of emissions near the border.

Planned Enhancements

The U.S.-Mexico Joint Working Committee (JWC) current work plan includes an initiative, Greening Transportation at the Border, to measure and monitor air quality near the border. At the San Ysidro/Virginia Avenue border station, air monitors for CO are being installed at the POV inspection booths. Selected inspection booths also will have monitors for NOx.

Gap Analysis

No ongoing techniques exist to isolate forecasts of emission near the border. In addition, there is a lack of data on vehicle fleet characteristics using the border to develop a model.

Recommendations

This report recommends building on the work of SEMARNAT and the U.S.-Mexico JWC to better understand emissions at the POEs. Once a more comprehensive understanding is established, tools like CT-EMFAC (Caltrans' project level emissions tool) and MOVES could be expanded to forecast emissions near the POEs.

[14] Greening Transportation at the Border. U.S.-Mexico Joint Working Committee on Transportation Planning.
[15] Medición de emisiones vehiculares en ciudades mexicanas de la frontera Norte. Verónica Garibay Bravo. INE-SEMARNAT

From a data perspective, a comprehensive inventory of vehicles crossing the border is needed to improve the understanding of fleet fuel efficiency of border users. This inventory could further be augmented by an intercept survey to understand fuel type and purchase location of gasoline for border crossers.

17. Greenhouse Gas Emissions

Definition

This is a measurement of the annual amount of carbon dioxide equivalent (CO_2Eq) emissions produced by the on-road transportation sector before and after the POE investment. This measurement includes GHG emissions for all vehicles (e.g., passenger vehicles, medium-heavy duty and heavy-duty trucks).

Current Data Availability

In Mexico, SEMARNAT has done extensive monitoring and analysis of air quality near POE and in the surrounding border communities to better understand the connection between wait times, fleet type, and carbon dioxide (CO_2) emissions.[16]

No ongoing air monitoring stations are proximate to the POE in the U.S. or Mexico to isolate the greenhouse gas emissions near the POE.

Current Forecasting Methods

There are currently no ongoing efforts to measure and predict GHG emissions at the California–Baja California border.

Until recently, much of the idling of vehicles occurred only in the northbound direction waiting for inspections. Since these queues do not regularly occur in the southbound direction, the greenhouse impacts of vehicles idling while waiting to enter Mexico is not adequately accounted for in any model in the United States.

In 2010, researchers at SDSU[17] conducted a study to estimate GHG emissions due to northbound vehicle delays at the three San Diego County-Baja California border stations (located in San Ysidro, Otay Mesa, and Tecate) in fiscal year (FY) 2009. CO_2, nitrous oxide (N_2O), and methane (CH_4) emissions were quantified and expressed collectively as CO_2 equivalents (CO_2Eq). Estimations were based on emission rates derived from the U.S. EPA's model MOVES2010. Using this approach, FY 2009 emissions were approximately 80,000 metric tons (MT) of CO_2Eq for all three border crossings combined, comprising 0.5 percent of total on-road transportation emissions in San Diego County based on the latest 2006 inventory. Of the three border crossings, the San Ysidro POE contributed the most GHG emissions (68% of total), Otay Mesa contributed significantly less (30% of total), and Tecate the least (2% of total). Heavy-duty diesel trucks at the Otay Mesa commercial crossing contributed the most on a per vehicle basis, and vehicles using the SENTRI lanes contributed the least overall. Of the total amount of 80,000 MT GHG emissions, 45 percent was due to pure idling, meaning the vehicle was completely stopped. Southbound crossings were not included in this study.

[16] Ibid
[17] Greenhouse gas emissions due to vehicle delays at the San Diego-Tijuana border crossings, Barzee, Suzanne, SDSU

Planned Enhancements

The U.S.-Mexico JWC current work plan includes an initiative, Greening Transportation at the Border, to measure and monitor air quality near the border.

Gap Analysis

There are no ongoing techniques to measure and predict GHG emissions near the border. Also, the greenhouse impacts of vehicles idling while waiting to enter Mexico is not adequately accounted for in any model in the United States.

Recommendations

This report recommends building on the work of SEMARNAT and the U.S.-Mexico JWC to better understand emissions at the POE. Once a more comprehensive understanding is established, tools like CT-EMFAC (Caltrans' project level emissions tool) and MOVES could be expanded to forecast emissions near the POE.

From a data perspective, a comprehensive inventory of vehicles crossing the border is needed to improve the understanding of fleet fuel efficiency of border users. This inventory could further be augmented by an intercept survey to understand fuel type and purchase location of gasoline for border crossers.

If queues in the southbound direction become a more regular occurrence, the air quality effects of idling should be considered with similar methodologies as in the northbound direction.

Summary Recommendations and Estimated Cost, Category IV: Air Quality (Performance Measures 16 – 17)

This report recommends SEMARNAT expand and enhance air quality monitoring near the POEs to better measure local air quality and calibrate future air quality models of the border region. In a similar vein, San Diego and Imperial County Air Pollution Control Districts could place sensors near each POE.

In order to calibrate an emissions model, transportation and air quality agencies in the United States and Mexico should conduct a vehicle inventory survey of border crossers. This survey would identify the fleet characteristics (vehicle age, vehicle condition, vehicle model) of vehicles crossing at each POE. This is a critical input into a model like EMFAC which could be customized for use in the border region.

As shown in Table 5.5, only one data point is required for each of the two measures in this category.

Table 5.5
Data Points Required for Performance Measures 16-17

Performance Measure		Data Point--Average:					
IV. Air Quality		Weekday	Peak Period	Peak Hour	Peak Hour (Seasonal)	Weekend	Annual
16	Community Air Quality	X					
17	Greenhouse Gas Emissions						X

Estimated Cost: Air Quality Monitoring Stations: A minimum of $250,000 (2013 USD)
Vehicle Survey: $200,000 (2013 USD)

V. ECONOMIC INDICATORS (PERFORMANCE MEASURES 18-20)

18. Regional Gross Domestic Product (GDP)

Definition

The value of all goods and services produced within the California-Baja California border region.

Current Data Availability

Historic GDP information for San Diego County is available from the U.S. Bureau of Economic Analysis (San Diego/Carlsbad Metropolitan Statistical Area (MSA)). GDP data is available for Imperial County (El Centro MSA). In Mexico, data are available at the statewide level from Instituto Nacional de Estadística y Geografía (INEGI).

Current Forecasting Methods

A number of private and public organizations publish regional forecasts for San Diego and Imperial counties. However, the current economic forecasts used for the border region are not designed to be sensitive to individual POE infrastructure projects.

Planned Enhancements

No work is underway to enhance forecasting models to account for the addition of new border infrastructure.

Gap Analysis

Existing econometric forecast models are not designed to be sensitive to trade flow changes and other economic impacts due to individual POE infrastructure projects. Regional GDP estimates do not exist at the municipality level in Baja California.

Recommendations

Develop estimates of Regional GDP for the municipalities in the State of Baja California and enhance existing forecast models to include both the direct economic activity generated by infrastructure investments and the trade and labor flow effects of improved crossborder transportation.

19. Job Creation from Project Investment

Definition

The number of jobs created due to the investment of border infrastructure. These would include direct jobs—those employed directly as a result of the investment (border agents, truck drivers, manufacturing jobs); the indirect jobs—those employed at "supplier" companies (aggregate mining, engineering, accounting, and legal service jobs), and the induced jobs (restaurant, healthcare, and other service jobs) resulting from shopping and spending from those employed due to the investment.

Current Data Availability

A well-known model for estimating the economic impact of infrastructure and other investments in the United States is the Minnesota IMPLAN economic input/output model. This model provides data for every state and county in the United States. The model is updated annually and is available for purchase.

An input/output model also is available for the State of Baja California, developed by the Colegio de la Frontera Norte (COLEF). The most recent model is dated 2008. It would be necessary to update the model before it could be used in this type of effort. No government organization has attempted to quantify the number of jobs created by investing in border infrastructure.

Current Forecasting Methods

The Minnesota IMPLAN economic input/output model could be used to estimate the economic impact of infrastructure and other investments. The model is capable of producing an estimate of the direct, indirect, and induced impact of infrastructure investment.

An input/output model is also available for the State of Baja California, developed by COLEF. The model is capable of producing an estimate of the direct, indirect, and induced impact of infrastructure investment.

Planned Enhancements

No work is underway to enhance economic impact models. Existing techniques are sufficient.

Gap Analysis

The existing input/output model for the State of Baja California, developed by COLEF, would need to be updated.

Recommendations

The input/output models for each side of the border should be sufficient for producing this type of analysis. The input/output model would need to be updated in Baja California.

20. Average Wage of Jobs Created

Definition

The average annual salary of the jobs created due to the investment of border infrastructure. As described above, these would include salaries from direct jobs, indirect jobs, and induced jobs.

Current Data Availability

As previously noted, the Minnesota IMPLAN economic input/output model is a well-known model used to estimate the economic impact of infrastructure and other investments in the United States. This model provides data for every state and county in the United States. The model is updated annually and is available for purchase.

An input/output model also is available for the State of Baja California, developed by COLEF. The most recent model for Baja California is dated 2008. It would be necessary to update the model before it could be used in this type of effort.

No government organization has attempted to quantify the average wage of jobs created by investing in border infrastructure.

Current Forecasting Methods

The Minnesota IMPLAN economic input/output model could be used to estimate the economic impact of infrastructure and other investments. The model is capable of producing an estimate of the direct, indirect, and induced impact of infrastructure investment.

An input/output model is also available for the State of Baja California, developed by COLEF. The model is capable of producing an estimate of the direct, indirect, and induced impact of infrastructure investment. The most recent model is dated 2008. It would be necessary to update the model before it could be used in this type of effort

Planned Enhancements

No work is underway to enhance economic impact models. Existing techniques are sufficient.

Gap Analysis

None.

Recommendations

None.

Summary Recommendations and Estimated Cost, Category V: Economic Indicators (Performance Measures 18 – 20)

Investments are needed to update the COLEF economic models to reflect current economic trends and historical data in Baja California.

Enhance existing forecast models to include both the direct economic activity generated by infrastructure investments and the trade and labor flow effects of improved crossborder transportation.

As shown in Table 5.6, only one data point (average annual) is required for each of the three performance measures in this category.

Table 5.6
Data Points Required for Performance Measures 18-20

Performance Measure		Data Point--Average:					
V. Economic Indicators		Weekday	Peak Period	Peak Hour	Peak Hour (Seasonal)	Weekend	Annual
18	Regional Gross Domestic Product (GDP)						X
19	Job Creation from Project Investment						X
20	Average Wage of Jobs Created						X

Estimated Cost: COLEF Model Enhancements $50,000 (2013 USD)
Economic Development Assessment $150,000 (2013 USD)

SUMMARY OF COST ESTIMATES

The cost to develop the travel demand model for each binational metropolitan area (Option 1) would be comparable to the ABM developments at both SANDAG and SCAG or approximately $1 million 2013 USD) each.

Table 5.6 summarizes the cost estimates by major performance measure category to develop the initial "stitching" of the models explained in the previous Framework section (Option 2). It does not include an estimate of the costs associated with developing two truly binational models (Option 1) as described at the beginning of this chapter.

The cost estimates are for planning purposes. Specific costs would be refined during project scoping. The timing of the activities is broken into two phases shown in the table. Developing two fully integrated ABMs is not covered in this estimate. It should be noted that cost estimates do not include data development and acquisition costs. Additional needed travel surveys and other data may represent a substantial additional cost to model development.

Table 5.7
Cost Estimate for Framework for Stitching Models – Option 2 (2013 USD)

Major Tasks	Capital Cost	Initial Modeling Costs	Ongoing Annual Cost	Schedule
PHASE 1:				
Model Coordination and Set-up *(Annual costs for staff time at MPOs, travel documents, etc.)*			$200,000	Ongoing
Category I: Crossings by POE *(Econometric model development plus annual costs of staff MPOs to update model framework and data)*		$250,000	$35,000	9 Months Ongoing
PHASE 2:				
Category II: Wait Times by POE *(PeMS and pedestrian counters; expansion of* BorderWizard™ *and SimFronteras integration; and annual maintenance of sensors and infrastructure)*	$2,500,000	$225,000	$150,000	6 Months (1) Ongoing
Category III: Roadway and Transit Performance	None	None	None	N/A
Category IV: Air Quality *(Air quality monitoring stations; Vehicle survey*	$250,000	$200,000	None	1 Year
Category V: Economic Performance *(Update model in Mexico; enhance existing models)*	None	$200,000	None	1 Year
Total Cost: $4,010,000	**$2,750,000**	**$875,000**	**$385,000**	

Notes: (1) Excludes time to complete investments in PeMS or radar stations and to expand BorderWizard™ and SimFronteras to others for use in modeling.

EXISTING TRANSPORTATION MODELING—CALIFORNIA-BAJA CALIFORNIA REGION

POE Sensitivity Analysis

This section provides background information about current transportation and POE modeling efforts in the California-Baja California border region.

To effectively evaluate the impacts of infrastructure investments at POEs, transportation, land use, and econometric models must be able to evaluate the two types of improvements that can be made at POEs to impact the travel patterns of crossborder travelers and goods: capacity improvements and operational improvements. Depending on the type of improvement, this analysis should be sensitive to passenger vehicle, pedestrian, rail, and truck infrastructure investments.

***Capacity Improvements*:** Capacity improvement projects add infrastructure at POEs to handle higher volumes of traffic. For example, the currently planned expansion of the San Ysidro – Puerta Mexico land POE by both the United States and Mexico is an example of capacity improvement. Capacity improvements can also be made outside the POE to facilitate access to the border crossing, such as State Route 905 serving the Otay Mesa POE.

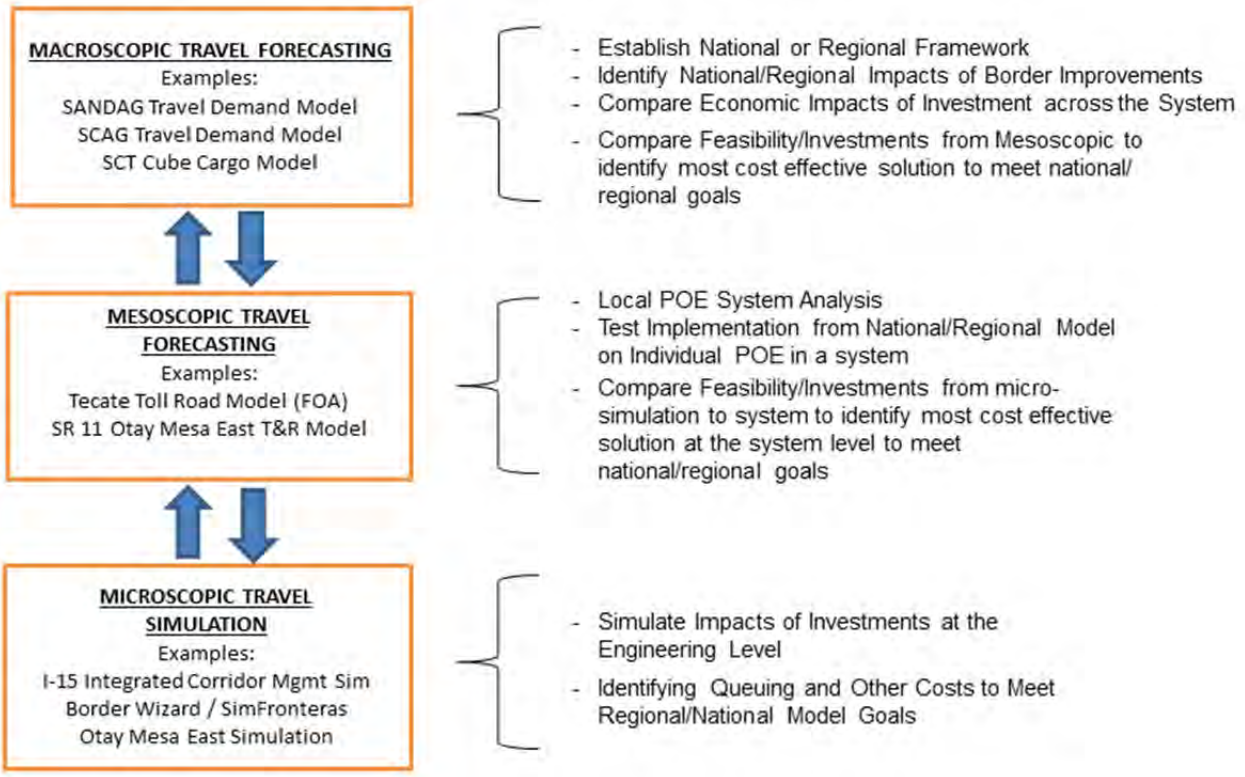
***Operational Improvements*:** Operational improvements are projects that enhance the immigration or customs processing time at the POE. Implementation of programs like SENTRI, FAST, and Ready Lanes and their associated infrastructure all are examples of operational improvements. In each of these examples, limited traditional transportation infrastructure was added to significantly increase the throughput of border traffic.

Levels of Detail in Transportation Modeling

Due to the unique nature of transportation modeling and planning in the California-Baja California region, the BMP process must adapt to the planning and policy needs of two different countries. Within the BMP study area, many different types of transportation systems and facilities exist, including highway networks, public transportation systems, seaports, airports, and international POEs. The characteristics of each facility require that the level of detail (scale) of any model is appropriate to the level of analysis.

Selecting the most suitable level of analytical detail is important to developing the framework, development, calibration, and maintenance of complex models that require significant investments of money, staff resources, and consulting resources. The three levels of scale used in the California-Baja California region are macro, meso, and micro. These three levels are illustrated in Figure 5.1 and described below.

Figure 5.1
Levels of Detail in Transportation Modeling



- **Macro-level models**. These models are usually performed at the national, state, or regional level, where overall flows between regions or cities are evaluated for person or commodity flows. The networks and policies evaluated at the macro level usually include major infrastructure that facilitates major regional flows.

- **Meso-level models**. These models operate at the sub-regional level where a regional government or operator will evaluate person and commodity flows at a more detailed geographic area, such as a neighborhood or colonia. Meso-level projects also would include infrastructure and policy that serve local travel. Meso-level models tend to rely on macro flows to set regional control totals for external travel.

- **Micro-level models**. These models are usually applied at the project or corridor level. Micro-level tools tend to be the most sensitive but require vast amounts of geographically-detailed data (such as census tracts or blocks) to develop, calibrate, and maintain. Because of this large data requirement, micro-level models are generally developed for a specific infrastructure project, such as a local transportation corridor in the study area.

The three different scales of modeling are usually structured in a way in which the data can nest within each scale. For example, national level commodity flows from a macro model could be used as a control total for commercial trucks in a regional meso model. Finally, the assignment and distribution of those truck trips could be used by a micro-level model to evaluate different configurations for a POE analysis.

Existing Model Frameworks

Information was collected from various agencies that perform transportation or POE modeling to better understand the existing modeling framework used along the California–Baja California border. The following summary is not an exhaustive explanation of modeling capabilities of each agency, but a general description about how the models handle crossborder travel. A summary of the characteristics of several current modeling frameworks is shown in Table 5.2 at the end of the chapter.

United States

- U.S. Federal Highway Administration (FHWA): The FHWA maintains the *Freight Analysis Framework* (FAF), a comprehensive analysis of freight movement among U.S. states and major metropolitan areas. The model provides estimates for tonnage and value by commodity type, mode, origin, and destination for 2007 (the most recent year) and forecasts through 2040.

  It is important to note that FAF is not a comprehensive transportation model but a framework for analyzing freight-related policy and capacity for freight transportation. The commodity flows in FAF are converted to truck average annual daily traffic in order to develop a truck volume origin-destination matrix.

  The FAF data and forecasts are important to the BMP study area because they are robust data sources that local planners can reference for base year calibration and future year demand. These commodity flows and truck volumes can be used to calculate regional control totals used in more comprehensive and detailed local travel models.

- FHWA, in conjunction with General Services Administration, the U.S. Customs and Border Protection, and the U.S. Immigration and Customs Enforcement: *BorderWizard*™ simulates auto, bus, truck, and pedestrian travel through a POE. BorderWizard™ simulates Federal inspection activities, including customs, immigration, freight, and security procedures at any land border station to determine infrastructure, facility, and operational needs.

  It is important to note that BorderWizard™ is a custom tool that must be developed specifically for a POE using facility data such as design, number of inspection booths, parking spaces, and warehouse slips. While BorderWizard™ can evaluate POE operations from imputed data sources, it is not a travel model.

- California Department of Transportation: The *2009 California Statewide Travel Demand Model* (CSTDM) forecasts all personal travel made by every California resident, plus all commercial vehicle travel, made on a typical weekday in the fall and spring. The CSTDM includes an External Vehicle Trip Model (for trips with origin and/or destination outside California). The External Vehicle Trip model forecasts car and commercial vehicle trips made between 51 external zones (including an external zone

for each international POE) and internal zones. The CSTDM uses a modeling methodology similar to the SANDAG Activity Based Model (ABM) described below.

- San Diego Association of Governments (SANDAG): The SANDAG (and Caltrans District 11) transportation model provides a systematic analytical platform so that different alternatives and inputs can be evaluated in a controlled environment. SANDAG uses an enhanced four-step transportation model. Four-step models have been the standard in transportation modeling since the late 1950s and are generally used for the development of transportation plans, corridor studies, proposals for transit projects, and air quality analyses. This model is used and continuously maintained by SANDAG. The four steps of the transportation model are trip generation, trip distribution, mode choice, and network assignment.

  For crossborder travel, the SANDAG four-step model generates trip ends for passenger vehicles and trucks separately. The imputed number of base-year passenger trip ends for each POE is calibrated to measured counts and future year passenger trip ends are determined by a regression analysis of border crossings. For the SANDAG truck model, truck trip ends are determined based on the Freight Analysis Framework (FAF) published by FHWA. Total freight movement is converted to truck trip ends by applying factors for pay load and vacancy. These trip ends are then distributed and assigned to the transportation network along with all of the other regional trip ends.

- SANDAG: The SANDAG ABM is a new generation of travel forecasting model with the main travel unit called a “tour” that represents a chain of trips starting and ending at the base location such as home or workplace. The model uses a microsimulation approach and therefore is more behaviorally realistic and sensitive to multiple variables than the traditional four-step model.

  For crossborder travel, the ABM accounts for Mexican resident demand (auto volumes, transit boardings, toll revenue, etc.) for transportation infrastructure in San Diego County. The other purpose of the model is to forecast border crossings at each current and planned border crossing station. The Mexican resident model includes the following features: (1) a tour-based treatment for travel within San Diego County, in order to better represent the travel patterns of Mexican residents, (2) consideration of the full set of modes within San Diego County, including auto trips by occupancy, transit trips by line-haul mode (bus versus trolley), and (3) consideration of toll / High Occupancy Vehicle lanes. The ABM also will analyze sensitivity to population and employment forecasts on both sides of the border, the wait times and costs associated with each border crossing, transport level of service, and cost by mode and time of day.

- Southern California Association of Governments (SCAG): SCAG is the primary agency responsible for the development and maintenance of travel demand forecasting models for the SCAG region. The SCAG region includes the counties of Los Angeles, Orange, San Bernardino, Riverside, Ventura, and Imperial. The SCAG transportation model is a similar type of model as the SANDAG four-step model described previously.

  The SCAG model is an advanced, four-step transportation model. The model is used for the development of major transportation plans as well as other transportation proposals in the region. The model also serves as a platform for various subregional models within the SCAG region.

The SCAG model is used and maintained on an ongoing basis by internal staff. For crossborder travel, trip distribution is based on a border crossings study, and growth rates for crossings at each POE are calculated. SCAG is currently developing an Activity Based Model, due for release in May 2016.

Mexico

- Mexico Secretariat of Communications and Transportation (SCT) is developing a nationwide commodity flow model for Mexico. This commodity flow model will be used for infrastructure planning efforts that include new capital projects and modernization of existing infrastructure. The model will function at three levels of analysis. The macro level examines commodity flow at the national level. The intermediate (meso) level covers commodity flow at the regional/state level. Finally, the micro level of the flow model will examine commodity flow at the metropolitan area level.

  This model is currently under development and includes efforts to develop geographic areas, collect baseline commodity transportation costs, collect baseline origin/destination travel times, and collect baseline and forecasted economic data. Future development of the micro scale of the commodity flow model can be used as vital input to a crossborder travel model.

- SCT: SimFronteras is a program that allows the Government of Mexico to assess the operational efficiency of land border stations through simulation of commercial vehicle, passenger vehicle, bus, and pedestrian traffic. SimFronteras was developed with features similar to its U.S. counterpart, BorderWizard™. However, rather than just being a Spanish language version of BorderWizard™, SimFronteras incorporates significant user interface and modeling flexibility improvements. SimFronteras is designed to assist both government and industry in balancing the demands of binational trade with those of customs and immigration enforcement.

  As part of the SimFronteras development project, baseline models of 20 Mexico-U.S. border stations and one Mexico-Guatemala station were created from data collected on-site by Regal Decision Systems, Inc. These models assist the Mexican government in assessing the efficacy of proposed infrastructure and operational changes in efforts to efficiently balance the competing demands of enforcement and commerce.

- Secretariat of Infrastructure and Urban Development of Baja California (SIDUE): Working through the State Program of Urban Development, (Programa Estatal de Desarrollo Urbano), SIDUE develops plans for primary and secondary road infrastructure for population centers within the State of Baja California. These plans and projects are based on specific technical standards established by SEDESOL (Secretariat of Social Development) and SCT. It is from these standards that regional corridors, tourist areas, road sections, nodes, intersections, distances between roads, signals, rights of way, travel times, and other features, are derived.

  SIDUE's border focus is concentrated on urban and socioeconomic aspects. SIDUE does not maintain a specific travel model. However, with information developed from several studies, a matrix of origin-destination, 2030 traffic projections, and traffic patterns with regional roadways connections has been created. SIDUE also maintains datasets related to population, housing, income, and land use estimates for the Baja California region.

- Metropollitan Institute of Planning, Tijuana (U.S.): While there are no plans in place for ongoing modeling efforts, IMPlan has used transportation models in the past primarily in support of specific projects or studies. For instance, the SCT Tijuana Metropolitan Area Transportation Model was developed for the *Seventh Mobility and Transportation Master Plan for the City of Tijuana*. The travel demand model was managed by IMPlan and was prepared by a private firm, Logística Informática y Transporte S.A. de C.V. (LOGIT). Origin-destination matrices were generated from a household survey and the model was produced using TransCAD.

- Municipal Institute of Planning, Mexicali (Mexicali IMIP): IMIP is responsible for urban planning activities in the municipality of Mexicali. IMIP does not maintain a specific travel model. However IMIP does maintain datasets related to population, housing, and land use estimates for the Mexicali region. The data is maintained by IMIP and serves as a valuable resource for future planning research.

- SANDAG, Caltrans District 11, and IMPlan Tijuana collaborated on the model used to prepare the 2000 San Diego Region – Baja California Cross Border Transportation Study. This study created a crossborder travel forecasting model that was based on pre-1995 data and had a horizon year of 2020. The model was developed by first collecting all necessary travel and socioeconomic data for validation and calibration. Specific surveys were developed and conducted to measure cross-border travel behavior. In addition to collecting data strictly necessary for model development, the survey was also designed to capture other crossing behavior of interest such as trip frequency and duration, auto registration and type of employment.

  The roadway component of this model was updated in 2006 but no other components were updated nor were the models recalibrated to a new base year. This model was a substantial improvement to the treatment of POEs in the model stream. It was an initial model improvement and the lessons learned in the development of this model point to the feasibility of a potential BMP model framework.

Table 5.8
Modeling Capability Matrix

Model	Type of Model	Ongoing Model or Study Specific?	Geography	Base Year	Horizon Year	Major Data Inputs	Calibration Frequency	Main Work Programs That The Model Supports	Main Data Products Produced From The Model
FHWA Freight Analysis Framework (FAF)	Freight model	Ongoing	USA	2007	2040	2007 Commodity flow Survey	2-3 years	Any planning agency that needs freight snapshot data that is not internally supported	Shipment origin & destination, Commodity class, Mode of Transport
FHWA Border WIzard	Border simulation model	Varies by application	Site specific (port of entry)	2010	n/a	Site specific attributes and custom data collection from Regal Decision Systems	Site specific	Port of entry optimization, port of entry capital investments	Queuing, processing, and inspection time scenarios
SCAG Transportation Model	4 Step travel demand model	Ongoing	Orange, Los Angeles, Imperial, Riverside, San Bernardino, & Ventura Counties	2008	2035	Regional growth forecast, travel surveys, vehicle counts, transit boardings, roadway & transit networks	2-4 years. Varies by model component	Regional trans. plan, air quality conformity, corridor studies	Trip tables, assigned vehicle and transit networks, air quality
SANDAG Transportation Model	4 Step travel demand model	Ongoing	San Diego County	2008	2050	Regional growth forecast, travel surveys, vehicle counts, transit boardings, roadway & transit networks	2-4 years. Varies by model component	Regional trans. plan, air quality conformity, corridor studies	Trip tables, assigned vehicle and transit networks, air quality
SCT Cube Model	Commodity Flow model	Ongoing	Mexico: National, State, Metropolitan areas		2030	Commodity flow surveys	Varies by scale	Any agency that relies on commodity flow for the master planning process.	Commodity origin & destination, commodity class, and cost of transport

Table 5.2 (Cont.)
Modeling Capability Matrix

Model	Type of Model	Ongoing Model or Study Specific?	Geography	Base Year	Horizon Year	Major Data Inputs	Calibration Frequency	Main Work Programs That The Model Supports	Main Data Products Produced From The Model
SimFronteras	Border simulation model	Varies by application	Site specific (port of entry)			Site specific attributes and custom data collection from Regal Decision Systems	Site specific	Port of entry optimization, port of entry capital investment	Queuing, processing, and inspection time scenarios
SCT Tijuana Metropolitan Area Transportation Model	4 Step travel demand model		Tijuana metropolitan area	2005		Origin-destination (OD) surveys, economic and demographic information, roadway & transit networks		Transit planning in the Tijuana area	Trip tables and mode split data
C&M Tijuana-Tecate Toll Road Model	Travel demand model	One time	Tijuana metropolitan area & areas near Mexico 2D toll road	2009		Traffic counts, roadway networks, travel surveys, and speed surveys	n/a	Optimize traffic and revenue on Mexico 2D Toll Road	
Felipe Ochoa Otay East Travel Demand Model	Travel demand model and simulation	One time	Tijuana metropolitan area	2007		OD surveys, economic and demographic information, roadway network	n/a	Conceptual master plan for the Otay Mesa East POE	Market analysis for POE
San Diego-Baja California Cross Border Model	4 Step travel demand model	One time	San Diego County, portions of municipalities of Tijuana, Tecate, Playas de Rosarito, & Ensenada	1995	2020	Regional growth forecast, travel surveys, Vehicle Counts, port of entry queues & wait times	n/a	Planning for bi-national transportation and port of entry projects	Trip tables, assigned vehicle and transit networks

CHAPTER 6
FUNDING OPPORTUNITIES FOR A BINATIONAL BORDER MASTER PLANNING PROCESS

INTRODUCTION

The California-Baja California Border Master Plan (BMP) is the first binational prioritization process for border planning for port of entry (POE) and transportation infrastructure that includes a methodology that is accepted on both sides of the border at federal, state, regional, and local levels of government. It provides a level playing field for project prioritization and a systematic approach to planning. However, it does not have a long-term sustainable funding source that would allow for continuity and certainty of BMP updates.

The California-Baja California BMP brings a number of benefits to border planning and helps resolve a number of challenges. These challenges include inconsistencies in POE and transportation project priorities, changes in POE and related transportation project priorities due to changes in United States and Mexico administrations, uncertainty of the private sector regarding investments in border projects, limited opportunities to improve the tools and data that contribute to more informed decision making, and uncertainty in the timing for conducting BMP updates. Consistent and reliable funding is needed to realize the benefits of the BMP on an ongoing basis. This chapter explores these benefits and identifies potential funding opportunities and sources.

On behalf of the California Department of Transportation (Caltrans) and the Secretariat of Infrastructure and Urban Development of the State of Baja California (SIDUE), the San Diego Association of Governments (SANDAG) Service Bureau conducted a Peer Exchange in October 2013 entitled, *U.S. – Mexico Border Master Planning for Port of Entry and Connecting Transportation Infrastructure: Why and How to Fund this Borderwide Process*. The participants included agencies engaged in the California-Baja California BMP, other state transportation agencies in the United States and Mexico involved with preparing BMPs in other border regions, the North American Development Bank (NADBANK), U.S. Environmental Protection Agency (EPA), and Mexico's National Immigration Institute or Instituto Nacional de Migración (INM).

The objective of the Peer Exchange was to open a dialogue focused on developing a U.S.-Mexico strategy that would institutionalize and secure consistent and reliable funding for the border master planning process. The reach of the Peer Exchange was broader than the California-Baja California region, encompassing border master planning for POE and connecting transportation infrastructure for the entire U.S.-Mexico border region. Up to this point, each U.S-Mexico border region has sought federal funding for its own BMP and some have contributed a state match. State representatives have expressed interest in sustainable funding for the border master planning process. Federal agencies, such as the U.S. Federal Highway Administration (FHWA) also have been receptive to exploring future borderwide funding opportunities.

It is clear that identifying and establishing ongoing funding sources is an important step in the BMP process. As the involved agencies work through this process, however, it is equally important to continue to seek funding from traditional planning processes.

Appendix H-2 includes a summary of the Peer Exchange. The summary was shared with the U.S.-Mexico Joint Working Committee (JWC) for its consideration to advance and more fully develop a potential funding strategy for the entire U.S.-Mexico border and to take appropriate action. Findings from this Peer Exchange were used to inform this chapter of the California-Baja California 2014 BMP Update. In the following section, ideas from Peer Exchange participants are discussed and organized into two sections: the benefits of a sustainably funded California-Baja California BMP and potential funding opportunities and sources.

BENEFITS OF A SUSTAINABLY FUNDED CALIFORNIA-BAJA CALIFORNIA BMP

Why is the California-Baja California BMP needed as an ongoing process? Why is consistent and reliable funding for BMPs needed?

There are a number of benefits that the California-Baja California BMP brings to border planning. Potential benefits include the following:

1. Continuity in Decision Making

   1.1 Creates a streamlined process for evaluating POE and related transportation projects in California and Baja California and builds on previous efforts to provide continuity in decision making.

   1.2 Develops a binational process that would transcend changes in government administrations in the United States and Mexico by providing a framework or blueprint with prioritized transportation investments that can be followed consistently throughout different administrations.

2. Binational Harmonization of Priorities

   2.1 Leads to improved coordination and consistency in planning for POE and connecting transportation projects at all levels of government in both countries. The decision-making structure of the California-Baja California BMP includes representation from federal, state, regional, and local levels of government. The BMP effort could be the vehicle that better connects the state, regional, and local vision and priorities with the federal-level vision and national priorities.

   2.2 Provides a list of prioritized POE and connecting transportation projects approved by federal, state, regional, and local levels of government in both countries in California and Baja California. These projects include new POEs and modernizing existing POEs, including connecting transportation projects for roadways, interchanges, rail, non-motorized modes of crossborder travel, and short-term operation and minor capital investment projects to reduce border wait times.

3. Certainty for Private Sector Investment

   3.1 Creates a trusted baseline document that can be shared with potential private investors for evaluating innovative financing opportunities such as public-private partnerships. Private sector funding sources need confidence that the planning efforts that take place are done according to a standardized and reliable process and that stakeholder agencies in both countries agree with the priorities.

4. Value for Seeking Public Funding for Project Implementation

   4.1 Provides a baseline platform for agencies at all levels of government to pursue and apply for federal, state, or other funding sources for POE and connecting transportation projects within the California-Baja California border region.

5. Connectivity with Greenhouse Gas (GHG) and Vehicle Idling Efforts

   5.1 Could provide the mechanism for bridging binational planning efforts of agencies such as the departments of transportation, U.S. Environmental Protection Agency (EPA) and Secretariat of Environment and Natural Resources (Secretaría de Medio Ambiente y Recursos Naturales – SEMARNAT) to study GHG emissions and vehicle idling due to wait times at California-Baja California border POEs.

6. Sound, Data-driven, and Systematic Planning Processes

   6.1 Enables project data, tools, and models to be updated on a regular basis so that decisions related to infrastructure investments, analyzing infrastructure needs, developing evaluation criteria, ranking projects, and monitoring the progress of BMP projects are made using the best possible information.

   6.2 Provides opportunities for developing and implementing new processes and tools, such as GIS geodatabases and mapping, to monitor the progress of the BMP projects in between updates.

   6.3 Helps accelerate the timely delivery of priority POE and transportation projects through BMP updates completed on a regular and reliable schedule.

7. Binational Information Sharing

   7.1 Provides a forum for all stakeholders to stay informed about projects, priorities and related binational border initiatives.

FUNDING OPPORTUNITIES AND SOURCES

What level of investment is needed?

Initial BMPs:

Border master plans have been developed or are under development in all states along the U.S.-Mexico border. Although they generally follow the California-Baja California model, all states tailored certain aspects of the studies to the uniqueness of their regions and goals of their leadership. For instance, some states established very large policy advisory committees, while others held additional stakeholder meetings with the community and/or private sector. Arizona-Sonora allocated funding toward the development of a GIS-based system for monitoring the progress of projects.

Funding levels varied depending on the components included in the BMPs. As shown in Table 6.1, the costs for conducting the initial BMPs ranged from $250,000 to $1,000,000 (2013 U.S. dollars [USD]). The cost of the California-Baja California 2014 BMP Update is $306,000 (2013 USD).

Table 6.1
Costs for Preparing BMPs in Different Regions of the US. and Mexico (in 2013 USD)

U.S.-Mexico Regions	Cost for Initial BMP	Cost for BMP Update
Arizona-Sonora 2012 BMP	$1,000,000	
California-Baja California 2008 BMP California-Baja California 2014 BMP Update	$349,000	$306,000
Laredo-Coahuila/Nuevo León/Tamaulipas 2012 BMP	$375,000	
El Paso/Santa Teresa-Chihuahua 2013 BMP	$660,250	
Lower Rio Grande Valley – Tamaulipas 2013 BMP	$362,000	
New Mexico – Chihuahua BMP (planning)	$250,000	

BMP Updates:

Currently, California-Baja California is the only border region conducting a BMP update. The cost of its 2014 BMP update is $306,000 (current 2013 USD). However, it is important to note that this amount was not sufficient to include all of the tasks desired by the Policy Advisory Committee (PAC), including the re-evaluation of criteria for ranking POE and transportation projects and the development of new criteria for ranking non-motorized transportation projects. Adding these tasks would have increased the cost by $75,000 to $100,000 (2013 USD). Further, these figures do not include the in-kind costs of Caltrans and SIDUE for management and oversight of the study.

The California-Baja California 2014 BMP Update documents the state-of-the-practice for transportation and POE modeling in the California-Baja California border region. It also evaluates the level of analysis, data, tools, and funding needed to move toward the development of a model that could help assess the impact and sensitivity of POE and transportation infrastructure investments serving those POEs.

Two options were identified to conduct this work. Option 1 represents the long-term goal of developing two truly binational models—one for the Imperial–Mexicali metropolitan area and another for the San Diego–Tijuana/Tecate metropolitan area. Option 2 would rely on existing U.S. and Mexico travel demand models that would be connected, or "stitched", using agreed-upon data and methods to forecast crossborder trips for each POE by mode of travel. Both rely on a set of 20 performance measures (see Chapter 5).

Option 1: Development of Binational Models

The cost to develop two truly binational models would likely require an effort similar to that required to produce the Activity Based Models (ABMs) under development by SANDAG and the Southern California Association of Governments (SCAG). These efforts are estimated at about $1 million (2013 USD) each.

Option 2: Development of a "Stitched" Model

The costs of the “stitched” model were estimated for two phases of this work. (The following costs are estimated in 2013 USD.)

Phase 1: (Category I performance measures): Phase 1 is the development of an econometric model. The cost is estimated at $250,000 USD with annual model coordination and maintenance costs of $235,000 USD.

Phase 2: (Categories II through V performance measures): Phase 2 is the development of modeling tools to forecast wait times by POE, air quality, and roadway, transit, and economic performance. Costs are estimated at $625,000 USD plus $150,000 USD in annual maintenance costs. These estimates do not include capital costs needed to acquire and implement southbound data collection equipment. Costs for the equipment could be in the neighborhood of $2.5 million USD if the California Freeway Performance Measurement System (PeMS) near the existing POEs were expanded to provide continuous information about the total number of privately owned vehicles entering Mexico from the United States and amount of time spent in the queue.

SANDAG in partnership with Caltrans, SIDUE, and Metropolitan Planning Institute of Tijuana (IMPLAN), are actively working with FHWA to obtain additional research monies to pursue the initial steps in the modeling development for Option 1.

Funding Opportunities and Sources

Currently, no dedicated, sustainable funding sources exist for the BMP process. This issue was discussed in great detail during the Peer Exchange process. The following ideas to address this critical need were put forth at the Peer Exchange:

1. As the United States moves beyond the current transportation bill (Moving Ahead for Progress in the 21st Century Act (MAP-21)), advocate through FHWA or DOT that funding in the next transportation bill be designated for border planning along the U.S.-Mexico border. These funds could include the requirement that states provide matching funds.

2. Explore using potential funding sources in Mexico including Metropolitan Fund (Fondo Metropolitano, published in the Official Journal of the Federation, April 11, 2012) or similar funding from the National Infrastructure Fund (Fondo Nacional de Infraestructura, FONADIN) and the Secretariat of Agricultural, Territorial and Urban Development, (Secretaría de Desarrollo Agrario, Territorial y Urbano, SEDATU).

3. Continue to use funding sources available to state agencies for updating BMPs. In the United States, this includes any remaining Coordinated Border Infrastructure (CBI) funds as part of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), State Planning and Research (SPR) funding, and other funding sources and/or grants.

4. Explore incorporating the BMP planning process into the annual budgets of Caltrans and SIDUE.

5. Use existing U.S.-Mexico binational partnerships such as U.S.-Mexico JWC, U.S.-Mexico High Level Economic Dialogue (HLED), U.S.-Mexico Binational Bridges and Border Crossings Group (BBBXG), and Border Governors Conference to coordinate efforts to secure consistent and reliable funding for the BMP process.

6. Explore the possibility of funding assistance through the North American Development Bank (NADBANK) for funding an ongoing binational planning process.

7. Investigate opportunities to conduct BMPs through existing regional mechanisms for planning such as Regional Transportation Plans in the United States. A similar mechanism would be needed in Mexico.

8. Evaluate other alternatives such as Crowdfunding. Funding discussions tend to be focused on institutions. Crowdfunding approaches individuals rather than institutions via social media to raise monies for specific initiatives or projects.

CHAPTER 7
RECOMMENDATIONS FOR A BINATIONAL BORDER MASTER PLANNING PROCESS

INTRODUCTION

The California-Baja California region completed its first Border Master Plan (BMP) in 2008. The Plan was envisioned by the U.S.-Mexico Joint Working Committee (JWC) as a pilot project between U.S. and Mexico border states to coordinate planning and delivery of land ports of entry (POEs) and transportation infrastructure projects serving those POEs. Since then, the California-Baja California BMP approach has been adapted and expanded to other border states and customized to address their individual needs. The Arizona-Sonora BMP was finalized in February 2013, the Laredo-Coahuila/Nuevo León/Tamaulipas BMP was completed in June 2012, and the El Paso/Santa Teresa-Chihuahua BMP and Lower Rio Grande Valley-Tamaulipas BMP were completed in October 2013. The New Mexico-Chihuahua BMP is under development and anticipated to be finalized in spring/summer 2015.

This chapter reviews the goals of the California-Baja California 2014 Border Master Plan Update and provides recommendations to maintain and enhance the border master planning process. The recommendations also suggest appropriate stakeholder agencies that would implement the recommendations as part of the next steps. As a starting point, the recommendations from the 2008 BMP were reviewed to monitor the status of their implementation and to identify recommendations to carry forward into the 2014 BMP Update. Chapter 8 details the results of this review.

CALIFORNIA-BAJA CALIFORNIA 2014 BMP UPDATE: RECOMMENDATIONS FOR A BINATIONAL MASTER PLANNING PROCESS

As described in Chapter 1, the primary goals of the California-Baja California 2014 Border Master Plan Update are to:

1. Re-establish and maintain binational coordination on the BMP Update in partnership with the U.S.-Mexico JWC and SIDUE.

2. Review findings of the 2008 BMP.

3. Identify new policy and/or legislative issues, and funding trends and opportunities impacting planning and capital improvement in the study area of California and Baja California along the U.S.-Mexico border.

4. Adapt an existing web-based pilot project data entry program for use by stakeholders in the project in both English and Spanish languages. This tool allows stakeholder agencies to directly input project data information into a formatted on-line database, streamlining the previous process that required multiple steps of input at the agency and SANDAG Service Bureau levels.

5. Expand data collection, monitoring, and technical modeling capabilities to better capture crossborder travel characteristics and POE throughput capabilities. Research and develop capabilities to perform border region sensitivity analyses for scenario planning and project prioritization.

6. Identify ongoing funding sources for the California-Baja California BMP process.

7. Reach agreement with agencies on BMP process and objectives/requirements for future BMP activities.

8. Complete the update within three years from the date the underlying Project Implementation Order as signed by both parties, with a desired project completion date of December 31, 2013. (Note: The Policy and Advisory Committee [PAC] extended the completion date to June 30, 2014.)

The remainder of this chapter presents recommendations toward reaching these goals through a continuous and coordinated binational planning process. Table 7.1 groups these goals into three key themes and summarizes the recommendations for achieving each goal. The recommendations are discussed in greater detail following Table 7.1. The three themes are:

Theme I: - Institutionalize the Border Master Planning Process
Theme II: - Modeling, Data Management, and Data Needs
Theme III: - Consistent and Reliable Funding

Table 7.1
Recommendations of the California-Baja California 2014 BMP Update (Grouped by Theme and Goals)

California-Baja California 2014 Border Master Plan (BMP) Update Goals	Recommendations
Theme I - Institutionalize the Border Master Planning Process	
1. Maintain Binational Coordination on the Border Master Plan	1.1 California Department of Transportation (Caltrans) and the Secretariat of Infrastructure and Urban Development of Baja California (SIDUE) should convene a working group to develop a process to make the Border Master Plan a living document.
	1.2 Caltrans and SIDUE would convene an annual meeting of the California-Baja California BMP Policy Advisory Committee to provide an update on the status of applicable themes, goals and recommendations adopted in the California-Baja California 2014 BMP Update. These meetings will include a standing item on the agendas to discuss proposed project updates and amendments.
	1.3 Subject to funding availability, comprehensive California-Baja California BMP updates would take place every four to six years. Caltrans and SIDUE would lead efforts to seek funding and manage these updates, in collaboration with the California-Baja California BMP Policy Advisory Committee, and, within the framework of the U.S.-Mexico Joint Working Committee (JWC).
	1.4 Caltrans and SIDUE would report on California-Baja California BMP monitoring and implementation at meetings of the Technical Commissions under the Border Liaison Mechanism (BLM), U.S.-Mexico JWC, U.S.-Mexico Binational Bridges and Border Crossings Group, U.S.-Mexico Border Governors Conference, and other binational forums as appropriate.
2. Review findings of the 2008 BMP	2.1 Consider the California-Baja California BMP as a framework to prioritize infrastructure projects and enhance coordination of planning and implementation of POE and related transportation facilities on both sides of the California-Baja California border.

Table 7.1 (Cont.)
Recommendations of the California-Baja California 2014 BMP Update (Grouped by Theme and Goals)

California-Baja California 2014 Border Master Plan (BMP) Update Goals	Recommendations
	2.2 Consider using prioritized California-Baja California project information to compete for transportation funding sources.
	2.3 Use prioritized California-Baja California project information to follow a systematic and orderly approach toward the implementation of binational projects.
	2.4 Consider the California-Baja California BMP project evaluation criteria to guide or support individual agency project ranking processes.
	2.5 Use outcomes from the California-Baja California BMP as inputs in federal, state, regional, and local planning documents. In turn, outcomes of these planning documents would feed into updates of the California-Baja California BMP.
Goal 3. Identify New Policy and/or Legislative Issues, Trends, and Funding Realities and Opportunities Impacting the BMP	3.1 Explore opportunities for aligning the BMP with federal initiatives, such as the 2013 U.S.-Mexico High Level Economic Dialogue (HLED), and others as appropriate.
Goal 7. Reach agreement with agencies on BMP process and objectives/ requirements for future BMP activities	7.1 Develop criteria for evaluation and ranking of non-motorized projects.
	7.2 Incorporate planning efforts by other agencies into the BMP process, including border wait times estimation, air quality, and economic analyses.
Theme II - Modeling, Data Management and Data Needs	
Goal 4. Adapt Web-based Pilot Project Data Entry Program	4.1 Explore whether Caltrans and SIDUE could host and maintain the California-Baja California BMP online data management portal and mapping.
	4.2 Expand and enhance the Web-based Data Management Tool.

Table 7.1 (Cont.)
Recommendations of the California-Baja California 2014 BMP Update (Grouped by Theme and Goals)

California-Baja California 2014 Border Master Plan (BMP) Update Goals	Recommendations
Goal 5. Expand Data Collection, Monitoring and Technical Modeling Capabilities	5.1 Request support from the U.S.-Mexico JWC, the U.S.-Mexico Binational Bridges and Border Crossings Group, officials participating in the Cabinet-level High Level Economic Dialogue, the U.S.-Mexico Border Governors Conference, and others as appropriate, to advance travel demand modeling as an ongoing planning tool in border regions to support the California-Baja California border master planning process.
	5.2 Continue to collaborate through the U.S.-Mexico Border Forecasting Peer Exchange, led by the U.S.-Mexico JWC, to harmonize and share information on data collection and forecasting methodologies for crossborder travel demand by mode, and other crossborder-related transportation data, such as border wait times.
	5.3 Explore ways to establish and maintain close coordination among technical staffs from state and regional agencies to exchange ideas and data related to regional and transportation planning in the border region.
	5.4 With support from, appropriate agencies, Caltrans and SIDUE would develop detailed scopes of work and refine cost estimates for each of the phases of the modeling framework and seek funding for staged implementation.
	5.5 Adopt the approved set of 20 performance measures for a modeling framework as relevant metrics when stakeholder agencies conduct specific project ranking processes or data collection and monitoring efforts.
	5.6 Define the specific boundaries of the two binational metropolitan areas in California-Baja California generally described as San Diego-Tijuana-Tecate and Imperial-Mexicali.
	5.7 Develop processes to collect and share needed northbound and southbound data.
Theme III - Consistent and Reliable Funding	
Goal 6. Identify BMP Ongoing Funding Sources	6.1 Discuss approach for developing a U.S.-Mexico borderwide BMP funding strategy with the U.S.-Mexico JWC, U.S.-Mexico Binational Bridges and Border Crossings Group, officials participating in the Cabinet-level High Level Economic Dialogue, U.S.-Mexico Border Governors Conference, and other entities as appropriate.
	6.2 Seek funding opportunities at the federal and state levels.

Goal 1: Maintain Binational Coordination on the BMP

In partnership with the U.S.-Mexico JWC, California and Baja California reconvened the BMP stakeholder agencies to conduct the California-Baja California 2014 BMP Update. BMP agencies on both sides of the border discussed and agreed on the scope of work and actively participated in meetings and regular communication to provide input and guidance on the 2014 BMP Update.

Recommendations

The following recommendations are proposed to continue to maintain binational coordination on the BMP:

1.1: Caltrans and SIDUE should convene a working group to develop a process to make the BMP a living document.

1.2 Caltrans and SIDUE would convene an annual meeting of the California-Baja California BMP Policy Advisory Committee to provide an update on the status of applicable themes, goals and recommendations adopted in the California-Baja California 2014 BMP Update. These meetings will include a standing item on the agendas to discuss proposed project updates and amendments.

1.3 Subject to funding availability, comprehensive California-Baja California BMP updates would take place every four to six years. Caltrans and SIDUE would lead efforts to seek funding and manage these updates, in collaboration with the California-Baja California BMP Policy Advisory Committee, and, within the framework of the U.S.-Mexico JWC.

The 2008 BMP recommended that comprehensive updates take place every three to four years. The 2014 BMP Update recommends that the updates be conducted every four to six years to better align with both funding cycles and administration cycles at the state and federal levels in the U.S. and Mexico. A comprehensive update could include the following tasks:

- Establish new base year and update base year data, including border wait times
- Establish new planning horizon
- Revise study area boundaries to incorporate significant planned POE or transportation projects
- Incorporate updated horizon year projections, such as socio-economic data, crossborder travel demand, etc.
- Incorporate updated POE plans
- Incorporate updated transportation plans
- Make use of Binational GIS mapping, as available
- Revise evaluation criteria or develop new evaluation criteria

1.4 Caltrans and SIDUE would report on California-Baja California BMP monitoring and implementation at meetings of the Technical Commissions under the Border Liaison Mechanism (BLM), the U.S.-Mexico JWC, the U.S.-Mexico Binational Bridges and Border Crossings Group, and the U.S.-Mexico Border Governors Conference, and other binational forums as appropriate.

Goal 2: Review findings of the 2008 BMP

The review of findings of the 2008 California-Baja California BMP focused on how agencies have used this plan for planning and prioritizing projects in their own agency's planning process (see Chapter 8).

Relevant Recommendations from the 2008 BMP

Several recommendations from the 2008 BMP related to Goal 2 are proposed to be carried forward into the 2014 BMP Update. These recommendations encouraged agencies to use the BMP framework to prioritize infrastructure projects, enhance coordination, and compete for funding. They are:

2.1 Consider the California-Baja California BMP as a framework to prioritize infrastructure projects and enhance coordination of planning and implementation of POE and related transportation facilities on both sides of the California-Baja California border.

2.2 Consider using prioritized California-Baja California project information to compete for transportation funding sources.

2.3 Use prioritized California-Baja California project information to follow a systematic and orderly approach toward the implementation of binational projects.

2.4 Consider the California-Baja California BMP project evaluation criteria to guide or support individual agency project ranking processes.

2.5 Use outcomes from the California-Baja California BMP as inputs in federal, state, regional, and local planning documents. In turn, outcomes of these planning documents would feed into updates of the California-Baja California BMP.

Goal 3: Identify New Policy and/or Legislative Issues, Trends, and Funding Realities and Opportunities Impacting the BMP

In May 2013, President Obama and President Peña Nieto agreed to establish a High Level Economic Dialogue (HLED) to elevate and strengthen the bilateral relationship between the U.S. and Mexico. The HLED will be led at the Cabinet level, meeting annually to facilitate dialogue and joint initiatives organized around three areas:

- Promoting Competitiveness and Connectivity
- Fostering Economic Growth, Productivity and Innovation
- Partnering for Regional and Global Leadership

Border Master Plans are listed as one of the specific topics for cooperation under the Competitiveness and Connectivity area.

Recommendation

The following recommendation is proposed to keep abreast of initiatives and opportunities to help institutionalize the BMP:

3.1 Explore opportunities for aligning the BMP with federal initiatives, such as the U.S.-Mexico High Level Economic Dialogue (HLED) and others as appropriate.

Where appropriate, stakeholder agencies would explore opportunities for aligning BMP updates with the current work plan of the HLED.

Goal 4: Adapt Web-based Pilot Project Data Entry Program

The California-Baja California 2014 BMP Update created an online data management portal for stakeholder agencies to update information on projects previously submitted for the 2008 Border Master Plan and to submit new projects. A User Guide was developed in English and Spanish and bilingual training on how to use the new tool was conducted. Project categories included: POEs (new or modernization), roadway, interchanges, rail/transit, non-motorized (bicycle and pedestrian), as well as short-term operational improvements and minor capital investments. A GIS tool also was incorporated in the web-based portal for mapping each project.

Recommendations

The following recommendations are proposed to manage and update project data:

4.1 Explore whether Caltrans and SIDUE could host and maintain the California-Baja California Border Master Plan online data management portal and mapping.

4.2 Expand and enhance the Web-Based Data Management Tool.

In future BMP updates, stakeholder agencies could consider establishing a process for expanding and enhancing the Web-Based Data Management tool so that it could be used for on-going project monitoring and updating. This process should ensure these activities occur in between plan updates.

Goal 5: Expand Data Collection, Monitoring and Technical Modeling Capabilities

The California-Baja California 2014 BMP Update documents the current state-of-the-practice for transportation and POE modeling in the California-Baja California border region. It also evaluates the level of analysis, data, tools, and funding needed to move toward the development of a model that could help assess the impact and sensitivity of POE and transportation infrastructure investments serving those POEs. In November 2012, the California-Baja California Policy Advisory Committee

approved the framework, a set of 20 performance measures (see Chapter 5), gap analysis, cost estimates, and recommendations for a future transportation demand model that could be used to conduct sensitivity analyses for capital improvements in a system of POEs in a metropolitan area.

Two options were identified to conduct this work. Option 1 represents the long-term goal of developing two truly binational models—one for the Imperial–Mexicali metropolitan area and another for the San Diego–Tijuana/Tecate metropolitan area. Option 2 would rely on existing models and it would "stitch" models on both sides of the border so that they would agree on a common handshake to model crossborder trips for each POE by mode.

The modeling framework for Option 1 includes the following overarching tasks that would lead to two activity based binational models:

1. Develop a common land inventory system to maintain parcel level data in a common location for each binational metropolitan area.
2. Develop a small area forecast program for the Baja California study area (e.g., by área geoestadística básica or AGEB).
3. Conduct travel behavior survey for the Baja California study area.
4. Develop transportation network for the Baja California study area.
5. Conduct estimation and calibration of the San Diego and Imperial Counties activity based models for the Baja California study area.

These models should build upon the best practices in the region and extend their geographic scope to include Northern Baja California and Southern California as one model for each binational metropolitan area. This initiative will require significant work to overcome data issues and develop a mutual understanding of transportation behavior in both countries. However, it would result in a more comprehensive view of the border that is more in line with interdependencies between Southern California and Baja California. The cost to develop the model for each binational metropolitan area would be comparable to the Activity Based Model (ABM) developments at both San Diego Association of Governments (SANDAG) and Southern California Association of Governments (SCAG) that have cost over $1 million U.S. dollars (USD) each.

The modeling framework for Option 2 has two phases. Phase 1 includes model coordination and set-up and the development of an econometric model to forecast the volume of border crossings (Category I performance measures). Phase 2 includes development of modeling tools to forecast wait time by POE, roadway and transit performance, air quality, and economic performance (Categories II through V performance measures).

Recommendations

The following recommendations are proposed to move forward toward building capacity in binational travel demand modeling and expanding data collection to support modeling and monitoring:

5.1 Request support from the U.S.-Mexico JWC, the U.S.-Mexico Binational Bridges and Border Crossings Group, officials participating in the Cabinet-level High Level Economic Dialogue, and the U.S.-Mexico Border Governors Conference, and others as appropriate, to advance travel demand modeling as an ongoing planning tool in border regions to support the California-Baja California border master planning process.

Research conducted for the California-Baja California 2014 BMP found that regional and state agencies in California have developed travel demand models that are maintained, enhanced, and used regularly in the planning process. In Baja California, it appears that regional and state agencies develop travel demand models to support specific planning efforts, however, models are not maintained or used on an ongoing basis.

5.2 Continue to collaborate through the U.S.-Mexico Border Forecasting Peer Exchange, led by the U.S-Mexico JWC, to harmonize and share information on data collection and forecasting methodologies for crossborder travel demand by mode, and other crossborder-related transportation data, such as border wait times.

The Forecasting Peer Exchange was created as a byproduct of the California-Baja California 2008 BMP and sponsored by the U.S. Federal Highway Administration. On November 4 and 5, 2013, the FHWA Office of Planning, in cooperation with Caltrans, hosted a peer exchange in San Diego at the Caltrans District 11 offices. The purpose of the peer exchange was to bring together modeling experts from federal, state, and metropolitan planning offices from Canada, Mexico, and the United States to share modeling expertise and exchange best practices in modeling traffic demand at border port of entries. Future border modeling peer exchanges will build on the knowledge base shared at these events.

5.3 Explore ways to establish and maintain close coordination among technical staffs from state and regional agencies to exchange ideas and data related to regional and transportation planning in the border region.

Technical staffs from state and regional agencies (e.g., SIDUE, Caltrans, IMIP, SCAG, IMPlan, and SANDAG) could meet periodically to build capacity, harmonize data, and become more familiar with modeling tools. This effort also could be accomplished through a binational peer exchange program in which staff from each side of the border works on site at the counterpart agency for an agreed upon period.

5.4 Working with appropriate agencies, Caltrans and SIDUE would develop detailed scopes of work and refine cost estimates for each of the phases of the modeling framework and seek funding for staged implementation.

Caltrans and SIDUE could lead the effort to work with appropriate agencies to develop detailed scopes of work, refine cost estimates for each of the phases of the modeling framework, and seek funding for staged implementation. Currently, Caltrans and SIDUE are actively working with FHWA to obtain additional research monies to pursue initial modeling work in the San Diego-Tijuana Metropolitan Area, which includes the municipalities of Tijuana, Tecate, and Playas de

Rosarito. Caltrans and SIDUE could lead the efforts to explore additional funding opportunities to build on these successes and advance the modeling tasks.

5.5 Adopt the approved set of 20 performance measures for a modeling framework as relevant metrics when stakeholder agencies conduct specific project ranking processes or data collection and monitoring efforts.

As referenced in the introduction to Goal 5, the California-Baja California Policy Advisory Committee approved a set of 20 performance measures as part of the modeling framework. It is recommended that stakeholder agencies use these performance measures as relevant metrics when they conduct their evaluation of POE or transportation project investments as well as data collection and monitoring efforts.

5.6 Define the specific boundaries of the two binational metropolitan areas in California-Baja California generally described as San Diego-Tijuana-Tecate and Imperial-Mexicali.

The modeling framework approved by the Policy Advisory Committee refers to two binational metropolitan areas, generally described as San Diego-Tijuana-Tecate and Imperial-Mexicali. The specific boundaries of these metropolitan areas should be discussed and defined, with approval of the Policy Advisory Committee.

5.7 Develop processes to collect and share needed northbound and southbound data.

When formulating and conducting data collection activities, stakeholder agencies could consider the inclusion of indicators that are part of the evaluation criteria for the California-Baja California 2014 Border Master Plan Update (see Chapter 4) to ensure information is readily available on both sides of the border and can be delivered in a timely fashion.

Specific attention should be given to southbound border crossing data by mode (passenger vehicles, trucks, pedestrians, trains, and rail cars) for use in the border master planning process. It is recommended that the Policy Advisory Committee establish a process with the Administración General de Aduanas in México to share the southbound border crossing data collected by this agency.

Goal 6: Identify Ongoing BMP Funding Sources

On behalf of Caltrans and SIDUE, the SANDAG Service Bureau conducted a peer exchange in October 2013, entitled, *U.S. – Mexico Border Master Planning for Port of Entry and Connecting Transportation Infrastructure: Why and How to Fund this Borderwide Process*. The objective of the Peer Exchange was to discuss and obtain input on developing a U.S.-Mexico borderwide strategy to institutionalize and secure consistent and reliable funding for the border master planning process. The focus of the Peer Exchange was broader than the California-Baja California region and it encompassed border master planning for POE and connecting transportation infrastructure for the entire U.S.-Mexico border region. Discussion at the Peer Exchange was used to inform the 2014 BMP Update and the development of recommendations for future efforts in the California-Baja California region.

Recommendations

The following recommendations are proposed to work toward securing consistent and reliable funding sources for the border master planning process.

6.1 Discuss approach for developing a U.S.-Mexico borderwide Border Master Plan funding strategy with the U.S.-Mexico JWC, the U.S.-Mexico Binational Bridges and Border Crossings Group, the Cabinet-level High Level Economic Dialogue, and the U.S.-Mexico Border Governors Conference.

Findings from the Peer Exchange referenced above could be a tool to engage federal and state stakeholders in discussions to develop a U.S.-Mexico borderwide Border Master Plan funding strategy and take appropriate action.

6.2 Seek funding opportunities at the federal and state levels.

Several potential funding sources for the border master planning process were identified during the peer exchange process. In the U.S., potential sources include a future funding source similar to the Coordinated Border Infrastructure (CBI) as part of the next federal transportation bill reauthorization, as well as State Planning and Research (SPR) funding. The State of Arizona tapped into CBI monies as one of the funding sources to develop the 2013 Arizona-Sonora BMP. In Mexico, potential sources include the Metropolitan Fund (Fondo Metropolitano) or similar funding from the Secretariat of Agricultural, Territorial and Urban Development (Secretaría de Desarrollo Agrario, Territorial y Urbano, SEDATU), and National Infrastructure Fund (Fondo Nacional de Infraestructura, FONADIN). Caltrans and SIDUE could explore the availability of these and other funding sources for future BMP updates.

Goal 7: Reach agreement with agencies on BMP process and objectives/requirements for future BMP activities

The Policy Advisory Committee discussed and approved the scope of work for both the 2008 BMP and the 2014 BMP Update, based on recommendations from the Technical Advisory Committee. When the 2008 BMP was approved by the Policy Advisory Committee, recommendations for consideration in future updates were included in the plan.

Recommendation

The following recommendations surfaced during the development of the 2014 BMP Update and are proposed for consideration in the next BMP update.

7.1 Develop criteria for evaluation and ranking of non-motorized projects

The Policy Advisory Committee recommended that the next California-Baja California Border Master Plan Update include a task to develop a methodology and new evaluation criteria to rank non-motorized projects. This may require establishing a binational bicycle network and binational

system of classifying bicycle and pedestrian projects. As a first step toward this goal, the projects submitted as part of this update were mapped into a network. The classification systems used in the U.S. and Mexico are included in Appendix I.

Criteria could include demand-based factors based on the location of the border crossing (urban, rural), facilities-based factors (accidents, connectivity with other facilities), and a cost-effectiveness criterion. Findings from the pedestrian and bicycle access study at Imperial and San Diego county POEs, which is being led by the Imperial County Transportation Commission through a Caltrans grant, will be valuable in the development of non-motorized project evaluation criteria. A potential challenge to ranking non-motorized projects is the limited data that may be available from stakeholder agencies.

7.2 Incorporate planning efforts by other agencies into the BMP process, including border wait times estimation, air quality, and economic analyses.

Current and future efforts undertaken to estimate northbound and southbound border wait times could be incorporated into the BMP process, where appropriate. For instance, the U.S.-Mexico JWC and the Texas Department of Transportation have developed a border crossing information system that provides real time information of estimated border wait times and crossing times for northbound commercial vehicles. Also, Caltrans and SANDAG will manage a pilot project to monitor southbound border waits on I-5 leading to the San Ysidro/Virginia Avenue-Puerta Mexico/El Chaparral POE, with funding from the U.S.-Mexico JWC.

In addition, studies led by stakeholder agencies that focus on air quality and economic analysis also could be incorporated as appropriate in future BMP updates.

Goal 8: Complete the Update within three years from the date the underlying Project Implementation Order is signed by both parties, with a desired project completion of December 31, 2013

The California-Baja California 2014 BMP Update was envisioned to be completed within three years of the notice to proceed date, which was June 2011. Currently, it is scheduled for completion in June 2014, which is within the desired timeframe.

In November 2011, the Policy Advisory Committee approved the Hybrid Scope of Work for the California-Baja California 2014 BMP Update with modifications and additional funding. To accommodate changes in administrations, staff training for the Web tool used to submit projects for evaluation and ranking was postponed and the 2014 BMP Update project completion date was moved to March 31, 2014. Subsequently, the completion date was changed to June 30, 2014 to accommodate the U.S.-Mexico border wide *U.S. – Mexico Border Master Planning for Port of Entry and Connecting Transportation Infrastructure: Why and How to Fund this Borderwide Process* Peer Exchange held in October 2013. The time frame for completing future BMP updates will vary depending on the scope of work for each update.

CHAPTER 8
STATUS OF RECOMMENDATIONS FROM THE 2008 BMP

INTRODUCTION

This chapter describes the status of the implementation of each of the recommendations of the 2008 California-Baja California BMP. Some of the recommendations are carried forward into the 2014 BMP Update. The recommendations were developed to implement the three primary objectives of the plan, which are to:

1. Increase the understanding of POE and transportation planning on both sides of the border and create a plan for prioritizing and advancing POE and related transportation projects.

2. Develop criteria for prioritizing projects related to existing and new POEs and transportation facilities leading to the California-Baja California POEs; rank mid- and long-term projects and services (e.g., roads, public transit, and railways).

3. Establish a process to institutionalize dialogue among local, state, and federal stakeholders in the United States and Mexico to identify future POE and connecting transportation infrastructure needs and coordinate projects.

The recommendations were developed to promote progress made toward implementing the main objectives of the California-Baja California BMP as a continuous and coordinated binational planning process. The following sections are organized by the three objectives and summarize the status of each recommendation.

2008 BMP OBJECTIVE 1: INCREASE THE UNDERSTANDING OF POE AND TRANSPORTATION PLANNING PROCESSES

The 2008 BMP described the state-of-the-planning practice for POE and related transportation facilities in California and Baja California. This evaluation found that municipal, regional, state, and federal agencies on both sides of the border implement a diversity of project evaluation processes. These processes range from qualitative assessments to the formulation and application of detailed quantitative and qualitative criteria. The 2008 BMP developed a methodology and criteria to evaluate and rank POE projects as well as roadway, interchange, and rail projects serving the POEs. These four sets of criteria were crafted taking into account previous corridor evaluation efforts, such as the Binational Infrastructure Needs Assessment or BINS project, project evaluation criteria currently being used by stakeholder agencies, and the available transportation data from stakeholder agencies at all levels of government in both California and Baja California.

The California-Baja California BMP methodology is a valuable tool to inform the POE and transportation planning practices of the stakeholder agencies. Therefore the 2008 BMP recommended the following:

Recommendation 1.1:

Consider the California-Baja California BMP project evaluation criteria to guide individual project ranking processes. In some instances, the 2008 BMP criteria would enhance the agency's methodology with elements or metrics not currently assessed. In other situations, it could lead to new data collection or monitoring efforts.

Status: Since the 2008 BMP was completed, several agencies have used BMP evaluation criteria for prioritizing projects into their agency's planning process. Findings from a survey of BMP agencies conducted as part of Task 1 of the 2014 BMP Update showed that of 25 agencies that responded, eight reported using BMP evaluation criteria. Those that used BMP evaluation criteria included Administración General de Aduanas México, City of National City, City of San Diego, Imperial County Transportation Commission, San Diego Association of Governments, Secretaría de Comunicaciones y Transportes México, U.S. Customs and Border Protection, and U.S. Federal Highway Administration. Those that did not use the evaluation criteria in their own individual project ranking processes cited reasons such as that agency roles and activities do not include criteria ranking of projects, or that there was a lack of staff familiarity with the BMP.

Recommendation 1.2:

Use outcomes from the California-Baja California BMP as inputs in federal, state, regional, and local planning documents, such as Strategic Resource Assessments (prepared by U.S. Customs and Border Protection); Statewide Transportation Plans (California and Baja California); Statewide Urban Development Plans (Baja California); Regional Transportation Plans (San Diego and Imperial Counties); General Plans (cities and counties in San Diego and Imperial Counties); and Municipal Development Plans (municipalities in Baja California). In turn, outcomes of these planning documents would feed into updates of the California-Baja California BMP.

Status: According to the BMP survey conducted as part of Task 1, 20 agencies responded that they used the 2008 BMP in either their planning/funding-related documents or processes. Agencies included Administración General de Aduanas México, California Department of Transportation, City of El Centro, City of Holtville, City of San Diego, County of Imperial, Departamento de Administración Urbana, Instituto Municipal de Investigación y Planeación Urbana de Mexicali, Instituto Municipal de Planeación de Tijuana, Imperial Country Transportation Commission, Oficina del Gobernador del Estado de Baja California, San Diego Association of Governments, Secretaría de Comunicaciones y Transportes México, Secretaría de Desarrollo Social, Secretaría de Infraestructura y Desarrollo Urbano del Estado de Baja California, Southern California Association of Governments, U.S. Customs and Border Protection, U.S. Department of State, U.S. Federal Highway Administration, and U.S. General Services Administration. Agencies have incorporated aspects of the 2008 BMP into their investment plans, state and local improvement plans, system planning documents, general plans, metropolitan plans, regional transportation plans, grant applications, and funding requests.

Specific documents cited by agencies that used the 2008 BMP include:

- Metropolitan Strategic Plan for Tijuana-Tecate-Playas de Rosarito (2012)
- 2008 Baja California State Development Plan
- 2008-2012 Investment Strategy of the Secretariat of Communications and Transportation
- 2050 San Diego Regional Transportation Plan (adopted 2011)
- Caltrans District 11 Goods Movement Business Plan (completed 2010)
- Caltrans District 11 Goods Movement Annual Report (completed 2010)
- 2012 Southern California Association of Governments Regional Transportation Plan
- 2010 Update of the 2010-2030 Urban Population Center Development Plan of Tijuana, Baja California

2008 BMP OBJECTIVE 2: DEVELOP CRITERIA FOR PRIORITIZING POE AND TRANSPORTATION PROJECTS (INCREASE SIGNIFICANCE OF THE CALIFORNIA-BAJA CALIFORNIA BMP PROCESS)

The 2008 California-Baja California BMP developed evaluation criteria for prioritizing POE and related transportation projects. Mid- and long-term projects were ranked. In developing recommendations, the Policy Advisory Committee (PAC) discussed how stakeholder agencies would make use of the Plan, and there was agreement that the outcome of the California-Baja California BMP would help agencies prioritize POE and related transportation facility projects, enhance coordination of planning and implementation of these projects on both sides of the border, and provide a systematic approach and a disciplined process to advance projects.

Federal agencies also expressed an interest in the development of a borderwide compendium of regional U.S.-Mexico BMPs.

Recommendation 2.1:

Consider the California-Baja California Border Master Plan as a framework to prioritize infrastructure projects and enhance coordination of planning and implementation of POE and related transportation facilities on both sides of the California-Baja California border.

Status: Agencies on both sides of the border have made progress toward incorporating the BMP into their individual planning and project prioritization processes. Additionally, the BMP framework has been adopted as a model for the entire southern border with Mexico with BMPs either completed or underway in the following regions: Arizona-Sonora; El Paso/Santa Teresa-Chihuahua; Laredo District-Coahuila/Nuevo Leon/Tamaulipas; Lower Rio Grande Valley-Tamaulipas.

In addition, agencies cited having used the BMP as a binational reference tool to obtain information about border issues in general, about specific projects, or when consulting with government entities across the border. The U.S. Department of State has used the 2008 BMP when reviewing Presidential Permit Applications and in federal policy meetings. Agencies in both countries have incorporated aspects of the BMP into their state, regional, and metropolitan plans.

Recommendation 2.2:

Consider using prioritized California-Baja California project lists to compete for transportation funding sources, such as the reauthorization of the U.S. federal transportation act, Mexico's federal funding sources, future bond or state funding programs, and private and local funds.

Status: Agencies on both sides of the border used the 2008 BMP to advance existing projects, identify project and investment priorities, and to support projects in funding requests and programming processes. The majority, or 20 out of 26 respondents to the survey of BMP agencies conducted as part of Task 1 stated that they used the 2008 BMP in their agency's planning/funding processes or as an input to their planning/funding documents. Ten agencies (the California Department of Transportation, City of El Centro, City of San Diego, County of Imperial, Departamento de Administración Urbana, Imperial Country Transportation Commission, Oficina del Gobernador del Estado de Baja California, Secretaría de Comunicaciones y Transportes México, Secretaría de Infraestructura y Desarrollo Urbano del Estado de Baja California, and U.S. Customs and Border Protection) used it to request funding for the following projects and project types:

- San Ysidro Port of Entry (POE) Phase I construction
- San Ysidro Intermodal Transportation Center Study
- Imperial Avenue Interchange and Imperial Avenue extension to McCabe Road
- Otay Mesa East POE and State Route 11
- Otay Mesa East POE Intelligent Transportation Systems Study
- SR 905/805 Interchange
- Calexico West POE and surrounding local roads and highways
- Baja California POE projects and nearby roadways and land acquisition
- Avenida México, Tecate
- Concessions and Public Private Partnerships

Several agencies did not use the BMP in their planning/funding processes because the timing of the release of the BMP did not coincide with planning activities. Other agencies noted that their agency does not have responsibility over planning or funding activities, while others mentioned staff being unfamiliar with the document.

Recommendation 2.3:

Use prioritized California-Baja California project lists to follow a systematic and orderly approach toward the implementation of binational projects.

Status: The BMP process is being implemented along the entire U.S.-Mexico border, although a consistent and reliable funding source has not yet been identified to establish regular updates. When opportunistic funding is identified, the process assists with the systematic and orderly approach toward implementation of binational projects. During the BMP process, binational agencies have the opportunity to align schedules and coordinate implementation details and priorities.

2008 BMP OBJECTIVE 3: INSTITUTIONALIZE THE CALIFORNIA-BAJA CALIFORNIA BMP PROCESS

Planning for POEs and related transportation facilities is a complex process that involves multiple agencies at all levels of government in both the United States and Mexico. Effective collaboration is critical to successful national and binational project implementation. California-Baja California stakeholder agencies reported that coordination and communication among federal, state, regional, and local agencies is occurring at some level, but there are opportunities for a more systematic process to align implementation activities, including funding and schedules for POEs and connecting transportation facilities.

Municipal, regional, and state agencies would benefit from closer coordination with the federal agencies on planning and implementation of POE projects to develop a mid- and long-term comprehensive strategy that integrates the POE project with surrounding land uses, regional transportation facilities and transit services, and other infrastructure.

The California-Baja California BMP PAC discussed how to accomplish the objective of institutionalizing the dialogue among local, state, regional, and federal stakeholders in the United States and Mexico to identify future POE and connecting transportation infrastructure needs and coordinate projects on a regular basis to establish a binational California-Baja California border master planning process.

Recommendation 3.1:

Caltrans and SIDUE lead efforts to establish a schedule or cycle for periodic California-Baja California BMP updates, seek funding, and take the lead on conducting these updates, in collaboration with the U.S.-Mexico JWC and the California-Baja California BMP stakeholders.

California-Baja California BMP PAC members expressed a preference for a consultant team to coordinate future updates, similar to the framework followed for the development of the current California-Baja California BMP.

Status: Caltrans and SIDUE continue to lead efforts to establish a schedule or cycle for periodic updates, seek funding, and take the lead on conducting these updates, in collaboration with the U.S.-Mexico JWC and the BMP stakeholders. The framework followed for the development of the 2014 BMP Update and that preferred for future updates consists of a consultant team coordinating the effort.

Recommendation 3.2:

The schedule for California-Baja California BMP updates should consider U.S. and Mexican administration cycles.

Status: During the 2014 BMP Update, U.S. and Mexican administration cycles were considered, but timing required that the BMP update process span two presidential administration cycles in both countries. Caltrans and SIDUE worked closely with U.S. and Mexican agencies during the transition period to minimize possible disruption to the planning process due to staff turnover and to achieve consensus on the work performed prior to the changes in administrations.

Recommendation 3.3:

Depending on funding, comprehensive California-Baja California BMP revisions would take place every three to four years to:

- Establish new base year and update base year data, including border wait times
- Establish new planning horizon
- Revise study area boundaries to incorporate significant planned POE or transportation projects
- Incorporate updated horizon year projections, such as socio-economic data, crossborder travel demand, etc.
- Incorporate updated POE plans
- Incorporate updated transportation plans
- Make use of binational GIS mapping

Status: The 2014 BMP Update initially was envisioned as a technical update that began in 2011 (three years after completion of the previous BMP) with an additional focus on enhancing binational modeling capabilities. After discussions at the Technical Working Group (TWG) and PAC meetings, it was decided that the 2014 Update would serve largely as a comprehensive update (as spelled out in the recommendation above), with the exception of establishment of new evaluation criteria. Funding continues to drive the update schedule for the BMP.

Recommendation 3.4:

Caltrans and SIDUE would lead the efforts to conduct an annual technical update of the California-Baja California BMP to provide an opportunity for stakeholder agencies to incorporate information on new planned projects, transmit changes to projects already submitted, and report on completed projects.

Status: Because a consistent and reliable funding source has not yet been identified for the BMP, annual technical updates have not transpired.

Recommendation 3.5:

The California-Baja California BMP PAC would meet once a year, or more frequently if needed, to provide direction on the annual California-Baja California BMP technical update and on future comprehensive updates.

Status: Annual updates were not conducted due to lack of funding. As a result, annual meetings of the TWG and PAC were not necessary.

Recommendation 3.6:

Borderwide, rely on the U.S.-Mexico JWC and the U.S.-Mexico Binational Bridges and Border Crossings Group to share information on the status of the California-Baja California BMP.

Status: The U.S.-Mexico JWC and the U.S.-Mexico Binational Bridges and Border Crossings Group (BBBXG) have and continue to be official and effective forums to share information on the

status of the California-Baja California BMP. Meetings of the JWC are held regularly throughout the year and updates on the BMP process in various states is presented by the respective lead agencies. The 2010-2012 JWC Work Plan proposed to create a compendium of borderwide Regional BMPs. The U.S.-Mexico BBBXG holds at least annual meetings at locations along the border, rotating among the states and countries.

In May 2010, the U.S. and Mexican federal governments made a declaration concerning 21st Century Border Management. The following joint declarations addressed potential areas of collaboration:

"Improved bi-national coordination in planning, financing, permitting, designing, building, and operating ports of entry, as well as optimal staffing of ports of entry"

"Development of shared priorities for public investments in ports of entry along the border, planned in coordination with the infrastructure feeding into them, as well as funding mechanisms for such projects, including private sector participation"

A 2012 Progress Report for the 21st Century Border Management also cited the following items relating to Border Master Plans:

"Participated actively in the established meetings to update the California-Baja California Border Master Plan and encourage timely information sharing with plan coordinators"

"Supported regional master planning processes with active federal participation in planning meetings and regular communication with plan coordinators in order to fulfill binational priorities embodied in the Declaration on 21st Century Border Management."

In May 2013, the U.S. and Mexican Presidents announced the formation of the U.S.-Mexico High Level Economic Dialogue (HLED) to advance strategic economic and commercial priorities central to promoting mutual economic growth, job creation, and global competitiveness. The HLED calls for the following elements under the Promoting Competitiveness and Connectivity goal:

"(1) Telecommunications; and (2) Transportation, including Intelligent Transportation Systems; Logistics Corridors and Freight Planning; Modernized and Expanded Bilateral Air Transport Relationship; Customs, and Border Master Plans"

Recommendation 3.7:

In California-Baja California, rely on Border Liaison Mechanism (BLM) Technical Commissions to maintain open lines of communication among federal, state, and local agencies responsible for planning and implementing POEs and connecting transportation facilities.

Status: The BLM Technical Commissions have served and continue to serve to maintain open lines of communication among federal, state, and local agencies responsible for planning and implementing POEs and connecting transportation facilities.

Recommendation 3.8:

SIDUE and Caltrans would report on California-Baja California BMP monitoring and implementation at meetings of the U.S.-Mexico JWC, the U.S.-Mexico BBBXG, and the BLM Technical Commissions.

Status: SIDUE and Caltrans have reported on California-Baja California BMP monitoring and implementation at meetings of the U.S.-Mexico JWC held on December 2-3, 2008; July 13-15, 2009; February 23-24, 2010; September 21-22, 2010; October 27-28, 2011; April 11-13, 2011; March 14-15, 2012; September 20-21, 2012; April 17-18, 2013; September 24-25, 2013. Reports on the Border Master Plan were also provided at meetings of the U.S.-Mexico BBBXG on September 25-26, 2008; May 21-22, 2013; and September 11-12, 2013. Additionally, reports on bilateral progress toward 21st Century Border Management were presented at meetings of the U.S.-Mexico BBBXG on September 7-8, 2011; February 29-March 3, 2012; and June 5-6, 2012.

Recommendation 3.9:

The United States-Mexico Border Governors Conference also could provide a forum to institutionalize the California-Baja California BMP. The Border Governors Conference is a forum for cooperation and deliberation among the ten states of the U.S.-Mexico border (Arizona, California, New Mexico, Texas, Baja California, Chihuahua, Coahuila, Nuevo León, Sonora, and Tamaulipas). SIDUE and Caltrans could report on the California-Baja California BMP at the annual conferences.

Representatives from each of the ten member states participate in worktables to develop solutions to mutual goals through a consensus approach. The Logistics and International Crossings Work Table "supports enhanced communications, coordination and consensus building among the ten Border States encouraging investment in modern and efficient infrastructure at ports of entry to increase security and strengthen commercial exchange." In September 2007, the XXV Border Governors Conference (United States-Mexico) issued a Joint Declaration that adopted several recommendations for the development of the border region. One recommendation in the area of Logistics and International Crossings is highlighted below.

"Request that federal agencies and non-governmental organizations from both the United States and Mexico work with border states to develop a Master Border Plan (MBP), which will focus on transportation and ports of entry, similar to the California-Baja California Master Border Plan, which is funded by the Joint Working Committee (JWC)."

In August 2008, in its Joint Declaration, the XXVI Border Governors Conference also adopted the following recommendation in the Logistics and International Crossings area:

"Substantially reduce cross border wait times by 2013 and complete bi-national state to state regional border master plans amongst the 10 border states within three years. Request both federal governments to incorporate these plans into a U.S.-Mexico Border Master Plan by the XXXI Border Governors Conference in 2013."

At future conferences, representatives from California and Baja California could present a recommendation to the Logistics and International Crossings Work Table to take action to update the California-Baja California BMP as the remaining plans between border states are developed.

Status: The Border Governors Conference continues to serve as a forum for highlighting the border master planning process.

In September 2009, in its Joint Declaration, the XXVII Border Governors Conference adopted the following recommendation in the Logistics and Border Crossings area:

"Request that both federal governments adopt an official policy to appropriate full funding necessary for prioritized projects along the U.S.-Mexico border"

In October 2012, in its Joint Declaration, the XXX Border Governors Conference adopted the following recommendation in the Logistics and Border Crossings area:

"Request that the United States and Mexican Federal Governments through the United States-Mexico Joint Working Committee (JWC) on Transportation Planning support and fund permanent bi-national regional border master planning processes."

STATUS OF 2008 BMP STUDY DEVELOPMENT AND DATA NEEDS SUGGESTIONS

Based on the primary objectives of the 2008 BMP, the SANDAG Service Bureau offered the following thoughts for consideration in future California-Baja California border master planning activities based on lessons learned throughout the development of the 2008 plan. The following section describes the response to these suggestions.

Suggestion 1:

Consider U.S. and Mexican administration cycles at the federal, state, and local levels when establishing the California-Baja California BMP annual technical updates and comprehensive updates. Leadership and staff transitions at the various agencies result in unanticipated delays due to changes in personnel and priority changes.

Status: During the 2014 BMP Update, U.S. and Mexican administration cycles were considered, but timing required that the BMP update process span two presidential administrations. Caltrans and SIDUE worked closely with U.S. and Mexican agencies during the transition period to minimize possible disruption to the planning process due to staff turnover and to achieve consensus on the work performed prior to the changes in administrations.

Suggestion 2:

Reaffirm the participation of executive-level managers as decision makers at the California-Baja California BMP PAC and the effective communication practices between PAC and TWG members, which allowed for an efficient flow of information and decision making throughout the development of this pilot project.

Status: At the first joint meeting of the Technical Working Group (TWG) and PAC for the 2014 Update in November 2011, a revised charter was approved that re-established the PAC and TWG membership, roles, and responsibilities. Participation by executive-level managers on the PAC was reaffirmed, and a successful effort was made to keep communication flow direct and continuous between the PAC members and the TWG throughout the BMP Update process.

Suggestion 3:

Consider obtaining commitments from the California-Baja California BMP PAC to devote sufficient staff resources for technical work to ensure the plan updates are conducted in a timely manner (e.g., providing data and conducting review of draft documents).

Status: PAC members were asked to commit sufficient staff resources to review documents and provide data. PAC members were asked at meetings, via email and personal phone calls, and via official correspondence to continue active and committed participation. Such proactive requests and the member agencies' responsiveness contributed to a successful update planning process with minimal disruption due to lack of communication.

Suggestion 4:

Provide consistent participation of PAC members at key decision-making milestones to ensure policy consistency throughout the binational planning process.

Status: PAC members were brought together to make decisions at key points throughout the BMP update process. On several occasions, joint meetings were held with both the TWG and PAC in order to ensure coordinated decision-making. Investment in simultaneous interpretation assisted in ensuring successful communication among all binational agencies.

Suggestion 5:

For future annual technical updates, convene the California-Baja California BMP TWG to discuss needs for re-evaluating projects and rankings and, if warranted, to review and comment on the result of the updated project rankings prior to presenting the updates to the California-Baja California BMP PAC for approval.

Status: Because a consistent and reliable funding source has not yet been identified for the BMP, annual technical updates have not transpired.

Suggestion 6:

For future updates, consider adequate budget for document translation and simultaneous interpretation services at TWG and PAC meetings.

Status: Adequate funding was provided for document translation and simultaneous translation services at TWG and PAC meetings. The interpretation services provided significant communication benefits for both U.S. and Mexican agency members.

Suggestion 7:

Include professionals from both California and Baja California in the consultant team responsible for conducting updates to facilitate coordination and data collection with agencies on both sides of the California-Baja California border.

Status: Consideration was given to including professionals from both California and Baja California on the consultant team. Because of funding limitations, Caltrans and SIDUE elected to enhance the role of the SANDAG Border Program staff to facilitate coordination and data collection with agencies in both California and Baja California. Additionally, a bilingual and webcast training session was held and guidebook produced to facilitate collection of data via the web-based data collection system.

Suggestion 8:

When formulating and conducting data collection activities, consider the inclusion of indicators that are part of the California-Baja California BMP evaluation criteria to ensure information is readily available on both sides of the border and can be delivered in a timely fashion.

Status: It appears that agencies are collecting indicators that are part of the BMP evaluation criteria, as agencies were able to successfully submit data for the 2014 BMP Update process. In the future, when criteria are expanded to include projects for non-motorized modes, agencies will be asked to include these indicators in their data collection activities.

Suggestion 9:

Continue to collaborate through the U.S.-Mexico Border Forecasting Peer Exchange, created as a byproduct of the California-Baja California BMP and sponsored by the U.S. Federal Highway Administration (FHWA), to harmonize and share information on data collection and forecasting methodologies for crossborder travel demand by mode, and other crossborder-related transportation data, such as border wait times.

Status: A Binational Transportation Modeling Peer Exchange sponsored by FHWA and part of the 2010-2012 JWC Work Plan was held November 4-5, 2013. Additionally, as part of the BMP Update, another BMP-focused peer exchange was held to discuss transportation modeling on both sides of the border on June 27, 2012. Attendees for the BMP peer exchange included, California Department of Transportation, U.S. Federal Highway Administration, U.S. General Services Administration, San Diego Association of Governments, City of Chula Vista, City of San Diego, City of Calexico, Instituto Municipal de Investigación y Planeación Urbana de Mexicali, Secretaría de Infraestructura y Desarrollo Urbano del Estado de Baja California, and U.S. Customs and Border Protection.

GLOSSARY

	Acronym	Definition
A	AADT	Average Annual Daily Traffic
	AAGR	Average Annual Growth Rate
	ABM	Activity Based Model
	ACCMA	Administración Central de Competencias y Modernización Aduanera
	ADT	Average Daily Traffic
	Aduanas	General Customs Administration of Mexico (Administración General de Aduanas)
	AP	Advanced Planning
	APCD	San Diego Air Pollution Control District
	AGEB	Área Geoestadística Básica
B	BBBXG	Binational Bridges and Border Crossings Group
	BEA	Bureau of Economic Analysis
	BINS	Binational Infrastructure Needs Assessment
	BLM	Border Liaison Mechanism
	BMP	Border Master Plan
	BRT	Bus Rapid Transit
	BTS	U.S. Bureau of Transportation Statistics
C	Caltrans	California Department of Transporation
	CBI	Coordinated Border Infrastructure
	CBP	U.S. Customs and Border Protection
	CEQA	California Environmental Quality Act
	CH_4	Methane
	CO	Carbon Monoxide
	CO_2	Carbon Dioxide
	CO_2Eq	Carbon Dioxide Equivalent
	COLEF	Colegio de la Frontera Norte

	Acronym	Definition
	COPLADE	Comité de Planeación de Desarrollo del Estado
	CP	Conceptual Planning
	CSTDM	California Statewide Travel Demand Model
	CTC	California Transportation Commission
	CT-EMFAC	Caltrans' project Level Emissions Tool
	CVEF	Commercial Vehicle Enforcement Facility
	CZRY	Carrizo Gorge Railway
D-E	DOS	U.S. Department of State
	DOT	U.S. Department of Transportation
	Empresa Certificada	Free and Secured Trade Program for Commercial Trucks in Mexico
	EPA	U.S. Environmental Protection Agency
F	FD	Final Design
	FAST	Free and Secured Trade (Empresa Certificada as it is known in Mexico)
	FAF	Freight Analysis Framework
	FDA	Food and Drug Administration
	Ferromex	Ferrocarril Mexicano, S.A. de C.V. (Rail Line)
	FHWA	U.S. Federal Highway Administration
	FMCSA	Federal Motor Carrier Safety Administration
	FONADIN	National Infrastructure Fund (Fondo Nacional de Infraestructura)
	FSTIP	Federal State Transportation Improvement Program
	FTE	Full Time Equivalent
	FY	Fiscal Year
G-I	GDP	Gross Domestic Product
	GHG	Greenhouse Gas
	GIS	Geographic Information Systems
	GSA	U.S. General Services Administration
	HCM	Highway Capacity Manual
	HLED	High Level Economic Dialogue

	Acronym	Definition
	HOV	High Occupancy Vehicle
	ICTC	Imperial County Transportation Commission
	IIP	Interregional Improvement Program
	ITS	Intelligent Transportation System
	IMIP	Municipal Planning Institute of Mexicali (Instituto Municipal de Planeación de Mexicali)
	IMPlan	Metropolitan Planning Institute of Tijuana (Instituto Municipal de Planeación de Tijuana)
	INDAABIN	Institute of Administration and Estimates of National Real Estate (Instituto de Administración y Avalúos de Bienes Nacionales)
	INEGI	Instituto Nacional de Estadística y Geografía
	INM	Mexico's National Immigration Institute (Instituto Nacional de Migración de México)
	IVAG	Imperial Valley Association of Governments
	IVT	Imperial Valley Transit
J-L	JWC	U.S.–Mexico Joint Working Committee
	LOGIT	Logística Informática y Transporte S.A. de C.V.
	LOS	Level of Service
M-N	MSAT	Mobile Source Air Toxins
	MDP	Millones de Pesos
	ML	Managed Lanes
	MPO	Metropolitan Planning Organization
	MOVES	Motor Vehicle Emission Simulator
	MSA	Metropolitan Statistical Area
	MT	metric Tons
	NADBANK	North American Development Bank
	NAFTA	North American Free Trade Agreement
	NEPA	National Environmental Policy Act
	Nox	Nitrogen Oxides
	N_2O	Nitrous Oxide
	MTS	San Diego Metropolitan Transit System

	Acronym	Definition
O-Q	O/D	Origin/Destination
	OMB	Office of Management and Budget
	PAC	Policy Advisory Committee
	PDUCP	Programa de Desarrollo Urbano del Centro de Población
	PeMS	Highway Performance Measurement System
	PIB	Producto Interno Bruto
	PND	Plan Nacional de Desarrollo
	POE	Port of Entry
	POV	Privately Owned Vehicle
R	RFID	Radio Frequency Identification
	RTIP	Regional Transportation Improvement Program
	RTP	Regional Transportation Plan
S	SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users
	SANDAG	San Diego Association of Governments
	SCAG	Southern California Association of Governments
	SCT	Mexico Secretariat of Communications and Transportation (Secretaría de Comunicaciones y Transportes)
	SD&AE	San Diego and Arizona Eastern (Railway)
	SD&IV	San Diego and Imperial Valley Railroad
	SDSU	San Diego State University
	SEDATU	Secretariat of Agricultural, Territorial and Urban Development (Secretaría de Desarrollo Agrario, Territorial y Urbano)
	SEDESOL	Secretariat of Social Development (Secretaría de Desarrollo Social)
	SEMARNAT	Mexico Secretariat of the Environment and Natural Resources (Secretaría de Medio Ambiente y Recursos Naturales)
	SENTRI	Secure Electronic Network for Travelers Rapid Inspection

	Acronym	Definition
	SIDUE	Secretariat of Infrastructure and Urban Development of Baja California (Secretaría de Infraestructura y Desarrollo Uranbo del Estado de Baja California)
	SPR	State Planning and Research
	SR	State Route
	SRA	Strategic Resource Assessment
	SRE	Secretariat of Foreign Relations (Secretaría de Relaciones Exteriores)
	STIP	State Transportation Improvement Program
T-Z	TEU	Twenty-foot Equivalent Unit
	T&R	Traffic and Revenue
	TRB	Transportation Research Board
	TWG	Technical Working Group
	UP	Union Pacific (Railroad)
	USD	U.S. Dollars
	USDA	U.S. Department of Agriculture
	WHTI	Western Hemisphere Travel Initiative
	WIM	Weight in Motion