Sustainable Freight Action Plan
Pilot Project Work Plan:

Advanced Technology Corridors at Border Ports of Entry

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Implementation of this Pilot Project will be an iterative process and this work plan should not be considered final. The participating State agencies welcome input on this document and look forward to ongoing collaboration with stakeholders.
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Introduction

Recognizing the influence that statewide policies and investments have on shaping California’s sustainable freight transportation system, Governor Brown issued Executive Order B-32-15\(^1\) in July 2015, which directed the Secretary of the California State Transportation Agency, the Secretary of the California Environmental Protection Agency, and the Secretary of the Natural Resources Agency to work with their associated Departments and the Governor’s Office of Business and Economic Development (GO-Biz) to form an action plan that improves freight efficiency, transitions to zero-emission technologies, and increases competitiveness of California’s freight system. As a result, the interagency team released the *California Sustainable Freight Action Plan*\(^2\) (Action Plan or Plan) in July 2016.

In addition, the Executive Order directed the State agencies to initiate work on corridor-level freight pilot projects within California’s primary trade corridors that integrates advanced technologies, alternative fuels, freight and fuel infrastructure, and provides local economic development opportunities. The Plan’s development process involved a criteria-based solicitation for projects, which resulted in the selection of three projects for further exploration. A synopsis of these project ideas are included in the Plan.

The California Department of Transportation (Caltrans) is the lead agency for two of the three pilot project concepts discussed in the Action Plan, which include *Advanced Technology for Truck Corridors*, *Advanced Technology Corridors at Border Ports of Entry*, and Air Resources Board’s Dairy Biomethane for Freight Vehicles. This preliminary work plan focuses on the efforts for the *Advanced Technology Corridors at Border Ports of Entry* pilot project. In order to encourage freight efficiency, this project involves a suite of emerging technologies at various Land Ports of Entry (LPOEs) along the United States-Mexico border that aim to reduce border crossing wait times, traffic congestion, and vehicular emissions while improving cross-border trade.

The purpose of the work plan is to outline how this interagency group intends to facilitate progress on this pilot project. This interim document outlines the pilot’s purpose and includes background information, a project description, cost estimates and a general project timeline.

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\(^1\) More information on Executive Order B-32-15 can be found at: https://www.gov.ca.gov/news.php?id=19046.

\(^2\) The full text of the California Sustainable Freight Action Plan is available at: www.casustainablefreight/.
Pilot Project Background

Project Proposal

Insufficient capacity at cross-border facilities and surrounding roadways has resulted in severely congested border entry facilities, subsequently generating significant delays for the 1.6 million trucks crossing the international border each year. The current border infrastructure between the U.S. and Mexico will be inadequate for projected binational commerce growth in the coming decades, and will need to integrate Transportation System Management (TSM) strategies to improve operations. Technological and operational advances in development at the planned Otay Mesa East (OME) and Calexico East LPOEs for state of the art intelligent transportation systems (ITSs), data collection and sharing, and connectivity to the international highway network have the potential to improve border operations, lower trade-related emissions, reduce congestion, and minimize border wait-times.

In Phases I and II, the pilot project will deploy a portion of the underlying architecture, hardware, and software needed to support advanced traffic management technology on southbound lanes at LPOEs in San Diego and Imperial Counties. Phase III focuses on potentially installing hardware on northbound lanes in Mexico at certain LPOEs. In Phase IV, the pilot also serves as a blueprint for building a Regional Border Management System (RBMS) designed to coordinate traffic management between the existing Caltrans Transportation Management Center (TMC) and a new Tijuana/Mexico Regional TMC. The RMBS effort will require continued coordination between local, regional, state, and federal binational partner agencies. As a result, the project will facilitate an unprecedented system-wide approach for traffic and border operations management that could be replicated for similar freight management operations across the state and nation.

The pilot project will use a range of advanced technologies to improve safety and mobility while reducing the environmental impact of transportation across the border. During Phase I, physical infrastructure, such as changeable message signs, pavement sensors, detection points, and closed circuit television cameras, will be placed across the border region to monitor wait times, collect traffic speeds, project advanced traveler information and broadcast incident management directives. Phase V of this pilot project addresses potential near-term strategies that may be implemented at the LPOEs pending the recommendations of an innovations analysis, which is currently being developed by the pilot partners. Phase VI highlights potential long-term operational and physical innovations that may be assessed later in the pilot’s development, since these strategies depend on an integrated effort among various binational stakeholders.

This pilot project aligns with the principles and objectives of the Sustainable Freight Action Plan, the 2014 California Freight Mobility Plan, as well as San Diego’s long-range transportation plan, *San Diego Forward: The Regional Plan*. In addition, with support from the Governor Brown’s Office, the new Otay

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Mesa East LPOE has been designated as the highest priority binational infrastructure project as part of the High-Level Economic Dialogue\(^4\) between the United States and Mexico.

**Importance of Project**

This pilot project, which will impact cross-border commerce, is critical for the continued success of the economies of California, Mexico, and the U.S. as a whole. Identified in Figure 1, the LPOEs are critical for Mexico purchasing about 15 percent of all California exports, which places Mexico as California’s number one export market.\(^5\) The commercial vehicle LPOEs in San Diego County include Otay Mesa and Tecate, with the proposed Otay Mesa East LPOE expected to act as a critical relief valve for commercial vehicles. In Imperial County, Calexico East is the major commercial vehicle LPOE.

*Figure 1: California LPOE Crossings*

Figure 2 shows a breakdown of commercial vehicle northbound crossings between the major freight LPOEs in California, with the existing Otay Mesa LPOE carrying approximately two-thirds of this movement.

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Inadequate infrastructure at border crossings has multiple impacts: it creates traffic congestion, increases transportation costs, interrupts just-in-time manufacturing cycles, adds to labor costs, discourages trips across the border, inhibits potential growth in business income, hinders trade in the long term, and generates harmful environmental impacts. Delays cost the U.S. and Mexican economies an estimated $7.2 billion in foregone gross output and more than 62,000 jobs in 2007. In a joint effort, Caltrans and the San Diego Association of Governments (SANDAG) are currently in the process of updating this study to reflect more recent economic and emissions impacts of border delays on the California-Baja California border.

Two-way trade between Mexico and the U.S. has increased dramatically with over a five-fold increase in trade value from 1993 to 2016 and continued growth expected. By 2050, border crossings in San Diego County will exceed over 32.4 million tons of freight valued at $178.5 billion. This increase in truck traffic will impact California’s already strained LPOEs and bottlenecks in its State highway system near the border.

In addition to economic impacts, delays at California’s LPOEs are contributing to adverse public health outcomes. These health issues are not limited to those who cross the border but also include residents in nearby border communities who experience poor air quality along the U.S.-Mexico Border.

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Joint Planning Process

The pilot project integrates a binational cooperative approach featuring federal, state, and local governments from both sides of the border to ensure the creation of a well-designed transportation border system of connectivity. New border crossings are often designed and implemented as two-separate projects, despite the fact that the U.S. and Mexican segments are only useful when both are finished, connected, and functioning as a single system. To address this issue, California and Mexico signed a 2014 Memorandum of Understanding (MOU) to expedite the construction of OME/State Route 11 (SR-11) and jointly monitor its progress. When funding, design, and construction are all handled separately, the risk of mismatches and system inefficiencies rises—the multi-agency and binational approach to this project seeks to mitigate these challenges and continue the coordination efforts established in the 2014 MOU.

The following is a list of federal, state, regional, and local partners who should be involved in the pilot project. Additional partners may be added as the pilot project develops:

Public Sector

Federal
U.S. Customs and Border Protection (CBP)
U.S. General Services Administration (GSA)
U.S. Department of Transportation (USDOT)
U.S. Federal Highway Administration (FHWA)

State
California Air Resources Board (CARB)
California Energy Commission (CEC)
California State Transportation Agency (CalSTA)
Caltrans, District 11
Caltrans, Division of Transportation Planning
Governor’s Office of Business and Economic Development (GO-Biz)

Regional and County
Imperial County Transportation Commission (ICTC)
San Diego Air Pollution Control District
San Diego Association of Governments (SANDAG)
Southern California Association of Governments (SCAG)

International
Secretaria de Comunicaciones y Transportes (SCT)
Servicio de Administracion Tributaria (SAT)
State of Baja California
City of Tijuana
City of Mexicali

Non-Public Sector

Other groups will also have a voice in the implementation of this work plan including academia, business, environmental, and community groups.
Phase I. Southbound ITS Infrastructure Improvements

The existing transportation network at the border, including San Diego County and Imperial County LPOEs, lacks the Intelligent Transportation System (ITS) infrastructure to provide information for the traveling public to make decisions based on actual traffic conditions. This phase will install the necessary equipment, including point vehicle/time detection (PVTD) devices, to collect data that will help calculate real-time border wait times. Additional infrastructure will also be installed that will assist in disseminating this data to the traveling public. In addition, Phase I will close the gap in the existing ITS infrastructure with the installation of fiber optic communications, resulting in improved operational freeway performance and dissemination of traveler information. Overall, the project will reduce localized border wait times by providing information to the traveling public at key decision points, which will reduce idling times along with greenhouse gas (GHG) emissions. The additional infrastructure will provide Caltrans with information to provide timely incident management response.

In Phase I, the following ITS elements will be installed along the southbound routes in San Diego and Imperial County at the Otay Mesa and Calexico East LPOEs (where possible): Wi-Fi and GPS readers (PVTD devices), changeable message signs (CMSs), radio-frequency identification (RFID) cards, and fiber optic (FO) cable. Figure 3 and Figure 4 identify the proposed southbound ITS elements in San Diego and Imperial Counties, respectively.

*Figure 3: San Diego County ITS Deployment Locations*
Some PVTD devices may be installed in existing call boxes along these routes. Proposed locations for these ITS elements are based on data collected through Caltrans and SANDAG’s “San Ysidro Southbound Border Wait Time Pilot” (2016), which provided recommendations on PVTD device distances at the San Ysidro Port of Entry.

Once the necessary ITS infrastructure is installed and operating, collected data will be pulled into a database located on partner servers at the Caltrans District 11 Transportation Management Center (TMC). An algorithm will process the raw data to calculate border wait times. In addition to being distributed through partner applications, the processed data will be shared with the private sector so that they can build an Advanced Traveler Information (ATI) system with Caltrans guidance, as described in Phase II of this pilot project. Caltrans and its partners will determine the appropriate methods for sharing this data.
Phase II. Information Dissemination Process

During Phase I construction, an application programming interface (API) will be created in order to share border wait time data with the private sector. Once the Phase I ITS infrastructure has been tested and data is being received at the Caltrans TMC, Caltrans will make sure that the algorithm used to calculate wait times at each LPOE is functioning and that reliable data is being disseminated through the developer portal.

Caltrans will integrate border wait times into existing information-sharing systems, such as the free 511 San Diego mobile application and Caltrans QuickMap. In addition, Caltrans will work to share real-time data with a private sector technology vendor, who will be contracted to develop an Advanced Traveler Information system (ATI) accessible to the general public. This information will ideally be available through a website, mobile application, and electronic highway signage through Changeable Message Signs (CMSs). When data becomes available, additional platforms for disseminating information will be explored.

Caltrans will work closely with partners to establish requirements for this ATI system in order to help border crossers, in particular freight companies, plan their trips and select which LPOE best suits their needs. By distributing data collected from Phase I to a web application, the ATI system will inform travelers about border wait times and incidents at all regional LPOEs. Access to this data through manageable software will empower the freight industry to make more efficient operational and cost-effective decisions, likely resulting in reduced congestion and emissions at LPOEs. Project partners will work over time to ensure that data reliability increases.
Phase III. Potential Northbound Investments

This phase is an optional, aspirational phase that is not necessary for pilot project implementation but aligns with the long-term goal of creating an efficient border LPOE system that integrates technologies in the United States and Mexico.

Caltrans is collaborating with U.S. Customs and Border Protection (CBP) and SAT [Tax Administration Service] Customs to explore the potential of northbound ITS investments. Currently, Caltrans and its partners are working with FHWA to install radio-frequency identification (RFID) and Wi-Fi readers on Mexico’s northbound lanes at the existing Otay Mesa and San Ysidro LPOEs in order to capture commercial vehicle wait time data, expanding Texas Department of Transportation’s (TxDOT) current border wait time program. The RFID project is expected to last for one year, and an agreement for future maintenance and operations will need to be established between partner agencies.

In addition to this RFID and Wi-Fi project, Caltrans can share traveler wait time data to the appropriate agencies in Mexico, which may require a data sharing agreement.

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Phase IV. Potential Regional Border Management System

When ITS infrastructure is completed, coordination will take place with the U.S. General Services Administration (GSA) and Customs and Border Protection (CBP) agencies to determine how to implement a border-wide system that allows travelers to make more informed decisions when crossing the border. Coordination and negotiation with a range of partners in both the U.S. and Mexico will be required to create a highly integrated border-wide system.

The partner agencies are in the process of developing an integrated traffic management system that will link traffic operations in Tijuana with those managed by SANDAG and Caltrans. To do so, Caltrans, SANDAG, Tijuana, and Mexico’s Secretary of Communications and Transportation (SCT) are developing a Regional Border Management System (RBMS). A scope, cost, and a project timeline for the RBMS is being developed.

Implementation of a border-wide monitoring system is fundamental to the goal of helping to reduce air pollution, improve freight efficiency, and increase competitiveness of California’s freight system. A methodology for measuring the impacts of this border-wide system will be developed during the design phase of the RBMS.
Phase V. Potential Near-term Innovations (Optional)

As part of the Otay Mesa East LPOE project, the partner agencies are conducting an innovations analysis (IA) to assess the feasibility of the below strategies. While not immediately part of this pilot project, the strategies recommended in this IA will be used in the OME LPOE design phase. This IA can be applied to the other LPOEs to also assess the feasibility of these strategies at these locations. If the following strategies are implemented at the LPOEs, future updates to this work plan will provide detailed implementation measures and include potential funding and requisite partnerships that may be required.

Interchangeable Lanes

At different times of the day in accordance with demand, lanes at the pilot LPOEs may be used interchangeably to process either commercial vehicles or passenger vehicles. Partner agencies are in the process of developing an IA for OME LPOE that will address the ability of these interchangeable lanes to take advantage of peak level traffic flows by type of vehicle to move border traffic more efficiently both northbound and southbound.

The analysis will address adjusting the lanes to accommodate these peak hours and the impacts to traffic volumes and toll revenues, as well as related design and cost. For example, peak time for passenger vehicles to cross the border northbound is during the morning, while truck traffic experiences consistent demand throughout the day with a peak in the afternoon. The analysis will address dedicating most or all of the lanes at the proposed LPOE to accommodate these peak hours and commercial vehicle operations. The results of the analysis will be compared against a baseline, including the operational needs, which will allow the project sponsors to optimally design a LPOE with the appropriate number of lanes that “flex” in accordance with demand.

A key outcome of the analysis is to determine whether a smaller facility would be able to accommodate the same amount or more volume and have the potential to raise more revenue due to the additional flexible capacity during peak demand, since more toll revenue would be collected. The baseline configuration on both sides of the border, which includes operating 10 lanes for passenger vehicles and 10 for commercial vehicles northbound, would be used during non-peak time if warranted by demand. The operational analysis will determine the impacts to traffic volumes and toll revenues, as well as related design and cost impacts to the project. Additionally, the consultant may assess if an interchangeable lane configuration is warranted for southbound commercial vehicles. Overall traffic flows and engineering issues must be analyzed at the federal compounds and regionally to determine impacts to the network.

Reversible Lanes

The IA for the OME LPOE is also looking into the feasibility of reversible lanes, which are bi-directional flow-lanes to take advantage of peak-hour north or southbound traffic flows during the operating day. Currently, the LPOEs in California segregate lane use into northbound and southbound exclusively. The analysis will evaluate the impacts of dedicating the proposed LPOE resources to accommodate northbound or southbound directional traffic during peak demand periods, keeping in focus peak travel
times for each type of vehicle. Traditional lane operations could occur during non-peak periods if warranted by demand. The analysis of one or more reversible lanes will determine the impacts to traffic volumes and toll revenues as well as related design and cost issues to the project.

The proposed project at Calexico East LPOE may also incorporate reversible lanes, since this may help to move traffic flows more efficiently during peak periods. Conducting an analysis to determine if reversible lanes would benefit the LPOE would be useful before the project moves forward. If built, the reversible lanes at OME in San Diego County may be a good model to determine if this strategy helps move freight efficiently.

**Variable Toll System**

Tolls at the Otay Mesa East LPOE will be fundamental for project financing and will provide for better predictability and demand management for the regional border crossing system. Toll rates will adjust throughout the day as demand rises and falls, essentially encouraging use through low toll rates when traffic is low and slowing demand through high tolls when traffic spikes. The IA will incorporate variable toll rates that are calibrated to demand conditions to achieve the goal of an approximately 20-minute wait-time from the end of the queue to primary inspection for northbound and southbound users.

If additional lanes are added, Calexico East LPOE can also integrate a variable toll system into their facility in order to manage demand. A financial feasibility study would help determine if a toll facility is feasible at this LPOE.

**Consolidated Toll Collection**

The IA will address the feasibility of binational toll collection from all northbound and southbound users on State Route 11 (SR-11), north of the OME LPOE with one toll collected per crossing in each direction. If a financial feasibility study is completed for Calexico East LPOE, the study may take into account the implementation of binational toll collection.

**Lane Management**

At OME, the management of dedicated lanes is being analyzed to adequately direct traffic that requires different levels of inspection. For example, trusted travelers enrolled in C-TPAT, FAST and SENTRI may have dedicated lanes. Additionally, lanes could be further segmented into laden trucks, empty trucks, ready lanes, and other special categories. Signage ahead of the LPOE will guide passenger and commercial vehicles to queue in an appropriate lane for inspection and clearance by border officials.

The innovations study being conducted by partner agencies is looking at approach lane management with interchangeable lanes as an alternative to dedicated lanes. In this strategy, commercial and passenger traffic approaching primary inspection locations at OME/Mesa de Otay II will be assigned to their appropriate lanes by taking into account factors such as the number and types of booths open at CBP, current wait-times, time of day, and variances in the local crossing environment. Lane designations will be presented to users far enough in advance of the LPOE to provide trusted travelers (for example,
SENTRI) a straight path to primary booths while providing LPOE operators an opportunity to
assign/manage lane types as lane types are adjusted to accommodate demand.

The project partners for OME are developing an integrated traffic management system that will link
traffic operations in Tijuana with those managed by the pilot partner agencies. To do so, Caltrans,
SANDAG, Tijuana, and Mexico’s Secretary of Communications and Transportation (SCT) are developing a
Regional Border Management System (RBMS). Caltrans will have the ability to coordinate with ICTC to
determine if Calexico East LPOE and other Imperial County LPOEs can integrate into this RBMS.
Phase VI. Potential Long-term Innovations (Optional)

With strengthened partnerships in place, local, regional, state, and federal stakeholder agencies in the U.S. and Mexico will be prepared to explore additional emissions reduction strategies that may be integrated into this pilot project. The feasibility of these physical and operational strategies may be explored in greater detail as the design of this pilot project develops. While not immediately part of this pilot project, discussions with stakeholders are on-going to identify potential funding and requisite partnerships that may be required.

If integrated, the strategies listed below will require coordination and approval of binational federal, state, regional, and local partners since Caltrans may not have direct control over certain elements of these strategies. The purpose of listing the following strategies is to highlight optional long-term phases for this pilot project.

Commercial Truck Drop-Lot and Trans-Loading Facility

After the analysis plan, mentioned above, is complete, the partner agencies will evaluate the financial feasibility and relationship to the OME LPOE of operating a secure drop lot/trans-loading facility for commercial trucks on available excess land that is not utilized for federal inspections. The project on the U.S. LPOE federal inspection compound footprint is expected to occupy a sizable portion, but not all, of the estimated 100 acres available for the proposed OME LPOE. Similarly, the site for the Mesa de Otay II is proposed to be an estimated 90.6 acres (36.7 hectares).

The cost and operational analysis will evaluate which land use options would work best operationally and financially in conjunction with the OME LPOE by analyzing:

- A secure drop lot/trans-loading facility for commercial trucks on the unoccupied land;
- Market demand;
- Financial feasibility;
- Opportunities to facilitate cross border truck logistics, such as rapid return of tractor units; and/or
- The opportunity to allow “overweight” trucks to utilize the drop-lot.

If excess land is available near the other LPOEs, this analysis can be used to see if a secure drop lot/trans-loading facility can be built nearby.

U.S.-Mexico Joint Inspection Facility

For the OME project, the baseline analysis considered a traditional and separate border inspection facility for each country. This U.S.-Mexico Joint Inspection Facility innovation would consider one joint facility/combined LPOE to house the operations for both countries. There are two dimensions to this analytical task, which are mentioned below. CBP and SAT are currently in discussions to improve collaboration and explore joint activities, therefore close coordination with CBP and SAT will be required. Although a joint facility may not be feasible by opening day, the analysis may consider:
Feasible “Opening Day” joint U.S. import/Mexico export and joint U.S. export/Mexico import inspection facilities to house the operations for both countries for a 2019 opening date. This level of analysis should address the level of physical and operational unification possible and the benefits and costs of such a change. As noted earlier, this will be done in close coordination with CBP and SAT. This innovation assumes that Mexico import facilities would house U.S. export inspection and vice versa.

A flexible design approach that takes into consideration how a future, more fully integrated/unified LPOE could evolve over time.

Incorporation of renewable energy components that support building and transportation electrification needs.

This analysis may also be used at other LPOEs to assess if joint facilities can be built.

Appointment Times
The innovations study is also looking at the future feasibility of arrival/appointment windows. This approach will be analyzed in depth by the financial and toll operations/ITS teams at a later date as arrival/appointment windows are not an opening day concept, but may be an option for long-term operations.

Arrival/appointment windows are an operational concept where border users could pay for a designated appointment window to cross the border. This first stage operational analysis should create a simulation of how a commercial LPOE with appointment windows could operate, including an assessment of analogous appointment systems at other major cargo processing facilities, acceptance by major users, security benefits and security challenges related to data exchange challenges/protocols, other management approaches, and cost benefit issues.

Best practices identified in this analysis can be applied to the Calexico East LPOE project.

Energy Efficient Facilities
Since 2010, GSA has required that all new federal buildings and major renovations attain Leadership in Energy and Environmental Design (LEED) Gold certification, which is a rating system for sustainable buildings. The federal facilities at OME and Calexico East would need to be designed with LEED criteria in mind, which would help to reduce the energy footprint of these LPOEs. As part of this effort, the facilities may integrate technology that supports zero/near-zero emission vehicles, such as electric vehicle/temperature-controlled container charging connections.

Zero/Near-Zero Truck Prioritization
State agencies can collaborate with federal and local stakeholders on concepts to incentivize zero/near-zero emission truck crossings at international ports of entry facilities, which would help in reaching the targets established in California Executive Order B-32-15, the 2016 ZEV Action Plan, and local air

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district targets. As part of this collaboration, strong consideration should occur for the need to establish a binational agreement between the U.S. and Mexico, and to partner with private industries who own and operate the equipment. Due to the complexity of both CBP jurisdictional issues and international partnership requirements, consideration should also be given to a study and/or assessment of an institutional coordination plan and an assessment of feasible emission reduction strategies technologies needed for sustainable goods movement across the U.S. and Mexico international border.

As a conceptual example, dedicating one lane to zero/near-zero trucks before reaching the inspection facility could improve the operating efficiency and air quality at the border. The ability to have a zero/near-zero dedicated lane or several interchangeable lanes dedicated to zero/near-zero trucks would be highly dependent upon zero/near-zero truck market penetration, agreements with Mexico, and feasible and available technologies. In the long-term, signage for dedicated lanes/interchangeable lanes could also be used for future use by zero/near-zero truck inspections. In addition, the facility operator may consider building charging connections that would allow trucks or temperature-controlled containers/trailers to plug in where appropriate.

Depending on the timing, one of the LPOEs discussed in this pilot project could serve as a demonstration project that tests the binational feasibility and implementation of zero/near-zero emission trucks. This demonstration project may be modeled after the Port of San Diego’s Sustainable Freight Demonstration Project\(^\text{11}\), which used zero-emission vehicles for movement in and around the port, for short distance movement near the LPOEs. The partner agencies can work with private companies who own warehouses near LPOEs to encourage the deployment of zero/near-zero forklifts, drayage trucks, and other equipment for short distance movement between warehouses on both sides of the border and the LPOEs.

State agencies can also partner with freight companies to determine how future technologies that encourage clean trucks can be incorporated into LPOEs.

Timeline and Cost

The following tables highlight the estimated amount of time each phase will take from design to construction, assuming funding has been allocated. Some phases may start before the previous phase is complete (e.g. Phase II design may start before Phase I construction begins). The timeline also indicates the estimated cost, which includes capital and support costs, for each phase. Phases that do not currently include timeline and cost estimates will be updated in future progress reports.

Since Phases V and VI are optional, their timelines and costs may be determined once the pilot project develops.

Table 1: Pilot Project Confirmed Phases

<table>
<thead>
<tr>
<th>Pilot Phase</th>
<th>Phase Breakdown</th>
<th>Estimated Completion</th>
<th>Estimated Cost</th>
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<td>Design</td>
<td>9 months</td>
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<td>Procurement</td>
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Table 2: Pilot Project Potential Phases

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<th>Phase Breakdown</th>
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<td>Phase III: Potential Northbound Investments</td>
<td>Design</td>
<td>9 months</td>
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Funding Options

The following list highlights potential funding options for each phase of the pilot project.

- **Phase I: Southbound ITS Infrastructure Improvements**
  - The major components of this phase are currently under the Caltrans 10-Year State Highway Operation and Protection Program (SHOPP) plan for a programmable year of 2020, with an estimated ready to list (RTL) year of 2021. In addition, the PVTD devices in Imperial County are currently being designed under the Caltrans Minor B program, with an estimated construction date of 2018. Additional funding sources are also being considered.

- **Phase II: Information Dissemination**
  - If Caltrans and its partners decide to bid the ATI system out to the private sector, funds may be provided by the partner agencies. The partner agencies, however, may agree to use existing public systems to display this data. If existing systems are used, maintenance costs and upgrades for this additional data will be factored into these system contracts.

- **Phase III: Potential Northbound Investments**
  - Funding will be provided by FHWA with Caltrans partners handling the procurement process. Although Caltrans cannot directly provide funding for ITS investments in Mexico, Caltrans can facilitate collaboration between U.S. and Mexico agencies in order to identify additional funding sources for continued operations and expansion after the pilot project is complete.

- **Phase IV: Potential Regional Border Management System**
  - Partner agencies will apply for federal and state funding for this phase.

- **Phase V: Potential Near-term Innovations (Optional)**
  - Once the innovations analysis being developed has determined the best strategies to pursue, appropriate funding sources will be explored.

- **Phase VI: Potential Long-term Innovations (Optional)**
  - If strategies from this phase are implemented in the pilot project, appropriate funding sources will be explored.

- **Additional Funding Sources**
  - Potential funding sources that can contribute to this pilot project include:
    - FHWA grants
      - Advanced Transportation and Congestion Management Technologies Deployment (ATCMTD) -
Transportation Infrastructure Finance and Innovation Act (TIFIA) - https://www.fhwa.dot.gov/fastact/factsheets/tifiafs.cfm

California Air Resources Board
- Carl Moyer Memorial Air Quality Standards Attainment Program - https://www.arb.ca.gov/msprog/moyer/moyer.htm
- Goods Movement Emission Reduction Program (Proposition 1B Program) - https://www.arb.ca.gov/bonds/gmbond/gmbond.htm
- Low Carbon Transportation (LCT) Investments and Air Quality Improvement Program (AQIP) - https://www.arb.ca.gov/msprog/aqip/aqip.htm

California Energy Commission - http://www.energy.ca.gov/contracts/
- Electric Program Investment Charge (EPIC) Program - http://www.energy.ca.gov/research/epic/
- Alternative and Renewable Fuel and Vehicle Technology Program (ARFVTP) - http://www.energy.ca.gov/drive/

California Transportation Commission
- California Freight Investment Program (CFIP) - http://www.catc.ca.gov/programs/CFIP.html
- State Highway Operation and Protection Program (SHOPP) - http://www.catc.ca.gov/programs/shopp.htm

Governor’s Office of Business and Economic Development

SANDAG
ICTC
Public-private partnerships
### Acronym and Abbreviations List

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Meaning</th>
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</thead>
<tbody>
<tr>
<td>ARB</td>
<td>California Air Resources Board</td>
</tr>
<tr>
<td>API</td>
<td>Application Programming Interface</td>
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<tr>
<td>ATI</td>
<td>Advanced Traveler Information System</td>
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<tr>
<td>CalSTA</td>
<td>California State Transportation Agency</td>
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<tr>
<td>Caltrans</td>
<td>California Department of Transportation</td>
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<tr>
<td>CBP</td>
<td>U.S. Customs and Border Protection</td>
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<tr>
<td>CEC</td>
<td>California Energy Commission</td>
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<tr>
<td>CMS</td>
<td>Changeable Message Sign</td>
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<tr>
<td>FHWA</td>
<td>U.S. Federal Highway Administration</td>
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<tr>
<td>FO</td>
<td>Fiber Optic</td>
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<tr>
<td>GHG</td>
<td>Greenhouse Gas</td>
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<tr>
<td>GO-Biz</td>
<td>Governor’s Office of Business and Economic Development</td>
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<tr>
<td>GSA</td>
<td>U.S. General Services Administration</td>
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<tr>
<td>IA</td>
<td>Innovations Analysis</td>
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<tr>
<td>ICM</td>
<td>Integrated Corridor Management</td>
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<tr>
<td>ICTC</td>
<td>Imperial County Transportation Commission</td>
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<tr>
<td>ITS</td>
<td>Intelligent Transportation Systems</td>
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<tr>
<td>LEED</td>
<td>Leadership in Energy and Environmental Design</td>
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<tr>
<td>LPOE</td>
<td>Land Port of Entry</td>
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<tr>
<td>MOU</td>
<td>Memorandum of Understanding</td>
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<tr>
<td>OME</td>
<td>Otay Mesa East Land Port of Entry</td>
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<tr>
<td>PVTD</td>
<td>Point Vehicle/Time Detection</td>
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<tr>
<td>RBMS</td>
<td>Regional Border Management System</td>
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<tr>
<td>RFID</td>
<td>Radio-Frequency Identification cards</td>
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<tr>
<td>RTL</td>
<td>Ready to List</td>
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<tr>
<td>SANDAG</td>
<td>San Diego Association of Governments</td>
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<tr>
<td>SAT</td>
<td>Servicio de Administracion Tributaria [Tax Administration Service]</td>
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<tr>
<td>SCAG</td>
<td>Southern California Association of Governments</td>
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<tr>
<td>SCT</td>
<td>Secretaría de Comunicaciones y Transportes [Secretariat of Communications and Transportation]</td>
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<tr>
<td>SENTRI</td>
<td>Secure Electronic Network for Travelers Rapid Inspection</td>
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<tr>
<td>SHOPP</td>
<td>State Highway Operation and Protection Program</td>
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<tr>
<td>SR-11</td>
<td>State Route 11</td>
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<tr>
<td>TMC</td>
<td>Transportation Management Center</td>
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<td>Transportation System Management</td>
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<td>Texas Department of Transportation</td>
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<td>USDOT</td>
<td>U.S. Department of Transportation</td>
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<tr>
<td>ZEV</td>
<td>Zero Emission Vehicle</td>
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