



Agenda Item No. 3

To: Finance-Auditing Committee/Committee of the Whole  
Meeting of January 13, 2011

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Subject: **DISCUSSION AND POSSIBLE ACTION RELATIVE TO THE  
STRATEGIC DEVELOPMENT PLAN FOR ALL ELECTRONIC TOLL  
COLLECTION ON THE GOLDEN GATE BRIDGE**

### **Recommendation**

The Finance-Auditing Committee recommends that the Board of Directors approve actions relative to all electronic toll collection conversion on the Golden Gate Bridge as follows:

1. Authorize staff to commence implementation activities for all electronic toll collection conversion on the Golden Gate Bridge;
2. Authorize a budget increase to the All Electronic Toll Collection project in the FY 10/11 Bridge Division Capital Budget in the amount of \$2,900,000 to be funded from District reserves for a total project budget of \$3,237,000;
3. Authorize initiation of formal meet and confer discussions with unions who represent potentially affected employees concerning the effects of the Board's decision to commence implementation activities for all electronic toll collection conversion; and,
4. Authorize the filing of Notices of Exemption in the counties of Marin and San Francisco.

If approved by the Finance-Auditing Committee, this item will be presented to the Board of Directors for consideration on January 28, 2011.

### **Summary**

Facing a now \$89 million five-year projected deficit the Board approved the *Financial Plan for Achieving Long-Term Financial Stability* (Financial Plan) on October 30, 2009. The purpose of this report is to provide information and recommendations for initiative #4, All Electronic Tolling (AET) Conversion, in the Financial Plan.

On April 9, 2010, the Board authorized actions relating to initiative #4 in the Financial Plan, development of the All Electronic Tolling Strategic Development Plan (AET Plan). This report and attachment presents the results of the AET Plan and recommend authorization of a \$2.9 million capital project for AET conversion that, if approved, will be completed in late 2012.

Currently the Golden Gate Bridge collects 33% of tolls manually; the AET Plan explores fully automating toll collection to reduce costs, minimize congestion at the toll plaza, reduce vehicle emissions, and does not propose any changes to the current toll structure. Achieving fully automated toll collection depends on serving those customers currently paying the toll in cash, including those without a bank account, that prefer to pay in cash, are infrequent users or are visiting the Bridge for the first time. New toll payment options and programs will be developed to accomplish this task, including expanding the availability of the FasTrak program and paying the toll based on the vehicle license plate.

#### ***AET Plan – Benefits of AET***

The primary benefits of AET identified in the plan can be summarized as follows:

- **Environment** – emissions reductions by reducing unnecessary vehicle decelerations and accelerations at the toll plaza as well as reducing southbound weekend toll plaza traffic back-ups;
- **Access** – expanded availability of FasTrak toll pricing for cash customers and offering credit card toll payment for casual users;
- **Safety** – reduction or elimination in abrupt vehicle stoppages, speed changes and lane changes, and removing personnel from the traffic lanes, and;
- **Efficiency** – cost savings from eliminating cash toll collection at the plaza.

#### ***AET Plan – Cost and Benefit Analysis Overview***

The cost and benefit analysis conducted as a part of the AET Plan estimates a ten-year Financial Plan deficit reduction of \$19.2 million, occurring during the eight years after AET conversion. The savings are due to reduced collection costs from eliminating manual toll payment; in an AET environment the tasks of cash toll collection, toll collector supervision and cash counting are no longer present. This will eliminate 28 full-time and 4 part-time toll collection positions and 2 vault positions; resources currently used for toll collector supervision (Sergeants and Lieutenants) will be redirected to other high priority security and bridge operations activities. The cost and benefit analysis also takes into account the 5 new positions that will need to be added to manage new programs and systems associated with AET.

#### ***District Staff Impacts – Mitigation Overview***

The District will take significant efforts to mitigate the impacts of AET conversion on District staff. Specific information will be presented to the Board by the Deputy General Manager for Administration and Development, Z. Wayne Johnson.

The findings of the AET Plan, described briefly in this report, will be provided in more detail at the January 13, 2011, Finance-Auditing Committee meeting. The draft All Electronic Tolling Strategic Development Plan is included with this report as an Attachment; the report will be finalized after feedback from the Committee has been incorporated.

#### ***AET Plan – Project Overview***

On April 9, 2010 the Board authorized a professional services agreement with Traffic Technologies, Incorporated (TTI) for the creation of the AET Plan. Over the ensuing months TTI worked with District staff, toll collection vendors and contractors, and other tolling agencies to investigate the state of AET operations and development, and to determine how AET can work on the Golden Gate Bridge.

### ***Scope***

Conversion to AET will not impact the method of toll payment for the 67% of customers that currently pay the toll electronically; it is also anticipated that AET implementation will reduce southbound backups at the toll plaza, most notably on weekends. For those that currently pay the toll in cash, approximately 33% of Bridge customers, the District will offer the following:

- FasTrak – encourage frequent customers to use FasTrak
- License Plate Tolling:
  - Automated license plate-based payment, or;
  - Invoice sent in the mail

### ***Payment Options***

Concurrently, the District will undertake efforts to expand FasTrak and license plate tolling availability to ensure that the needs of customers that prefer to pay in cash, have no bank account or credit/debit card, or are just visiting the Golden Gate Bridge are met:

- Cash payment via a third party retail network – add toll and FasTrak payment capability to existing cash bill pay facilities in the Bay Area
- Credit/debit payment via phone and web – use automated functionality to pay an invoice, set up an automatic license plate payment account, or set up a FasTrak account
- Check or money order payment via mail – available for payment of an invoice or to replenish a FasTrak account

There will be no change to the toll rates in AET conversion. License plate and invoice customers will be assessed the \$6 base toll and FasTrak customers will receive the \$5 discount toll.

### ***Schedule***

Implementation of AET will take approximately two years. If the Board approves the capital project in January 2011 the schedule will be as follows:

#### **Design** – January 2011-August 2011 (months 1-8)

Develop business rules, coordinate and resolve regional issues, develop RFPs and contracts.

#### **Build** – September 2011-January 2012 (months 9-13)

Build on existing toll collection hardware and software; refine and finalize system design; develop and test hardware and software functionality that provides new payment options.

#### **Soft Launch** – February 2012-August 2012 (months 14-20)

Introduce new payment options to the public; verify functionality and address issues.

#### **Implement and Monitor** – September 2012-November 2012 (months 21-23)

Implement signage and striping;

*September 2012: AET conversion (cash toll payment no longer accepted);*

Resolve contingencies and verify system accuracy.

Implementation of the AET conversion will involve minor alterations to existing facilities, primarily software, hardware, signage, and striping. As such the project is categorically exempt under the California Environmental Quality Act. Notices of Exemption will be filed in the Counties of Marin and San Francisco upon approval by the Board.

AET conversion will also involve coordination with the Bay Area Toll Authority (BATA) for items that have regional implications, such as enhanced interactive voice recording (IVR) functionality at the FasTrak regional customer service center. We will discuss issues related to scope as well as cost sharing opportunities with BATA after approval of AET conversion.

***Next Steps***

Upon approval by the Finance-Auditing Committee, this item will be forwarded to the Board of Directors for consideration on January 28, 2011.

Additionally, if the AET conversion is approved, staff will return to the Board of Directors in the following months with policy decisions and contracts for the items described in this report. A brief list of near term actions is as follows:

- Project adviser and technical consultant contract(s) February 2011
- AET business rule approval Spring 2011
- System enhancement vendor contracts Spring-Summer 2011
- Vendor and consultant contract(s) Summer 2011

With the outlined AET conversion schedule it is anticipated that cutover to fully automated tolling and the elimination of cash toll payment can take place in September 2012.

**Fiscal Impact**

It is estimated that operating cost savings of approximately \$19.2 million will be generated over the 10-year period corresponding to the Financial Plan. The first two years of operational savings will be offset by the capital project cost of \$3,237,000; net operational savings will be \$16.3 million. These savings are projected to begin in the fall of 2012 after anticipated cutover to AET and accumulate over an eight-year timeframe in the Financial Plan.

The All Electronic Toll Collection - Strategic Development Plan project is included in the FY 10/11 Bridge Division Capital Budget in the amount of \$337,000 and is funded with 100% District funds. A capital budget increase in the amount of \$2,900,000 from District reserves will fully fund this project at a total cost of \$3,237,000 as follows:

<u>BUDGET ITEM</u>	<u>COST</u>
All Electronic Tolling Strategic Development Plan	\$337,000
All Electronic Tolling Conversion – Design	\$600,000
All Electronic Tolling Conversion – Construction	\$2,300,000
Hardware and Software	\$1,125,000
Implementation Actions and Equipment (e.g., signage)	\$450,000
Technical Activities (e.g., testing)	\$200,000
Project Management	\$525,000
<b>TOTAL</b>	<b>\$3,237,000</b>

Attachment: Draft All Electronic Tolling Strategic Development Plan

Attachment

**DRAFT**

**All Electronic Toll Collection  
Strategic Development Plan**

**January 13, 2011**



**GOLDEN GATE BRIDGE**  
HIGHWAY & TRANSPORTATION DISTRICT

Prepared by



DRAFT

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## 1. Executive Summary

Most major toll facilities in the United States have had some form of transponder-based electronic toll collection (ETC) capability (e.g. FasTrak in California, E-ZPass on the East Coast, SunPass in Florida) for well over ten years. During this time the average ETC market share has grown; and the technology, most notably automatic license plate recognition and processing, has improved. Recently, many of these facilities have converted to, or are in the planning stages of converting to, all electronic tolling (AET).

AET is a cashless system that relies on a mix of conventional transponder-based tolls with “license plate” tolls to achieve non-stop traffic through the tolling zone. Benefits realized by other agencies in the conversion to AET are similar to those that would be realized by the District:

1. Travel Time – Customers can proceed to their destination with fewer obstacles.
2. Safety – Reduction or elimination of abrupt vehicle speed changes and lane changes.
3. Environment – Emissions reductions through the elimination of unnecessary vehicle decelerations and accelerations at the toll plaza.
4. Service – Customers are not required to have cash on hand; expanded payment options.
5. Operational Efficiency – Operation of a single toll collection methodology.
6. Cost Efficiency – Reduction in operating costs.

The primary challenge of operating a toll facility in an all-electronic environment is serving those customers that currently pay the toll in cash. A survey of Southern California toll road users paying the toll in cash, conducted in May 2010, indicated that a number of customers would be more willing to join FasTrak if there were more convenient ways to participate in the program. As a part of AET implementation the Golden Gate Bridge could leverage existing Bay Area retail payment networks—which many individuals already utilize to pay utility, cell phone, and other bills using cash—to make the FasTrak program more convenient and accessible for cash customers. These payment networks could also be used to accept cash for single-toll payments. Such payment networks are already being used for tolling in other parts of the country and could be used here.

In addition to creating new automatic and cash-based payment methods, a successful conversion to AET depends on communicating these new options to the public. To achieve this goal comprehensive marketing, media, and public outreach programs would be necessary.

As a part of the AET Strategic Development Plan the project team developed a 23-month implementation and monitoring schedule. AET conversion could be achieved in this timeframe through the design, development, and deployment of new customer payment options in conjunction with thorough public education and outreach efforts. This schedule would accommodate the phasing-in of new payment options and interfaces, allowing for testing and verification as well as refining public outreach, in advance of full conversion to AET.

## 2. Project Overview

This strategic development plan was developed over a period of eight months, beginning with Board approval in April 2010. The plan includes both external and internal components.

An external industry scan of existing AET projects was conducted; this included surveys, documentation review, and interviews. Two formal studies involved an investigation of cash customer frequency and development of a traffic visualization model that assessed the impact AET might have on southbound traffic flow at the toll plaza under various configurations and maximum traffic volume.

Additionally, an internal project administrative structure was established that included a steering committee, a project team and a variety of working groups. The working groups discussed hardware, lane configuration, legal considerations, marketing and public outreach, account types, payment options, transition, staffing, equipment relocation, and financial impact.

The following principles for the implementation of AET on the Golden Gate Bridge guided the process:

- **Maintain the Existing Toll Rates**  
The toll will remain at \$6 for all non-FasTrak users; FasTrak customers will continue to pay \$5, receiving a \$1 discount.
- **Encourage FasTrak for Frequent Customers**  
By expanding the availability of the FasTrak program we hope to make the discount toll available to the remaining frequent customers that currently pay cash.
- **Accommodate Cash-Dependent Customers**  
Serving those customers that don't have a bank account or credit card and must pay the toll in cash is a key component of AET conversion. Successfully serving these customers by utilizing options such as existing retail cash payment networks is necessary.
- **Leverage Existing Hardware and Software**  
The toll system was replaced in 2007 and can support most functions required by AET, reducing the capital cost of implementation.
- **Accommodate Infrequent Customers**  
In addition to frequent and cash-dependent customers AET conversion must serve those users that live in the area and don't use the bridge frequently, as well as one-time visitors and tourists. This can be done by adopting new license plate tolling options.



### 3. All Electronic Tolling Industry Review

To date, AET has been implemented by nine toll facilities in the United States. While these facilities are primarily toll roads, both the MTA in New York and the Port Authority of New York and New Jersey, who together manage all toll bridges and tunnels into Manhattan, are also proceeding with AET programs. In addition to conversions, several new toll roads and one bridge have been using AET from the start.

To obtain firsthand knowledge about AET conversion, District staff interviewed the E-470 Public Highway Authority in Denver, which converted to AET on July 4, 2009. A lengthy interview was also conducted with the manager of the Sydney Harbour Bridge in Australia, a facility that converted to AET in January 2009. U.S. agencies that operate with all electronic tolling are as follows:

- Colorado, E-470 Public Highway Authority, E-470 [converted 7/4/09]
- Colorado, Northwest Parkway LLC, Northwest Parkway [converted 12/31/09]
- Florida, Tampa-Hillsborough Expressway Authority, Selmon Expressway [converted 9/17/10]
- Florida, Miami-Dade Expressway Authority, Gratigny Parkway (SR 924) [converted 6/7/10]
- Florida, Miami-Dade Expressway Authority, Don Shula Expy (SR 874) [converted 7/17/10]
- Florida, Miami-Dade Expressway Authority, Snapper Creek Expy (SR 878) [AET on 7/17/10]
- Louisiana, LA Dept of Transportation and Development, LA 1 (Leeville Bridge) [AET on 7/7/09]
- Texas, Central Texas Regional Mobility Authority, SH 183A [converted 12/1/08]
- Texas, North Texas Tollway Authority, President George Bush Turnpike [converted 7/1/09]

Our industry scan focused on the four agencies underlined above. These agencies were selected due to their operational similarities to GGB as well as the fact that they are currently operating in an AET environment or are about to convert, providing relevant data.

Predictably, finances, bond covenants, and many other factors influence an agency's decisions and reported results. The focus of the industry scan was primarily on the agency size, revenue, cost of operations, business rules established to optimize service to the customer, and net earnings to the agency. Specific questions asked of the selected agencies were:

- Why convert to AET?
- What are the major risks and how are they mitigated?
- What were the changes to the business model?
- What were the changes to infrastructure?
- What was the project cost?
- How was the project funded?
- What is the expected Return on Investment (ROI)?
- What was the impact on traffic and revenue?
- What was the impact on customers?

As the project moved towards completion additional questions were asked as they arose. Several overarching themes emerged from the industry review:

- Each of the four agencies indicated that they apply a discount to transponder-based tolls;
- Each agency emphasized the need for careful preparation—particularly in the areas of customer outreach and education, hardware and software upgrades, service center staffing, and traffic management during conversion; and,
- Each agency expressed overall satisfaction with the conversion stating that, if given the choice, they would again choose to convert to AET.

#### 4. Physical Changes (Infrastructure, Maintenance, and Safety)

Current lane configurations, frequency of multi-axle vehicles, and input from the District’s operations and engineering departments were used to build a traffic model that simulates traffic in an AET configuration. One of the anticipated outcomes of AET is that it would do for weekend traffic what the FasTrak program did for weekday morning traffic: reduce southbound backups at the toll plaza.

As part of AET, new and easily readable variable message signs would be installed on the canopy over each lane to provide better feedback to drivers approaching the plaza. AET also provides the opportunity to designate two dedicated lanes for carpools during appropriate hours.

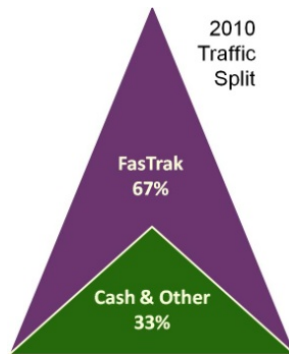
Based on identified AET needs, as well as the proposed 2009 FHWA Manual on Uniform Traffic Control Devices (MUTCD), new or changed approach signing would be necessary in several areas. These signs would start at about 3.5 miles from the bridge and would be used to communicate both the toll amount and the action necessary for payment.

Additionally, the license plate image capture system would be augmented to accommodate the increased volume of images. The following chart indicates the required equipment and software changes to implement AET, as well as the entity responsible.

Equipment	Entity Responsible
Image capture system	Toll system vendor
Lane Software <ol style="list-style-type: none"><li>1. Hybrid Vehicles</li><li>2. Switchable Tags</li><li>3. Customer Feedback Display</li><li>4. New Alarms</li><li>5. Remove Obsolete Functions</li></ol>	Toll system vendor
Plaza Software <ol style="list-style-type: none"><li>1. CSC interface</li><li>2. Reports</li><li>3. New Support Functions</li><li>4. Remove Obsolete Functions</li></ol>	Toll system vendor
Approach Signing	General consultant
CSC software changes	CSC vendor

## 5. Cash Customer Programs

The majority of GGB customers currently use FasTrak. Customers with FasTrak accounts and government non-revenue transactions account for sixty-seven percent (67%) of overall traffic and more than seventy percent (70%) of rush hour traffic. No changes, either in technology or in the processing of FasTrak transactions, would be required to serve these customers under AET.



The focus of this plan is on the thirty-three percent (33%) of customers paying the toll in cash. To help determine what payment options might be suitable we conducted a frequency study to determine how often cash customers cross the bridge. This assessment helped to determine how many customers might be appropriate for FasTrak and how many might best be served by other payment options. Additionally, the results of the May 2010 Southern California customer survey provided a better understanding of why cash customers have not adopted FasTrak. This information was utilized to anticipate how GGB cash customers might choose to pay for tolls under AET.

The frequency study performed at GGB in October 2010 divided the cash population (33% of total traffic) into three major categories: infrequent customers are those that cross the bridge less than 4 times per month, frequent customers cross the bridge 4 or more times per month, and the remainder are rental vehicles.

- **Infrequent Cash Toll Payment – Currently 18% of Golden Gate Bridge Customers**

Today, 18% of all customers on the Golden Gate Bridge are infrequent travelers (less than 4 crossings in a month) who pay with cash. It is anticipated that most of these customers, 14% of total bridge traffic, will not choose FasTrak or another automated (license plate-based) payment method as their limited bridge use wouldn't provide enough incentive to set up a payment account; these customers will receive an invoice in the mail. It is anticipated, however, that some of these customers, 4% of overall traffic, will choose to set up a FasTrak or a new license plate tolling account.

- **Frequent Cash Toll Payment – Currently 10% of Golden Gate Bridge Customers**

Although frequent travelers are in many ways ideal candidates for FasTrak accounts, the Southern California customer survey indicated that there are a variety of reasons why customers prefer not to open a FasTrak account. These include concerns for privacy, confidentiality and cash flow; these are discussed in more detail in Section 5.1 below. Furthermore, the survey indicated that some current cash payers would be willing to join FasTrak, but to date, have not done so. Hence we anticipate that a small number of these users, 2% of overall traffic, would sign up for FasTrak while many more, 7% of total traffic, would set up a new license plate tolling account for automatic payment. The remainder, 1% of total traffic, would receive an invoice.

- **Rental Car Cash Toll Payment – Currently 5% of Golden Gate Bridge Customers**

While all major rental car companies are currently enrolled in FasTrak, many rental car customers continue to pay in cash. Once paying cash at the lanes is no longer an option, most of these customers, 4% of total traffic, will pay the toll via FasTrak. The remaining rental car customers, 1% of total traffic, could take advantage of the automatic license plate toll payment option.

## 5.1 *Cash Customer Considerations*

A toll road survey conducted in Southern California targeted cash payment customers and provides insight into the reasons why these customers have stayed away from FasTrak. Of these respondents, two-thirds reported that they had not elected to open a FasTrak account due to something they didn't like or some general concern about the FasTrak program. The key reasons customers paid in cash are as follows:

- Want to be anonymous
- Cash preference
- Want a receipt
- Unbanked or under-banked
- Indifferent or an infrequent user

To address some of these customer concerns, a network for cash customers to interface with the toll payment system would be implemented under AET. There are existing third party vendors in the Bay Area that operate extensive retail cash payment networks, and these would be leveraged to enable customers to establish and replenish FasTrak accounts locally with cash. Currently cash replenishment of a FasTrak account can only be done at the customer service center at Broadway and The Embarcadero in San Francisco. Regional policies regarding the use of cash-based FasTrak accounts would be discussed with the Bay Area Toll Authority in advance of deployment.

Customers who do not want to use FasTrak could be accommodated through new automatic toll payment methods or invoicing. Registering a license plate number and associating it with a credit or debit card would expand automatic toll payment to those that don't wish to have a FasTrak transponder or a pre-paid account balance. All others would receive an invoice in the mail that could be paid via phone, on-line, or at a participating retail location using cash.

The infrequent user who pays by cash merely because there is no other alternative to FasTrak would be the ideal candidate for the registered license plate toll. They would simply call in (or go on-line) with their license plate number and credit card information before or after the trip is taken. Once the license plate image is processed, the toll amount would be charged to the credit card.

## 5.2 *New Payment Options*

Information on the frequency of cash customers and insight into their preferences, outlined above, enabled the development of several new payment options. Implementation of AET on the Golden Gate Bridge would involve rolling out this functionality to successfully serve current cash customers:

- **Registered License Plate**  
The registered license plate payment option requires registration of a valid credit/debit card with the customer service center but does not require a pre-paid balance. A registered license plate customer must supply license plate information, as well as a credit card or no-pin debit card. Registration can be established before or after a trip is taken and with or without an account closure date. Each night, the credit card provided would be charged for that day's transactions.
- **Registered Invoice**  
The registered invoice payment option is a registered account that requires neither a pre-paid balance for tolls nor a credit/debit card on file. Registered invoice customers provide their personal information (name, address, email, phone), as well as their vehicle information, and are billed monthly based on their license plate. Invoices would be emailed periodically and will give customers a specified number of days to pay the invoice before the transactions would be considered toll violations.
- **Unregistered Invoice**  
The unregistered invoice payment option will go into effect for all customers that do not have a FasTrak account and that don't register their license plate. Transactions would be aggregated onto invoices and sent periodically to the address of the vehicle's registered owner. Owners would be given a specified number of days to pay the invoice before the transactions are considered toll violations. Under AET, no driver is considered a violator at the time of crossing.

## 6. **Advantages, Risks and Mitigation**

AET is being pursued by toll facilities in North America and around the world due to the benefits that it can provide to both toll agencies themselves and their customers. As mentioned above the advantages of AET range from increased safety to customer convenience and cost savings. Benefits for the Golden Gate Bridge identified by the project include the following:

### 6.1 *Benefits of All Electronic Tolling*

- **Environment**  
A key benefit of AET is the reduction in emissions produced by stop-and-go traffic, and the consequent improvement in air quality. The environmental impact is one of the key reasons cited by agencies nationwide for considering and choosing AET.

- **Access**

In an AET environment, customers are not required to have cash on hand. A variety of convenient payment options would be introduced under AET that would allow for payment by credit cards, debit cards (including pre-paid types) and cash at offsite facilities.
- **Safety**

Under AET, traffic is expected to move at more uniform speeds through the toll plaza, since vehicles will no longer be stopping. This uniformity will result in fewer lane changes and speed changes, thereby increasing safety. Additionally, District personnel will no longer need to cross traffic lanes.
- **Efficiency**

The introduction of FasTrak eliminated weekday morning southbound traffic backups, as most of these customers joined the FasTrak program. However, there are still backups at the toll plaza on weekends due to the higher percentage of cash-paying customers. AET conversion is anticipated to reduce weekend southbound toll plaza backups in the same way that FasTrak eliminated weekday commute backups. Finally, one of the most compelling reasons that agencies opt for AET is the reduction in operating costs.

## ***6.2 Risks and Mitigations of All Electronic Tolling***

While the benefits of AET conversion are significant there are risks associated with the elimination of cash toll collection. In addition to possible customer confusion about the available payment options, AET conversion also entails an increased reliance on hardware and software systems as well a delay in revenue collection. Several strategies can be pursued to reduce or eliminate these risks:

- **Customer confusion**

Risk: Eliminating cash payment at the toll booth and introducing new toll payment methods will inevitably lead to some customer confusion.

Mitigation: A comprehensive public outreach and education campaign, a phased-in implementation approach, clear signage and additional traffic management support at the toll plaza during transition are strategies that would be implemented to minimize confusion.
- **Fully automated toll collection**

Risk: Toll systems, like all systems that rely on software and hardware, require ongoing maintenance and oversight. By eliminating cash, the reliance on accuracy and reliability in image capture becomes all the more critical.

Mitigation: To mitigate this risk, implementing AET would include augmenting vigilance of hardware and software performance as well as pro-active maintenance and updating.

- **Revenue collection**

Risk: The more a system relies on license plate tolling the greater the risks due to missing license plates, incomplete information received from the DMV and delayed processes at the customer service center or the collections agency.

Mitigation: To mitigate this risk the AET project would include increased monitoring of all systems and processes that impact revenue. Monitoring would include ensuring invoices are mailed on schedule, that returned mail is re-sent promptly and that violations flow to the collections agency smoothly and efficiently.

## 7. Employee Impact

If AET were adopted the need for and expenses associated with manual toll collection would no longer exist. During the two-year AET implementation period the District would, among other things, work to mitigate and address the impacts on staff affected by conversion.

AET would also require some changes to current responsibilities in the areas of program management and outreach, revenue and toll collection analysis, and technical software monitoring and maintenance.

### 7.1 *Eliminated Duties*

Proposed staffing changes under AET include the elimination of 28 full-time and four part-time toll collector positions as well as two positions in the vault department. The vault positions will be eliminated as cash counting will no longer be required.

It should be noted that although supervision of toll collectors will no longer be needed the resources currently allocated to toll supervision would be redirected to other priorities.

### 7.2 *Increased or New Duties*

As outlined in the risks and mitigation strategies in Section 6.2 above, strategies to mitigate the risks associated with a move to AET require several new or increased duties. These fall into three main categories:

- Cash Payment Program Management and Education to manage the third party retail payment network and help ensure the public is aware of and understands the AET program.
- License Plate Toll Collection and Revenue Oversight Analysis to ensure that revenue flows back to the District efficiently and promptly. This requires pro-active monitoring of traffic volumes and revenue collection, performance of the customer service center and supporting processes, violation processing and collections activities, as well as resolving customer issues that may arise.

- Toll System Monitoring to proactively ensure that the toll collection system collects all necessary transaction information and transmits it to the CSC, software and hardware systems are performing optimally, a preventive maintenance program is being implemented and most importantly to ensure that issues are resolved expeditiously when they do arise, minimizing risk to the toll collection system.

The District’s Human Resources Department will work with all impacted employees to ensure that each individual understands and can take full advantage of the programs and alternative opportunities that are available.

## 8. Financial Impact

The cost of the capital project for AET conversion is estimated at \$2.9 million. This includes transition costs, equipment modifications, signing and striping, changes to the customer service center system, required studies, initial marketing, and consulting services.

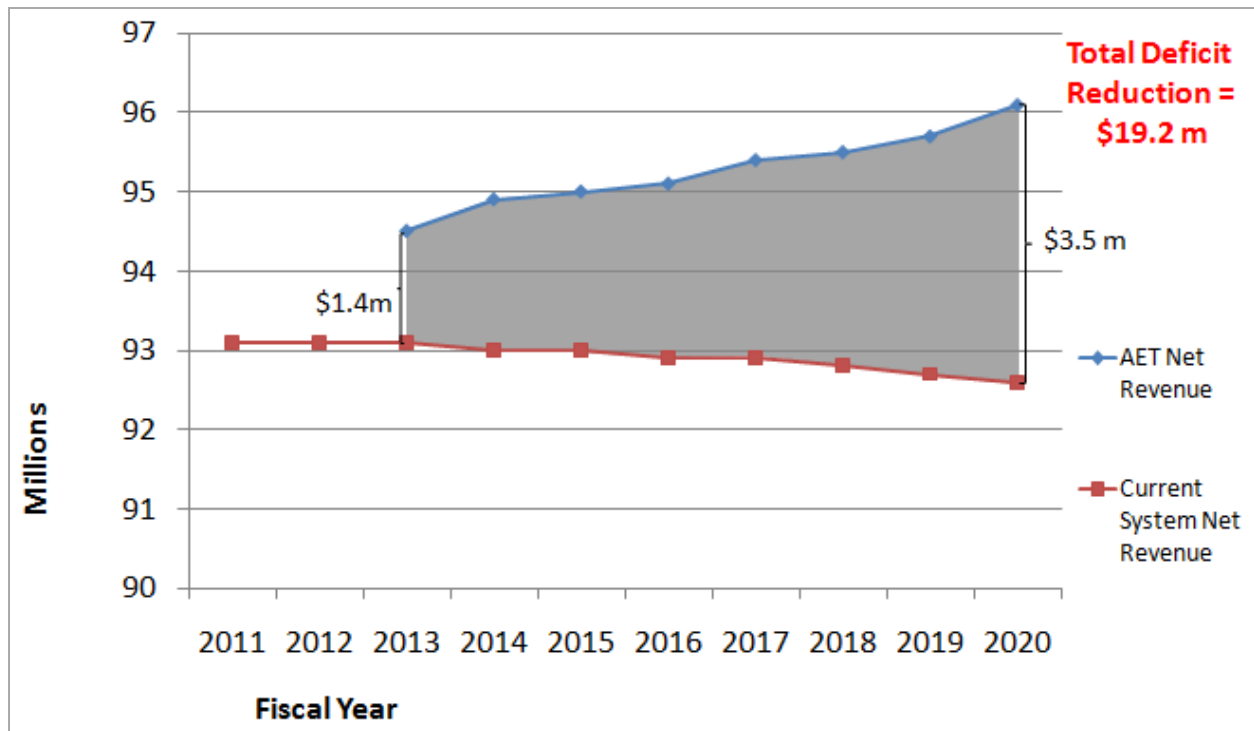
Phase	Cost
Design	\$650,000
Build	\$1,100,000
Soft Launch	\$950,000
Implement & Monitor	\$200,000
<b>TOTAL</b>	<b>\$2,900,000</b>

Operating cost and toll revenue estimates were based on keeping the current toll rates. Under this guideline, and well enforced violation policies, the gross revenue for the District would remain essentially consistent. The net deficit reduction over the ten year period that corresponds with the *Financial Plan for Achieving Long-Term Financial Stability* adopted in October 2009 is estimated to be \$19.2 million. The District is projected to recover the initial \$2.9 million capital investment within two years of moving to AET.

The figure on the following page shows the projected net operating revenue for both the current system and all electronic tolling.



**Comparison of Net Operating Revenue**



An overview of the net operating revenue projections for the current system and all electronic tolling scenarios is shown in the table below. Projected revenue for both the current system and all electronic tolling were based on the same projections of traffic on the Golden Gate Bridge and on the current toll rates. Under the current system revenues are collected via cash, FasTrak and violation processing; with all electronic tolling revenues are collected via FasTrak, license plate tolling and violation processing. Under all electronic tolling, the new license plate toll account holders pay the same toll as current cash customers. Under all electronic tolling customers will move towards FasTrak at a faster rate than they have historically under the current system. In addition, enhanced monitoring of the processing for image-based transactions is projected to improve the District’s ability to collect image-based tolls.

The operating cost projections below are based on the same division of customers among the payment options as the revenue projections: cash, FasTrak and violation processing costs for the current system and FasTrak, license plate tolling and violation processing costs under all electronic tolling. The major cost components of collecting tolls are summarized below:

- Cash**  
The major cost of collecting cash tolls is the personnel required.
- FasTrak**  
The major cost components of collecting FasTrak tolls include transaction processing, customer service, and credit card fees.

- **License Plate**

The major cost components of collecting license plate tolls are transaction processing, customer service, invoice generation, cash payment network costs and credit card fees.

- **Violations**

The major cost components of violations are transaction processing, notice generation and mailing, customer service, credit card fees, and DMV hold and collections fees (if applicable).

The operating cost comparison shows that the switch from cash to license plate tolling provides substantial cost savings. The cost savings grow over time as the rate of increase of personnel costs is faster than the rate of increase of costs for electronic transaction processing. More detail on revenue and cost can be found in [Appendix A](#).

**Overview: Operating Cost and Revenue**

Fiscal Year	Current System			All Electronic Tolling			Net Differential
	Total Revenue	Operating Costs	Net Revenue	Total Revenue	Operating Costs	Net Revenue	
2011	\$102.3	\$9.2	\$93.1				
2012	\$102.4	\$9.3	\$93.1				
2013	\$102.6	\$9.5	\$93.1	\$102.8	\$8.3	\$94.5	\$1.4
2014	\$102.7	\$9.7	\$93.0	\$102.8	\$7.9	\$94.9	\$1.9
2015	\$102.9	\$9.9	\$93.0	\$102.9	\$7.9	\$95.0	\$2.0
2016	\$103.0	\$10.1	\$92.9	\$103.0	\$7.9	\$95.1	\$2.2
2017	\$103.2	\$10.3	\$92.9	\$103.2	\$7.8	\$95.4	\$2.5
2018	\$103.3	\$10.5	\$92.8	\$103.3	\$7.8	\$95.5	\$2.7
2019	\$103.5	\$10.8	\$92.7	\$103.6	\$7.9	\$95.7	\$3.0
2020	\$103.6	\$11.0	\$92.6	\$104.0	\$7.9	\$96.1	\$3.5
<b>TOTAL</b>	<b>\$824.8</b>	<b>\$81.8</b>	<b>\$743.0</b>	<b>\$825.6</b>	<b>\$63.4</b>	<b>\$762.2</b>	<b>\$19.2</b>

Notes: numbers are in millions; for comparison purposes the Current System figures in the TOTAL row represent Fiscal Years 2013-2020; the Total – Net Differential figure is \$19.2 million due to rounding in the underlying annual Net Differential figures.

## 9. Legal Considerations

Concepts such as new payment options, invoicing, violation processing, fees, and toll differentials were reviewed by the District’s legal counsel. Their assessment was that there were no legal obstacles to implementing AET on the Golden Gate Bridge. Their opinions and guidance will help to establish the proposed business rules for new payment options and transaction processing.

## 10. Transition

The transition to AET would be phased-in using a “soft launch” approach. While the requisite technical and system changes are being implemented, the period leading up to the AET conversion date would also be used for public outreach, bringing as many customers as possible into new payment programs as they become available. This time can also be used to ensure that requisite internal operational changes are put in place and that new AET functionality is adequately tested. In addition to hardware and software updates, District staff will use this time to review toll payment processing procedures to identify and address any unknown gaps or weaknesses. Prior to the AET conversion date, new payment options will be introduced and relevant signs unveiled. All necessary toll booths would continue to be available for cash collection until final conversion. Implementation of AET is outlined in more detail below.

## 11. Schedule and Implementation Plan

This project included development of a preliminary implementation plan and schedule in order to fully assess the impact of AET conversion. If a decision to convert to AET is made in January 2011 the design phase of the project would begin immediately with full transition to AET in September 2012, followed by three months of verification and final issue resolution. District staff and consultants would launch the project and generate the necessary specifications and other contracts to the existing CSC and toll system contractors. Staff would bring on additional support to accomplish a series of specialized tasks. Acceptance testing and contingency resolution would be accomplished prior to, during, and for three months following conversion. Following is the summary implementation schedule broken out in phases.

### Phase I: Design - Contracts and Business Rules

January – August 2011

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During Phase I, District staff and extensions of staff would prepare three requirements specification documents.

- (a) Prepare specifications for technical changes to the existing lane and plaza contractor to make necessary upgrades to the lane equipment and plaza computer.
- (b) After a thorough review of existing business rules and process flows, prepare specifications for software changes for the regional customer service center.
- (c) Prepare a Request for Proposals for a general systems and traffic consultant(s). Duties would include conducting a traffic safety study, developing and implementing a marketing and public outreach program, introducing new payment methods such retail cash payment networks, finalizing and implementing a plan for restriping and re-signing as well as testing and implementation of each project component.

### Phase II: Build - Development, Testing, Media/Marketing Outreach September 2011 – January 2012

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During Phase II, a traffic safety study will be undertaken and designs for lane signage and striping finalized. The preliminary marketing plan will be refined, focus groups conducted, and public outreach initiated.

Phase II is also the critical phase during which lane, plaza, and customer service center software modifications will be developed and tested. The contemplated software modifications to the customer service center processes—which include changes to the web, the interactive voice system, and customer materials—are rather extensive. However, a significant portion of the required modifications are already underway as part of the Video Tolling Demonstration Project.

### **Phase III: Soft Launch - New Account Types Introduced**

**February 2012 – August 2012**

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All new account types that will be offered to the public would be made available in February 2012, six months before the final conversion. This gradual transition will allow operational issues and customer concerns to be resolved prior to final conversion. New methods of payment such as kiosks will also be introduced in this phase.

Phase III will include extensive testing of all functionality, including new traffic, revenue, and reconciliation reports.

Cash-paying non-revenue groups will be transitioned to the approved AET payment method.

Signs will be installed and unveiled in stages. For example, signs informing travelers to call 511 to pay tolls would be visible in Phase III, but signs related to lane configuration would not.

Also during Phase III, the staff transition will begin. Job descriptions will be prepared and user manuals developed.

### **Phase IV: Implement and Monitor – AET Cutover**

**September 2012 – November 2012**

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September 2012 will mark the full conversion of the Golden Gate Bridge to a cashless facility. The roadway will be striped and remaining signs unveiled. Final stages of the staff transition plan will be implemented. Following full implementation, the lane equipment will be relocated to facilitate maintenance.

Cash currently accounts for roughly 50% of revenue (due to FasTrak discount). Electronic toll collection, though more efficient, requires a different type of monitoring and vigilance. For three months following transition, each and every process would be scrutinized for accuracy and completeness.

Any detected problem will be resolved and/or reported. Not until full implementation is underway can a comprehensive financial and operational analysis be performed. Staff and extensions of staff will deliver reports that provide management and oversight committees with a complete picture of successes, lessons learned, and recommendations.

## 12. Conclusions

In conclusion, the All Electronic Tolling Strategic Development Plan found that the benefits in travel time, safety, service, environmental impact and operational and cost efficiencies inherent in AET are incentivizing tolling agencies in North America and around the world to pursue operations in an all electronic environment.

AET is considered viable for agencies implementing new systems and for agencies converting from a system that includes cash collection. AET continues to be a key topic at national and international conferences and conversion to AET is in the planning stages of numerous U.S. agencies. Agencies that have already made the conversion to AET are achieving their goals, and all those interviewed stated that they would choose AET conversion again if given the choice.

Most importantly, the results of the AET Strategic Development Plan indicate that through the implementation of new payment methods and comprehensive public outreach and education programs the District can achieve operational cost savings through AET conversion. The net operating deficit reduction over the ten-year period that corresponds with the *Financial Plan for Achieving Long-Term Financial Stability* adopted in October 2009 is estimated to be \$19.2 million. AET on the Golden Gate Bridge would bring the added benefits of reduced weekend traffic back-ups at the toll plaza, improved air quality, and increased payment options for customers. Full conversion to AET at the Golden Gate Bridge could be completed in approximately two years.

**APPENDIX A: Detailed Financial Information**

**All Electronic Tolling Strategic Development Plan  
10-Year Cost Projection (data are for fiscal years)**

Numbers are in thousands

<b>SUMMARY</b>	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Current System	\$ 9,156	\$ 9,334	\$ 9,520	\$ 9,714	\$ 9,914	\$ 10,117	\$ 10,326	\$ 10,537	\$ 10,754	\$ 10,975
AET			\$ 8,255	\$ 7,914	\$ 7,889	\$ 7,860	\$ 7,832	\$ 7,804	\$ 7,857	\$ 7,918
AET Cost Differential			\$ (1,265)	\$ (1,800)	\$ (2,025)	\$ (2,257)	\$ (2,494)	\$ (2,733)	\$ (2,897)	\$ (3,057)
<b>Total Costs</b>										
Current System										
Personnel Costs	\$ 5,567	\$ 5,702	\$ 5,846	\$ 5,998	\$ 6,155	\$ 6,316	\$ 6,481	\$ 6,649	\$ 6,823	\$ 7,000
Cash Collection Personnel	\$ 4,780	\$ 4,895	\$ 5,017	\$ 5,146	\$ 5,279	\$ 5,415	\$ 5,555	\$ 5,697	\$ 5,844	\$ 5,994
ETC Personnel	\$ 787	\$ 807	\$ 829	\$ 852	\$ 876	\$ 901	\$ 926	\$ 952	\$ 979	\$ 1,006
Transaction Costs	\$ 3,589	\$ 3,632	\$ 3,674	\$ 3,716	\$ 3,759	\$ 3,801	\$ 3,845	\$ 3,888	\$ 3,931	\$ 3,975
CSC Costs	\$ 2,447	\$ 2,476	\$ 2,505	\$ 2,534	\$ 2,563	\$ 2,592	\$ 2,622	\$ 2,651	\$ 2,681	\$ 2,711
Bank and Credit Card Fees	\$ 1,061	\$ 1,075	\$ 1,088	\$ 1,101	\$ 1,115	\$ 1,128	\$ 1,142	\$ 1,156	\$ 1,169	\$ 1,183
Other Costs	\$ 81	\$ 81	\$ 81	\$ 81	\$ 81	\$ 81	\$ 81	\$ 81	\$ 81	\$ 81
<b>CURRENT SYSTEM TOTAL</b>	<b>\$ 9,156</b>	<b>\$ 9,334</b>	<b>\$ 9,520</b>	<b>\$ 9,714</b>	<b>\$ 9,914</b>	<b>\$ 10,117</b>	<b>\$ 10,326</b>	<b>\$ 10,537</b>	<b>\$ 10,754</b>	<b>\$ 10,975</b>
AET										
Personnel Costs			\$ 1,536	\$ 1,580	\$ 1,624	\$ 1,670	\$ 1,716	\$ 1,764	\$ 1,813	\$ 1,864
ETC Personnel			\$ 749	\$ 770	\$ 792	\$ 814	\$ 837	\$ 860	\$ 884	\$ 909
AET Personnel			\$ 787	\$ 810	\$ 832	\$ 856	\$ 879	\$ 904	\$ 929	\$ 955
Transaction Costs			\$ 6,719	\$ 6,334	\$ 6,265	\$ 6,190	\$ 6,116	\$ 6,040	\$ 6,044	\$ 6,054
CSC Costs			\$ 4,961	\$ 4,616	\$ 4,542	\$ 4,462	\$ 4,382	\$ 4,301	\$ 4,301	\$ 4,307
Bank and Credit Card Fees			\$ 1,522	\$ 1,482	\$ 1,487	\$ 1,492	\$ 1,498	\$ 1,503	\$ 1,507	\$ 1,511
Other Costs			\$ 236	\$ 236	\$ 236	\$ 236	\$ 236	\$ 236	\$ 236	\$ 236
<b>AET TOTAL</b>			<b>\$ 8,255</b>	<b>\$ 7,914</b>	<b>\$ 7,889</b>	<b>\$ 7,860</b>	<b>\$ 7,832</b>	<b>\$ 7,804</b>	<b>\$ 7,857</b>	<b>\$ 7,918</b>

**All Electronic Tolling Strategic Development Plan**  
**10-Year Revenue Projection** (data are for fiscal years; numbers are in thousands)

**SUMMARY**

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Current System	\$ 102,304	\$ 102,449	\$ 102,595	\$ 102,740	\$ 102,887	\$ 103,031	\$ 103,177	\$ 103,322	\$ 103,469	\$ 103,613
AET			\$ 102,825	\$ 102,766	\$ 102,909	\$ 103,047	\$ 103,177	\$ 103,303	\$ 103,642	\$ 103,984
AET Revenue Differential			\$ 230	\$ 26	\$ 22	\$ 16	\$ -	\$ (19)	\$ 173	\$ 371

**Revenue Breakdown**

Current System

FasTrak	\$ 62,388	\$ 63,238	\$ 64,093	\$ 64,952	\$ 65,816	\$ 66,683	\$ 67,555	\$ 68,431	\$ 69,312	\$ 70,196
Cash	\$ 37,941	\$ 37,231	\$ 36,516	\$ 35,797	\$ 35,074	\$ 34,346	\$ 33,614	\$ 32,878	\$ 32,138	\$ 31,393
Violation	\$ 1,975	\$ 1,980	\$ 1,986	\$ 1,991	\$ 1,997	\$ 2,002	\$ 2,008	\$ 2,013	\$ 2,019	\$ 2,024
<b>CURRENT SYSTEM TOTAL</b>	<b>\$ 102,304</b>	<b>\$ 102,449</b>	<b>\$ 102,595</b>	<b>\$ 102,740</b>	<b>\$ 102,887</b>	<b>\$ 103,031</b>	<b>\$ 103,177</b>	<b>\$ 103,322</b>	<b>\$ 103,469</b>	<b>\$ 103,613</b>

AET

FasTrak			\$ 71,290	\$ 72,169	\$ 73,052	\$ 73,940	\$ 74,831	\$ 75,728	\$ 75,936	\$ 76,145
License Plate			\$ 21,992	\$ 22,396	\$ 21,940	\$ 21,481	\$ 21,020	\$ 20,556	\$ 20,612	\$ 20,669
Violation			\$ 9,543	\$ 8,201	\$ 7,917	\$ 7,626	\$ 7,326	\$ 7,019	\$ 7,094	\$ 7,170
<b>AET TOTAL</b>			<b>\$ 102,825</b>	<b>\$ 102,766</b>	<b>\$ 102,909</b>	<b>\$ 103,047</b>	<b>\$ 103,177</b>	<b>\$ 103,303</b>	<b>\$ 103,642</b>	<b>\$ 103,984</b>