

RESOLUTION NO. 21-012

**RESOLUTION OF THE
RIVERSIDE COUNTY TRANSPORTATION COMMISSION
REAFFIRMING AND READOPTING THE
AMENDED AND RESTATED
INTERSTATE 15 EXPRESS LANES
TOLL POLICY GOALS AND TOLL POLICIES AND
RATIFYING ACTIONS IN FURTHERANCE OF THE POLICY**

WHEREAS, the Riverside County Transportation Commission (the "Commission") has commenced operation of the I-15 Express Lanes.

WHEREAS, the Commission adopted its original I-15 Express Lanes Toll Policy on June 8, 2016 pursuant to adoption of Resolution No. 16-011.

WHEREAS, on March 13, 2019, by Resolution No. 19-003, the Commission amended and restated, in its entirety, the original I-15 Express Lanes Toll Policy (the "Toll Policy") with the intent of reducing the toll discount offered to qualified zero emission vehicles to 15%, from commencement of operations.

WHEREAS, due to a scrivener's error, a correction is needed to the Toll Policy to reflect the intent of the Board action on March 13, 2019, which will ensure that the policy is internally consistent, and consistent with the intent of the Board in its action on March 13, 2019, as clarified in the staff report associated with such action.

WHEREAS, the Commission also desires to make a minor, non-substantive change to the Toll Policy to acknowledge that zero emission vehicles are also referred to as clean air vehicles (CAVs).

NOW, THEREFORE, be it resolved by the Riverside County Transportation Commission as follows:

Section 1. The Recitals set forth above are true and correct and incorporated into this Resolution as though fully set forth herein.

Section 2. In accordance with the findings set forth above and in the staff report accompanying this Resolution, the Riverside County Transportation Commission hereby reaffirms and readopts the Amended and Restated Interstate 15 Express Lanes Toll Policy Goals and Toll Policies ("Toll Policy") attached as Exhibit A, including correction of the scrivener's error as described above, and ratifies all actions in furtherance of the Toll Policy.

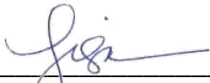
APPROVED AND ADOPTED this 9 day of June, 2021.

RESOLUTION NO. 21-012



Jan C. Harnik, Chair
Riverside County Transportation
Commission

ATTEST:



Lisa Mobley
Clerk of the Board

EXHIBIT A

**AMENDED AND RESTATED
INTERSTATE 15 EXPRESS LANES
TOLL POLICY GOALS AND TOLL POLICIES**

[attached behind this page]



I-15 EXPRESS LANES PROJECT

Toll Policy Report

*Adopted March 2019
Reaffirmed June 2021*





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Introduction

This report provides a description of the toll policies that form the basis for the Concept of Operations, which serves as the framework for the ultimate design of the I-15 Express Lanes Project. These toll policies will also be used as key assumptions for the I-15 Express Lanes Traffic and Revenue Study prepared separately.

The I-15 Express Lanes Project will generally include two tolled express lanes in each direction on Interstate 15 (I-15) in Riverside County between Cajalco Road in Corona and the State Route 60 (SR-60) interchange, a distance of approximately 15 miles. The Project is being developed by the Riverside County Transportation Commission (RCTC) in partnership with the California Department of Transportation (Caltrans) and the Federal Highway Administration (FHWA). The Express Lanes are intended to improve current and projected future congestion by adding capacity that can be managed and operated in a manner consistent with the policies described in this document.

RCTC developed a set of toll policy goals that provided a foundation for the development of the policies described in this document. These goals are described in the next section, followed by a table summarizing each of the toll policies and how each policy achieves the stated goals.

Toll Policy Goals

Description:

In partnership with federal, state, regional, and local agencies, RCTC develops and oversees transportation plans, policies, funding programs, and both short-term and long-range solutions that address the county's increasing mobility, accessibility, and environmental needs.

The establishment of Express Lanes on I-15 within the County has the potential to assist Riverside County in meeting many of its mobility, air quality, and funding challenges. Vital to this effort are toll policies which fulfill RCTC's goals and objectives for transportation system performance and revenue sustainability.



RCTC's toll policy goals and objectives are guidelines for developing specific policies and business rules that inform the toll collection aspects of the design and operation of the I-15 Express Lanes. Given the corridor's adjacency to the SR-91 corridor, and the more recent effort by RCTC in setting policies and goals for Express Lanes in that corridor, the toll policy goals for I-15 are similar to those developed by RCTC for the Riverside 91 Express Lanes to provide for regional consistency.

Background:

RCTC, in cooperation with the Caltrans, is proposing a project to improve traffic flow and reduce congestion on a portion of I-15. The project proposes to construct two tolled Express Lanes generally in each direction between the I-15/Cajalco Road interchange and the I-15/SR-60 interchange. All proposed improvements are anticipated to be constructed within existing Caltrans right of way, with the majority of the improvements occurring within the existing I-15 median.

According to the I-15 Tolled Express Lane Corridor Improvement Program Draft Forecast Traffic Volume Development Report, the primary purpose of the project is to address current and future (2040) travel demand and improve traffic operations on the I-15 corridor, which has been identified as a corridor that needs capacity improvements to address existing and projected capacity deficiencies from the accelerated growth and development that has taken place in communities along the I-15 corridor and is expected to continue. As a result of the on-going accelerated growth and development, the I-15 corridor will experience increased congestion, longer commute times, increased energy consumption, air pollution, higher accident rates and the degradation of the freeway mainline, local interchanges, and the adjacent local arterials. The operational breakdown of these facilities is expected to have significant adverse impacts on the economic vitality of the region and the transport of goods and services along this corridor.



Recommendation:

RCTC staff recommends the following goals for the I-15 Express Lanes:

1. Provide Express Lane customers with a safe, reliable, and congestion free trip.
2. Deliver exceptional, consistent, and responsive customer service.
3. Enact toll policies that balance commute choice and lane availability for all customers.
4. Provide the infrastructure and an incentive for ridesharing and increased transit use as an alternative to driving alone.
5. Generate sufficient revenue to meet Express Lane financial obligations to pay current and long-term costs.
6. Use surplus revenues for transportation improvements exclusively within the Interstate 15 corridor.

Toll Policy Summary

#	Policy Topic Area	Policy Recommendation	Toll Policy Goal(s) Met	Page
1	Toll Pricing Objectives	Optimize person throughput in the corridor while meeting debt obligations.	1,3,4,5	6
2	Toll Pricing Objectives	Establish toll pricing to routinely achieve free-flow speeds of 60-65 mph, always exceeding the 45 mph federal minimum requirement.	1	6
3	Hours of Operation	Charge tolls 24 hours a day, seven days a week.	3,5	7
4	Carpool Occupancy Requirement	Define carpools as vehicles occupied by 3 or more persons.	3,4	8
5	Toll Interoperability	Adopt the national interoperability standard for automated toll collection systems when adopted by the toll industry.	2	10
6	Toll Interoperability	Adopt the new state interoperability standard for automated toll collection systems when adopted by the California Toll Operators Committee.	2	10
7	Project Development Costs	Fund project development costs by current and future Measure A sales tax, toll revenue, and state and federal grants.	3,5	12
8	Operations and Maintenance Costs	Fund operations, maintenance, and toll enforcement costs by toll revenue.	2,5	14
9	Project Repayment	Repay Measure A sales tax bonds and toll revenue bonds with future Measure A and toll revenue, respectively.	5	16
10	Use of Revenue	Use surplus revenue to fund Interstate 15 corridor transportation investments.	2,3,6	17
11	Enforcement	Enforce I-15 Express Lanes toll violations through agreement with the California Highway Patrol and any future state or federal toll violation laws.	1,2	18
12	Operations and Maintenance Responsibilities	Maintain Express Lanes and toll systems as a responsibility of RCTC.	1,2	20

#	Policy Topic Area	Policy Recommendation	Toll Policy Goal(s) Met	Page
13	Operations and Maintenance Responsibilities	Perform customer service patrol and incident management as a responsibility of RCTC in cooperation with Caltrans and other jurisdictions.	1,2	20
14	Operations and Maintenance Responsibilities	Provide customer service and the account relationships as a responsibility of RCTC.	2,5	20
15	Signage	Provide toll signage meeting the latest California Manual of Uniform Traffic Control Devices Standards.	1,2	22
16	Express Bus Integration	Encourage express bus use through toll policies and Express Lane operations.	3,4,6	23
17	Design – Facility Ingress and Egress	Design the roadway and ingress and egress locations meeting Caltrans design standards where feasible and practical.	1,2	25
18	Design – Number of Lanes	Construct and operate two Express Lanes in each direction where possible.	1,2,5	27
19	Toll Pricing Method	Use Dynamic Pricing to determine the toll price.	1,3,5	28
20	Toll Exemptions and Discounts	Provide toll discounts according to legislation and for operations and maintenance vehicles.	1,2	30
21	Toll Payment Method	Require all vehicles to have a transponder at time of travel.	1,2,4	33
22	Mobile Interface	Implement Mobile Web for FasTrak® customers, but defer the Mobile Toll Payment Application.	1,2,3	35
23	High Occupancy Vehicle Declaration Options	Identify HOV3+ carpool customers via a switchable transponder.	1,2,4	36
24	Express Lane Operations Facility	Locate the call center, customer service center and traffic management center and administration in close proximity to the Express Lanes.	2	38

1 – 2. Toll Pricing Objectives

Description:

Express lane pricing serves as a tool to regulate demand and preserve optimal operating conditions. A primary goal of express lanes is to maintain priority access for high occupancy vehicles (HOVs), buses and vanpools to achieve high person throughput. In addition, federal requirements specify minimum operating conditions for HOV and express lanes and prescribe the use of pricing as a means of meeting those requirements. Express lane pricing also generates revenue that can be used to support project development, operating and maintenance costs, and other improvements.

Recommendation:

- 1. Optimize person throughput in the corridor while meeting debt obligations.***
- 2. Establish toll pricing to routinely achieve free-flow speeds of 60-65 mph, always exceeding the 45 mph federal minimum requirement***

Background:

A common goal of express lane projects around the country is to optimize the performance of the lanes using pricing. The performance of express lanes can be measured in a number of ways, including person throughput. And although not often stated as a primary goal of express lanes, revenue generation is another measure of performance. Optimizing person throughput in express lanes is achieved by maintaining priority service for HOVs, buses and vanpools by offering toll discounts and ensuring that the express lanes maintain free-flow conditions for these vehicles.

Federal requirements define a degraded HOV or express lane facility as one that does not meet a minimum average operating speed of 45 mph for 90 percent of the time over a 180-day monitoring period during weekday peak hours. The requirements specify varying the toll charged to vehicles to bring a degraded facility into compliance. As described in Section 19, dynamic pricing will be used to manage demand in the Express Lanes. The pricing algorithm used to calculate the toll rates can be calibrated to ensure that free-flow speeds of 60-65 mph are routinely achieved in the Express Lanes. Additionally, tolls can be set to ensure that the project generates revenue that will be used to service debt obligations.

Assessment:

Optimizing person throughput is a common goal of express lane projects and is achieved by using pricing as a mechanism to maintain priority access for vehicles carrying multiple occupants. Pricing will also be used to ensure that the federal minimum operating requirements are met and that the Express Lanes generate revenue necessary to service debt obligations.

3. Hours of Operation

Description:

Express lane hours of operation define when toll collection will occur. Toll collection can occur during traditionally defined peak periods or extended peak periods (part time), or can occur 24 hours a day, 7 days a week (full-time). Under part-time operations, all passenger vehicles would be allowed to access the Express Lanes during off-peak hours. Under full-time operations, a minimum toll rate would be charged during off-peak hours.

Recommendation:

Charge tolls 24 hours a day, seven days a week.

Background:

Express lanes hours of operation generally fall into one of the following categories:

1. Part-time operations – Toll collection occurs during defined periods of the day. When toll collection is not in effect, the express lanes are open to all vehicles. Toll collection can occur during defined morning and evening peak periods (e.g., 5am-9am and 3pm-7pm) or during extended daytime hours (e.g., 5am-7pm).
2. Full time operations – Toll collection is in effect 24 hours a day, 7 days a week. During non-peak times, the toll rate is often set to a minimum rate.

All HOV lanes in the Southern California region operate full time, with the exception of SR-14 between Santa Clarita and Palmdale and SR-60 from Day Street to Redlands Boulevard. This is because Southern California freeways experience sustained hours of congestion, with relatively short off-peak hours. Under such conditions, part-time HOV operation would not be viable. Similar to the region's HOV facilities, all current and planned express lane facilities within the SCAG region are operating or will be operating with full-time tolling. The 91 Express Lanes in Orange County and the extension into Riverside County operate 24/7, and the I-15 Express Lanes project planned in San Bernardino County has also adopted a 24/7 policy. Having consistent policy helps enforcement and may contribute to a better understanding and reliance on the express lanes network whenever congestion occurs.

Assessment:

Full-time tolling on the I-15 Express Lanes is recommended to maximize efficient operation of the Express Lanes and general purpose lanes, and to be consistent with adjoining express lane facilities on the SR 91 and the planned I-15 Express Lanes in San Bernardino County.

4. Carpool Occupancy Requirement

Description:

The HOV occupancy definition establishes the minimum occupancy requirements for discounted and/or free travel within express lanes. This is important because there will be different traffic and revenue results if carpools are defined as two or more persons per vehicle (HOV-2+) or three or more persons per vehicle (HOV-3+).

Recommendation:

Define carpools as vehicles occupied by 3 or more persons.

Background:

Under Federal requirement (23 USC § 166), HOV and express lanes facilities must maintain a minimum speed of 45 mph. Caltrans has the responsibility of maintaining operations for the state's HOV lanes, which includes the authority to make operational changes (including occupancy) provided they are compliant with federal and state regulations. Multiple sections of California law pertain to HOV policies on express lanes. The specific legislative authorization given to each facility in the state typically provides that particular entity the authority to set rates and HOV policies on the respective facilities.

RCTC's application for the I-15 Express Lanes Project approved by the California Transportation Commission (CTC) states that vehicles with three or more occupants will be allowed entry into the Express Lanes at no cost initially. The Application acknowledges that it may be necessary to charge for HOV-3+ in the future as demand for the Express Lanes increases.

According to the *2013 CA HOV Lane Degradation Report* published by Caltrans, many HOV facilities in the Southern California region are currently experiencing various degrees of performance degradation with a HOV-2+ minimum occupancy requirement. As the region's express lanes network expands, and demand increases, the need to increase the minimum occupancy requirement becomes more apparent.

Currently, there are three existing and four planned (excluding this Project) express lane facilities in southern California. The current practices for carpool occupancy policy are summarized as follows:

Existing Facilities

- **Metro I-10 ExpressLanes** – HOV-3+ toll-free during peak periods; HOV-2+ toll-free all other times
- **Metro I-110 ExpressLanes** – HOV-2+ toll-free





- **OCTA 91 Express Lanes** – HOV-3+ toll-free, with the exception of eastbound PM peak period operating with discount toll rates for HOV-3+

Planned Facilities

- **OCTA 405 Express Lanes** –Pending results of the Traffic and Revenue Study
- **SANBAG I-10 Express Lanes** – HOV-3+ toll-free
- **SANBAG I-15 Express Lanes** – HOV-3+ toll-free
- **Riverside 91 Express Lanes** – HOV-3+ toll-free, with the exception of eastbound PM peak period operating with discount toll rates for HOV-3+

Assessment:

HOV-3+ is recommended as the minimum occupancy requirement for discounted travel for the I-15 Express Lanes. This is consistent with policy recommendations in the SCAG Regional Express Lanes Concept of Operations and the adjoining SR-91 in Orange/Riverside Counties and future I-15 Express Lanes in San Bernardino County.

5 – 6. Toll Interoperability

Description:

Toll interoperability refers to the ability for customers to use multiple toll facilities with a single toll account. Currently, there are various tolling protocols used across the United States to communicate between the in-vehicle toll transponders and roadside toll readers and only a few of the systems allow a customer to use the same toll transponder at other facilities across state lines. There are national and state initiatives to adopt new interoperability standards.

Recommendation:

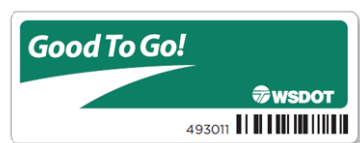
- 5. Adopt the national interoperability standard for automated toll collection systems when adopted by the toll industry.***
- 6. Adopt the new state interoperability standard for automated toll collection systems when adopted by the California Toll Operators Committee.***

Background:

The protocol for the exchange of transponder information for toll facilities in California is specified by Title 21 of the California Code of Regulations. The transponders used by California toll agencies are commonly referred to as Title 21 transponders. These transponders are branded as FasTrak® and can be used on any of the California toll facilities. California is the only state currently using the Title 21 transponders.



Switchable Title 21



WSDOT 6C Sticker



Legacy Title 21

In 2012, the federal government passed Moving Ahead for Progress in the 21st Century, MAP-21, calling for a national toll interoperability by 2016. The International Bridge, Tunnel, and Turnpike, Authority (IBTTA) is the worldwide association representing toll facility owners and operators and the businesses that serve them. IBTTA has formed an Interoperability Committee that is working to advance the goal of achieving national interoperability by 2016. They are in the process of selecting the transponder protocols that will undergo further testing and analysis. The Title 21 transponders are not being considered for the national standard.

Concurrent with the efforts of IBTTA, the California Toll Operators Committee (CTOC), which was formed to facilitate interoperability within California, has developed a Transition Plan to replace the legacy California protocol (referred to as “Title 21”) with a newer and less expensive protocol (referred to as “6C”). This plan proposes that all toll facilities in the state be able to recognize the 6C protocol by 2018



with full transition by 2020. The 6C protocol is also one of the final protocols being evaluated for the national standard and CTOC is represented in the discussions regarding national interoperability.

Assessment:

The I-15 Express Lanes will be consistent with the interoperability standards currently being assessed at the national and state levels. In doing so, I-15 Express Lanes customers will only have to establish a single toll account to travel on all toll facilities in the state and, depending on the outcome of the national interoperability discussions, may be able to use their account to travel on toll facilities across the country.

7. Project Development Costs

Description:

The I-15 Express Lanes will require funding for project capital costs, necessary for the final design, construction, and initial deployment of the Express Lanes. Capital costs include all items necessary to build new lanes or retrofit existing lanes in order to provide an Express Lane facility, including infrastructure construction, toll collection implementation, and equipment. The funds for capital costs may come from a number of sources, including Riverside County “Measure A” sales tax revenue or state and federal grants. In addition, bonds could be issued or a federal loan obtained for capital costs that are leveraged based on these dedicated tax revenue sources and/or toll revenues from the actual Express Lane facility.



Recommendation:

Fund project development costs by current and future Measure A sales tax, toll revenue, and state and federal grants.

Background:

Riverside County Measure A Sales Tax

Measure A is a Riverside County half-cent sales tax dedicated to transportation. Voters approved the Measure A program in 1988, which has raised over \$1 billion for major highway and local road projects throughout Riverside County. Voters extended Measure A in 2002, ensuring that the program will continue to fund transportation improvements through 2039.



Federal Funding

In addition to local funding through Measure A, there are multiple federal programs facilitated through the FHWA that could potentially be used to fund the I-15 Express Lanes. These programs are intended to award funds to projects that upgrade facilities in order to reduce congestion or improve safety. These sources could include, but are not limited to, the Surface Transportation Program, the Highway Safety Improvement Program, Congestion Mitigation and Air Quality funds, or a loan awarded through the Transportation Infrastructure Finance and Innovation Act (TIFIA).

State Funding

California state funding could potentially be available through the State Transportation Improvement Program (STIP). The CTC administers the STIP, which awards funds to eligible highway projects programmed by county transportation agencies.

Bonds

Many express lane projects throughout the country require some level of financing or debt. A limited tax obligation bond is issued by a government entity which is secured by a pledge of a specific tax revenue and can be used to fund certain capital improvements. However, the ability of a priced managed lane to collect toll revenue creates a dedicated funding source, which could be used to issue and repay a bond. These toll revenue bonds are the most popular to be issued by toll facilities. The authorizing statute for the I-15 Express Lanes (Streets & Highways Code Section 149.8) permits RCTC to issue bonds to finance the project.

Assessment:

Financing a project through the issuance of bonds or other means, allows for projects to offer the public more immediate benefits of transportation infrastructure, while spreading the costs of that infrastructure over the life of a project. In this way, the additional interest cost paid by the agency is outweighed by the mobility and economic benefits of having the project available more quickly. Capital costs for the I-15 Express Lanes are to be funded through current and future Riverside County Measure A sales tax revenues and project toll revenues through bond and TIFIA loan financing. Specifically, the recommendation is that sales tax revenue bonds may be issued by RCTC and repaid through Measure A sales tax revenues, while toll revenue bonds may also be issued and a TIFIA loan executed with repayment ensured through toll revenues collected by the I-15 Express Lane facility. In addition, it is recommended that additional State and Federal discretionary grant opportunities are sought to supplement project funding. RCTC's project plan of finance is currently being developed as part of project financing activities and will be brought for Board approval in the future.

8. Operations and Maintenance Costs

Description:

The I-15 Express Lanes will require funding for ongoing operation and maintenance costs associated with the project. Toll collection and dedication to enhanced traveler benefits make express lanes unique when compared to other highway projects, and often require greater resources and funding for the operation and maintenance of these services. The cost of express lane operations includes toll collection, standard operations, enhanced enforcement, incident response services, and toll system and facility maintenance. Operation and maintenance activities require a dedicated funding source in order to be viable, which could include local, state, or federal revenues, in addition to actual toll revenues collected as part of the project.



Recommendation:

Fund operations, maintenance, and toll enforcement costs by toll revenue.

Background:

As with all transportation infrastructure, a dependable and dedicated source of funding is necessary for operations and maintenance. This is especially true for express lanes, where enhanced services can be necessary to offer reliable travel time savings to toll paying customers. Express lanes are also unique in that the revenue collected from tolls is able to be used as a dedicated source of operation and maintenance funding.

The following are general express lanes operations and maintenance costs:

Toll Collection Costs

Toll collection costs include all costs associated with processing tolls payments, including the labor and materials required to manage customer accounts, perform license plate image reviews, process toll violations and provide general customer service. In addition, the cost of distributing and managing transponder inventory is included.

Standard Operation Costs

Standard operation includes costs associated with labor and equipment necessary to manage express lane operations, including personnel to monitor traffic and toll operations, generate reports, public outreach, management and oversight, etc.



Enhanced Enforcement

In order to manage express lanes demand, it is important that the vehicles using express lanes are either paying the posted toll or meeting the HOV requirement. A thorough enforcement program including the presence of the California Highway Patrol (CHP) is necessary to maintain motorist compliance.

Incident Response Services

In order to offer a dependable travel time savings, it is important that incident response resources be available to remove any disabled vehicles or objects which may prevent free-flow conditions.

Toll System and Facility Maintenance

Maintenance costs associated with express lanes include the inspection, upkeep, and replacement of the facility itself and items necessary for toll operation including roadside toll collection equipment and infrastructure, communications infrastructure, and all other hardware and software elements.

Assessment:

It is recommended that operation and maintenance costs for the I-15 Express Lanes be funded through toll revenue. Under this assumption, the resources and services necessary for Express Lanes operations will be funded from the project itself. Funding operations through project revenue will require that Express Lane tolls are set at a rate that ensures mobility and travel time benefits to customers, while also generating sufficient revenue to effectively operate the Express Lanes and meet debt obligations.



9. Project Repayment

Description:

As described in Section 7, sales tax and toll revenue bonds are anticipated to be issued by RCTC and a federal TIFIA loan executed to finance the I-15 Express Lanes development costs. Sales tax revenue bonds are to be backed by future Measure A tax revenues and toll revenue bonds are to be backed by future revenues generated by the Express Lanes. Therefore, funds for the repayment of these bonds will be obtained through revenues to be generated by the Measure A sales tax and operation of the Express Lanes.

Recommendation:

Repay Measure A sales tax bonds and toll revenue bonds with future Measure A and toll revenue, respectively.

Background:

The authorizing statute for the I-15 Express Lanes (Streets & Highways Code Section 149.8) permits RCTC to issue bonds to finance the project. It is RCTC's intent to issue bonds backed by both Measure A sales tax revenues and future toll revenues and to repay the bonds using these revenue sources.

Assessment:

Consistent with the obligations of issuing bonds, RCTC will repay bonds using revenues generated by Measure A sales taxes and Express Lane tolls.

10. Use of Revenue

Description:

Express lanes charge tolls and generate toll revenue as a normal function of operation. The I-15 Express Lanes will require an expenditure plan for all revenue, outlining what activities or functions will be funded from collected toll payments. As stated in Section 9, it is recommended that toll revenues should be used toward repayment of bond debt issued on behalf of the project and also to fund facility operations, maintenance, and enforcement. However, net excess revenue may remain after payments toward operation and maintenance costs and debt service obligations. There are multiple projects and programs which could be funded through the net excess toll revenue from the I-15 Express Lanes.

Recommendation:

Use surplus revenue to fund Interstate 15 corridor transportation investments.

Background:

The goal of most express lane facilities is to generate enough revenue to cover basic operations and maintenance, meet debt obligations (if applicable), as well as to fund replacement and upkeep to the extent that adequate revenue is available. Other facilities dedicate portions of net excess revenue to fund enhanced transit operations within the express lane facility, such as I-15 in San Diego and I-95 in South Florida. Statutes for the Metro I-110 and I-10 ExpressLanes in Los Angeles County state that toll revenue must first cover the costs incurred in connection with implementation/operation of the program. Metro reinvests surplus toll revenue into the corridor through a grant program. In addition, the 91 Express Lanes in Orange County have adopted the policy of directing net excess revenues to capital improvements within the SR-91 corridor.

The authorizing statute for the I-15 Express Lanes (Streets & Highways Code Section 149.8) permits excess toll revenues to be used for the following purposes:

- (A) To enhance transit service designed to reduce traffic congestion on I-15 or to expand travel options along I-15. Eligible expenses include transit operating costs, acquisition of transit vehicles and transit capital improvements.
- (B) To make operational or capacity improvements designed to reduce congestion or improve the flow of traffic on I-15. Eligible expenses include any phase of project delivery to make capital improvements to onramps, connector roads, roadways, bridges, or other structures on I-15.

Assessment:

The toll revenue collected as part of the I-15 Express Lanes operations will be used primarily to fund operation, maintenance, and enforcement costs of the facility, as well as to meet debt obligations for any revenue bonds issued as part of the project. Any remaining net excess revenue will be used to fund transportation improvements within the I-15 Express Lanes corridor consistent with authorizing statute.

11. Enforcement

Description:

Express lanes require effective enforcement policies and programs to operate successfully. Enforcement of vehicle occupancy requirements and toll payment is critical to protecting eligible vehicles' travel time savings and safety. Visible and effective enforcement promotes fairness and maintains the integrity of the facility to help gain acceptance among users and nonusers.

Recommendation:

Enforce I-15 Express Lane toll violations through agreement with the California Highway Patrol and any future state or federal toll violation laws.

Background:

Adequate and effective enforcement policies and incident management are integral elements to express lanes operations to ensure that the facilities are operating at the intended level of performance. Enforcement of vehicle occupancy and/or toll payment requirements is critical to protecting eligible users' travel-time savings and safety. Visible and effective enforcement promotes fairness and maintains the integrity of the facility to help gain acceptance among users and non-users.



The enforcement concept for many express lane facilities around the country involves a combination of manual and automated enforcement strategies. Manual enforcement requires CHP officers to be present during the peak hours to serve as a visual deterrent and to monitor vehicles to ensure they are complying with express lane operating policies. Observation areas are provided at strategic locations for officers to park and monitor beacons that illuminate when a vehicle passes through with a switchable transponder (see Section 23 of this report) set to a high-occupancy setting. Beacon lights provide a visual cue for officers to visually inspect the vehicle to verify whether it meets the occupancy requirement. The beacons can also be used to indicate when no transponder or an invalid transponder was detected and can be strategically placed to support stationary enforcement as well as enforcement by officers driving the corridor.

CHP will also be relied upon to enforce all other moving violations, including illegal crossing of the express lanes buffer and the requirement for vehicles to have properly mounted license plates.

In addition to manual enforcement, License Plate Recognition (LPR) cameras will be located at toll points to capture the license plates of vehicles for which no transponder was detected. If the license plate is able



to be matched to an account, then the toll amount will be deducted from the account. Otherwise, the license plate information is sent to the Department of Motor Vehicles (DMV) to determine the address of the registered owner for issuance of a toll violation.

In the Southern California region, HOV and express lanes enforcements are generally conducted by the CHP in conjunction with automatic tolling systems. The four operating express lane facilities in Southern California, Metro I-10 ExpressLanes, Metro I-110 ExpressLanes, OCTA 91 Express Lanes, and SANDAG's I-15 Express Lanes are all under contract with CHP to conduct violation enforcement. These facilities also employ beacon lights and CHP observation areas where possible.

Assessment:

Given national experience, including experience with the four express lanes operated in Southern California, manual enforcement is a proven component of successful express lane operations. The presence of CHP vehicles instills confidence to customers and serves as a deterrent for those that may violate. RCTC will establish an agreement with CHP officers to enforce the I-15 Express Lanes and provide CHP the necessary tools such as enforcement beacon lights and access to transponder information to effectively enforce. In addition, LPR cameras will be used to enforce the requirement for vehicles to carry a transponder.

12 – 14. Operations and Maintenance Responsibilities

Description:

Express lanes operations and maintenance responsibilities can be managed in a number of ways. These responsibilities include the maintenance of all equipment associated with the toll system, providing oversight of operations and incident management, and providing customer service to manage customer accounts. Each of these responsibilities is integral to the overall performance and operation of the express lanes. Express lane implementing agencies can use agency staff, contract staff or share responsibilities with other agencies.

Recommendations:

- 12. Maintain Express Lanes and toll systems as a responsibility of RCTC.***
- 13. Perform customer service patrol and incident management as a responsibility of RCTC in cooperation with Caltrans and other jurisdictions.***
- 14. Provide customer service and the account relationships as a responsibility of RCTC.***

Background:

Express lane operation and maintenance functions require dedicated resources to maintain hardware and software, monitor performance and manage customer accounts. These functions are described in more detail below.

Toll Systems Maintenance

The maintenance of toll systems includes the inspection, upkeep, and replacement of the items necessary for toll operations and the supporting infrastructure. Roadside toll collection equipment, communication network components, servers and workstations are all elements of a working toll system that require routine maintenance. Most express lane operating agencies enter into contracts with toll service providers to not only design and construct the toll systems, but also to operate and maintain them for some period of time. The toll system providers are required to develop maintenance tracking systems that keep track of the maintenance requirements for all elements of the toll system. These systems send alerts when there is an equipment malfunction, track maintenance response times, and keep track of equipment inventory.

Performance Monitoring and Incident Management

An important component of express lane operations is the ability to monitor traffic performance in real-time to ensure that the express lanes are maintaining optimum conditions. This is accomplished using roadside vehicle detection equipment and closed-circuit television cameras that send real time information to a facility where operators can monitor. Operators have the ability to override the toll system (e.g., display a message such as “HOV ONLY”) when conditions warrant and to coordinate with

Caltrans, CHP and other jurisdictions as needed. In addition, operators have the ability to dispatch tow trucks to clear incidents.

Some express lane operators choose to co-locate their express lane monitoring functions within a regional monitoring center and others choose to establish a dedicated monitoring facility. An example of a regional monitoring center is the Inland Empire Transportation Management Center (IETMC), which serves as an intermodal traffic management facility for San Bernardino and Riverside Counties and is staffed by both Caltrans and CHP personnel. The IETMC opened to service in 2011 and is located in the City of Fontana at the interchange of the I-15 and I-210.



Inland Empire Transportation

Customer Service

Customer service includes all of the functions related to account management, payment processing, transponder distribution, violation processing and providing general customer support. Some of these support activities, often referred to as “back office” activities, can take place at offsite facilities. Examples of activities that can be performed offsite include call taking and license plate image review. However, the location(s) of some customer service functions are ideally located in close proximity to the express lanes, including walk-in customer service, customer call center and transponder distribution.

Assessment:

Express lane operating agencies typically procure a contractor to carry out customer service responsibilities due to the amount of specialized systems and labor required. RCTC will contract with a toll services provider to design, implement, operate and maintain all aspects of the I-15 Express Lanes toll system. The RCTC Operations Center (see Section 24) will serve as the hub of all customer, maintenance, and operating activities.

15. Signage

Description:

The California Manual of Uniform Traffic Control Devices (California MUTCD) provides uniform standards and specifications for all traffic signage in California. The most recent version of the California MUTCD, published in 2014, includes signing guidelines and requirements for express lane facilities. These requirements are intended to standardize the way that express lanes throughout the state are signed to make it easier for the traveling public to understand express lane operating requirements.

Recommendation:

Provide toll signage meeting the latest California Manual of Uniform Traffic Control Devices standards.

Background:

The general signing requirements for all new highway projects, including express lanes, must comply with the 2014 California MUTCD. The California MUTCD includes requirements for different types of express lane configurations and operating requirements. Of particular relevance to the I-15 Express Lanes, are those signs that depict a restricted access facility where all vehicles in the express lanes are required to have a FasTrak® account.



Example Pricing Sign

Express lane signs included in the California MUTCD generally fall into the following categories:

- Overhead-mounted signs designating the start and end of the express lanes as well as intermediate access points.
- Overhead-mounted pricing signs that display the toll amount to given downstream locations. In accordance with the guidance in the MUTCD, pricing signs display the current toll to no more than two downstream destinations. Changeable message elements will be used to indicate the toll rate to travel to the destination shown. These signs will also specify the HOV occupancy requirement and that a FasTrak® account is required for vehicles to use the facility.
- Median mounted and overhead signs that display the carpool occupancy requirement, the FasTrak® account requirement and hours of operation.

Assessment:

The I-15 Express Lanes signage will conform to the standards in the California MUTCD. The design and implementation of the signage will be the result of several sign workshops and plan reviews that will include Caltrans and the FHWA.

16. Express Bus Integration

Description:

Transit is an important component in express lanes. If managed through variable pricing to maintain a minimum level of service, express lanes create efficient and reliable transit corridors compared to previously congested freeways. Of the existing HOV and express lanes facilities in the southern California region, most are already served by express bus services. Operating express bus service on express lanes offers several key benefits:

- Shortens Travel Times
- Improves Travel Time Reliability
- Lowers Operating Costs
- Increases Person Throughput
- Encourages Carpooling and Transit Use
- Addresses Equity Concerns
- Builds Public Support

Recommendations:

Encourage express bus use through toll policies and Express Lane operations.

Background:

Currently, the Riverside Transit Agency (RTA) provides eight express bus services throughout Riverside County, with one route (CommuterLink Express 206) providing service along I-15 between Temecula and Corona. The CommuterLink Express – Route 206 (Temecula-Murrieta-Lake Elsinore-North Main Corona Metrolink Station) runs daily during weekdays on approximately 30-minute headways, and the general fare costs \$3.00 each way (free with valid Metrolink Pass). Route 206 provides connections for commuters travelling from Riverside County to other regions via the North Main Corona Metrolink station.



RTA CommuterLink Express services
Nicholas Ventrone / The Transit Coalition

In anticipation of the 91 Express Lanes extension in Riverside County, the RTA already has two new RapidLink express bus routes programmed for deployment in 2017. These two routes, RapidLink 200 and 205, will provide connections between Riverside and Anaheim as well as Temecula and Anaheim via the 91 Express Lanes. The proposed I-15 Express Lanes will provide the opportunity for further expansion of express bus services along the corridor.

Similar to express bus benefits, the I-15 Express Lanes can provide opportunities for enhancing and promoting carpooling/vanpooling by commuters. Currently, there are eight Caltrans Park and Ride lots along the I-15 corridor within Riverside County. Of the eight existing lots, three are located within the I-15 Express Lanes Project corridor:

- Canyon Community Church Park And Ride (1504 Taber Street, Corona) – 75 spaces
- Norco @ 6th Street Park And Ride (3945 Old Hamner Road, Norco) – 100 spaces
- Mira Loma Park and Ride (12105 Limonite Avenue, Mira Loma) – 76 spaces

Specialized Transit Services

It should be noted that not only will the fixed route bus service discussed benefit from the I-15 Express Lanes, but also the Specialized Transportation Program funded by RCTC via Measure A funding along with federal funding from the Job Access Reverse Commute (JARC) and New Freedom (NF) programs. These specialized transit services (Dial-A-Ride paratransit) will most likely use the I-15 Express Lanes. In addition, a handful of non-profit and special criteria providers that operate specialized transportation will also benefit from using the I-15 Express Lanes.

Physical and Policy Considerations

Many of the physical design considerations for integrating bus service are similar to express lanes and HOV lanes, which have well-established design criteria. Besides the physical design, each express lane project has a unique set of policies in place that influences how well transit is integrated in a particular corridor. Establishing a set of policies that improves transit service and capacity is also often essential in building public support for often controversial toll lane projects and helps to neutralize the perception that Express Lanes are “Lexus Lanes” that primarily benefit those with higher incomes.

Assessment:

Encouraging transit and offering benefits for express bus service is a key component of the I-15 Express Lanes project. Coordination with RTA will take place during the design of the Express Lanes to ensure that transit needs are taken into consideration.

17. Design – Facility Ingress and Egress

Description:

This policy is related to the design of access locations, where vehicles can enter and exit the I-15 Express Lanes. Regulating access is one of the fundamental tools to manage traffic flow in the express lanes, and therefore, it is important to select the access points and design treatment early in the planning phase along with the separation type to help minimize weaving conditions.

Recommendation:

Design the roadway and ingress and egress locations meeting Caltrans design standards where feasible and practical.

Background:

Access treatments for express lane facilities fall into the following three categories:

Grade-separated direct access drop ramps Grade-separated drop ramps provide access to and from the express lanes using dedicated grade direct access ramps. These types of ramps generally provide access from adjacent freeways/arterials and park and ride facilities for express bus operations, and are desirable where sufficient right-of-way and high traffic volumes in both the express lanes and general purpose lanes warrant the need for such exclusive access. An example of a grade-separated drop ramp is the SR-91 eastbound direct connector to the southbound I-15 and vice versa being constructed as part of RCTC’s SR-91 Corridor Improvement Project.

At-grade limited access

At-grade limited access provides access to and from the express lanes at designated locations, typically through at-grade access openings that serve as ingress, egress or combined ingress and egress. Physical barriers or painted striping separates the express lanes from the adjacent general purpose lanes between access locations. Three different approaches for providing at-grade limited access include:

- Weave zones – provides combined ingress and egress by short breaks to the physical barriers or striping at designated locations.
- Weave lanes – similar to weave zones, except movement is facilitated by a change lane, which isolates the weaving from both the express lanes and the general purpose lanes, thereby minimizing the potential for unstable flow.
- Merge lanes – provide dedicated and separated ingress and egress (acceleration and deceleration) lanes. The merge lanes allow drivers the opportunity to adjust their speeds to match



At-grade limited access configuration on LA Metro ExpressLanes

the lane they are merging into. This design treatment further reduces the potential for unstable flow, as conflicts are avoided in the access lane.

Continuous access

Continuous access allows vehicles to enter and exit the express lanes for the entire stretch without any specific ingress/egress treatments. The striping that separates the express lanes from the general purpose lanes are generally skip striped.

Assessment:

A limited access configuration is recommended for the I-15 Express Lanes because it can reduce toll evasion, ensure greater access control, and is consistent with the access configuration of existing Southern California HOV and express lanes. Further, a limited access configuration is less complicated to design and has a far lower construction cost than direct access ramps and does not require as much toll equipment as may be required for continuous access. Vehicles will be able to access the express lanes at intermediate access points that provide access to local exits and interchanges. Between these points, access will be restricted to prevent weaving and improve overall mobility. A map of proposed access locations is accessible at http://i15project.info/express_lanes_access.php.

18. Design – Number of Lanes

Description:

The number of express lanes to be implemented for a particular project is dependent upon several variables, including traffic congestion, occupancy requirements and availability of existing right of way. The Project Approval Document for the I-15 Express Lanes generally includes a two lane configuration in each direction based on traffic and engineering analysis. This configuration is intended to add capacity, improve operations and fits within existing right of way.

Recommendation:

Construct and operate two Express Lanes in each direction where possible.

Background:

A number of criteria must be considered when evaluating the capacity needs of an express lanes project. These include existing and projected traffic congestion, toll discount policies, and the cost and availability of right of way. Some express lane projects simply convert an existing HOV lane to an express lane, others convert an existing lane and construct an additional lane (e.g., LA Metro I-10 ExpressLanes), and others construct an entirely new lane or lanes (e.g., I-680SB Express Lane in the Bay Area).



Two lane configuration on LA Metro I-10 ExpressLanes

There are currently no existing HOV lanes within the I-15 project limits. The preliminary engineering performed as part of the project identified a need for a two lane configuration in each direction to serve future traffic demand. This configuration fits within the existing right of way and helps to ensure that the facility will be able to sustain a high level of service.

Assessment:

The recommendation for a two lane configuration in each direction where possible is consistent with the project schematics and serves projected traffic demand while fitting within existing right of way.

19. Toll Pricing Method

Description:

Express lanes use pricing to manage the number of toll paying customers using the facility. Managing the number of users allows the express lanes to meet performance goals such as those described in Section 1 and Section 2. Variable pricing is to be used to manage traffic, whereby the cost to use the express lanes is directly related to the level of demand for the express lanes. As demand increases, raising the tolls will help manage demand in order to maintain federal performance requirements. Conversely, the price decreases as demand decreases to incentivize more vehicles to utilize the available capacity. Two variable pricing methods are currently in use on facilities across the country: time-of-day pricing and dynamic pricing.

Recommendation:

Use Dynamic Pricing to determine the toll price.

Background:

Time-of-Day Pricing

Time-of-day pricing employs a fixed toll rate schedule with different toll rates by travel direction, time of day and day of the week. Time-of-day pricing is actively used on the 91 Express Lanes and on express lanes in Denver and Houston. Time-of-day pricing is effective when traffic patterns remain relatively consistent over time. For instance, if congestion reaches the same level at the same time every Monday, then a static price that is capable of maintaining the desired level of traffic volume can be used for that time period.



With time-of-day pricing, tolls vary according to a fixed schedule, with different prices charged based on direction of travel, day of the week, and hour of the day. The toll rates are determined based on historical travel conditions in the corridor, and vary according to demand and congestion. The performance of express lane facilities using time-of-day pricing requires evaluation on a regular basis to ensure that free flow conditions are being maintained in the express lanes. If travel conditions on the express lanes deteriorate over time, the rates should be increased. Similarly, rates can also be lowered when the express lanes are found to have excess capacity that is not being used effectively. On the 91 Express Lanes, performance is monitored daily and evaluated every three months.

Dynamic Pricing

Dynamic pricing employs toll rates that vary in real time based on actual travel conditions detected in the corridor. Dynamic pricing is actively used on most California express lanes, including I-10 and I-110 (Los Angeles), I-15 (San Diego), I-680 (Alameda County), and I-880 / SR-237 (San Jose). Dynamic pricing is effective on facilities that have a high level of variability in congestion throughout each day and from day to day. For instance, if a facility does not have a peak period that is consistent from one day to the next or has a high rate of incidents that impact traffic, dynamic pricing allows for the adjustment of the price to match the actual real-time traffic conditions.



Dynamic pricing provides a real-time monitoring and response capability for express lane operations. Dynamic pricing requires capital investment for both the algorithm and the traffic detection system and also requires ongoing monitoring and maintenance of the pricing algorithm and traffic detection system. Like the time-of-day pricing, dynamic pricing requires variable message signs to communicate price to customers.

Assessment:

In order to be responsive to real-time traffic conditions that may vary from day to day, it is recommended that the I-15 Express Lanes use dynamic pricing. Despite the higher capital costs of deployment as compared to time-of-day pricing, dynamic pricing will be valuable to manage traffic and ensure the facility provides reliable travel at all times. The ability to readily adjust pricing and manage demand through dynamic pricing will allow for flexibility, particular in the critical area of overlap with the 91 Express Lanes that use time-of-day pricing.

20. Toll Exemptions and Discounts

Description:

Toll discounts and exemptions are required by legislation, law and by agreement with project partners. Discounts have an impact on revenue, operations, customer service center systems and enforcement. It is important to establish toll discounts or exemptions at an early stage to allow for the evaluation of operational impacts and for inclusion in system design.

Recommendation:

Provide toll discounts according to legislation and for operations and maintenance vehicles.

Background:

A review of project agreements and legislation suggested that the following vehicle types require evaluation for toll discounts.

Transit

One of the primary goals of express lane facilities is to offer enhanced transit service. California Vehicle Code defines qualifying mass transit, paratransit and vanpool vehicles, including those that are publically or privately funded. These vehicles will be allowed to travel toll-free in the I-15 Express Lanes at all times. With the passage of the Fixing America's Surface Transportation Act (the FAST Act) on December 4, 2015, U.S. Code was amended to enable privately-owned buses servicing the public to utilize toll facilities under the same rates, terms and conditions as other public transportation vehicles. RCTC will establish agreements with operators to facilitate toll-free travel at all times.

High-Occupancy Vehicles

The application for the I-15 Express Lanes project approved by the CTC and the Federal Agreement between RCTC, FHWA and Caltrans provide direction with regard to the tolling of HOVs. In both instances, HOVs are defined as vehicles with three or more occupants (HOV-3+). The authorizing statute for the Express Lanes (Streets & Highways Code Section 149.8) also specifies free travel for HOV-3+ vehicles initially upon opening.

There is no mechanism to regulate the demand of HOV-3+ vehicles when there is a 100% toll discount. As the HOV-3+ volume becomes an increasingly larger percentage of the total I-15 Express Lanes traffic, it will become increasingly difficult for the dynamic pricing algorithm to effectively manage demand and preserve free flow operations in the I-15 Express Lanes. Therefore, it is recommended that the speeds in the I-15 Express Lanes be monitored to determine when the lanes are being degraded. If the average speed in the Express Lanes drops to 60 mph three or more times in a thirty day period after three months of operation, the HOV-3+ discount will be reduced to 50%. The 100% discount will be in place for at least

the first three months of operation to allow for customers to adjust to the new facility and to incentivize use of the I-15 Express Lanes by carpoolers.

Motorcycles

California Vehicle Code 21655.5(b) provides for free passage on preferential lanes for motorcycles. Motorcycle toll transactions will be processed either through a transponder or by reading their license plate.

Zero Emission Vehicles (ZEVs) also referred to as Clean Air Vehicles (CAV)

Legislation (AB 1721), enacted as California Vehicle Code Section 5205.5, allows motorists driving ZEVs (CAVs) displaying a DMV-issued Clean Air Vehicle decal to travel in express lanes with a toll-free or reduced rate toll. The statute does not mandate the rate of reduction. The existing legislation is set to expire January 1, 2019 ahead of the I-15 Express Lanes planned opening.



The toll discount for ZEVs (CAVs) will be 15% upon opening of the Express Lanes.

White and Green Clean Air Vehicle Decals for HOV Lane Use
State of California / Dept. of Motor Vehicles

Emergency Vehicles

California Vehicle Code 23301.5 provides for toll exemption for specifically identifiable emergency vehicles being driven while responding to or returning from an urgent or emergency call, engaged in an urgent or emergency response, or engaging in a fire station coverage assignment directly related to an emergency response. The common method of processing these tolls is through a “non-revenue” account where the transaction is processed by the back office and posted to the account in order to provide a method of monitoring usage. RCTC will establish agreements with the local emergency providers that will outline the specific rules for these non-revenue accounts.

Maintenance and Operation Vehicles

In order to facilitate access to express lanes for the purposes of performing various maintenance tasks or performing operational checks and testing, it is common for tolling authorities to grant toll-exemption for vehicles being driven for these maintenance purposes. The common method of processing these tolls is through a “non-revenue” account where the transaction is processed by the back office and posted to the account in order to provide a method of monitoring usage.

Assessment:

In general, vehicles that are eligible to utilize HOV lanes in accordance with applicable federal or state law will be allowed discounted access to the I-15 Express Lanes. This includes buses (public transit and

privately operated tour buses), vanpools, motorcycles, HOV 3+ vehicles, ZEVs, emergency vehicles, law enforcement vehicles, and operation and maintenance vehicles. The following discount policies are recommended for each of these vehicle types:

- In-service public transit vehicles, private buses, vanpools, and motorcycles will be 100% discounted (toll free) at all times.
- All-HOV-3+ and zero-emission vehicles (ZEVs) will be 100% discounted (toll free) for the first three months of operation. The discount will be reduced to 50% if the average speed in the Express Lanes drops below 60 mph three or more times in a thirty day period after three months of operation.
- Emergency, law enforcement and Express Lanes maintenance vehicles will be 100% discounted (toll free) at all times.

21. Toll Payment Method

Description:

Electronic toll collection systems use automatic vehicle identification (AVI) technology to toll vehicles. These AVI systems use in-vehicle transponders and/or LPR cameras to identify vehicles for toll payment. Some facilities require that all vehicles have a transponder as the primary means of toll collection and use LPR cameras as a backup to capture vehicles that don't have a transponder or that have a transponder that fails to be detected. Other facilities allow vehicles to travel without a transponder and use LPR cameras as the primary means of toll collection; this system is known as pay by plate tolling.



License-plate tolling equipment
Craig F. Walker / The Denver Post

Recommendation:

Require all vehicles to have a transponder at time of travel.

Background:

Transponder-Based Toll Collection

Electronic toll collection using transponders is a proven technology with high accuracy. The cost associated with the systems needed to process transponder transactions is lower than systems which allow for toll payment by license plate. In addition, as California transitions from the legacy battery-operated transponders to the new, less expensive 6C transponders, the cost for a transponder based toll collection system will decrease even further making transponder based toll collection a far more efficient method of collecting tolls.

Most toll facilities that rely on transponders for toll collection also include LPR cameras to capture vehicles without a transponder to minimize revenue leakage. The license plate images are used to associate the transaction with a toll account when a transponder is not read or to look up the registered owner's address for collection of the toll through a toll violation process.

As described in Section 23, HOVs are able to use switchable transponders to indicate their vehicle occupancy status and receive the appropriate toll discount.

Pay by Plate

Pay by plate utilizes LPR cameras and Optical Character Recognition technology to identify a vehicle's license plate number. The automatically generated plate number is independently verified and validated by toll operators in the customer service center, thereby increasing operational costs per toll transaction. This technology is currently being used on Transportation Corridor Agencies (TCA) toll facilities in Orange County, on all toll facilities in the Denver Metro Area (including express lanes), all Dallas / Ft. Worth area toll facilities (including express lanes), Loop 375 express lanes in El Paso, and on the SR-520 and I-405



express lanes in the Seattle area. The license plate numbers are collected and the name and addresses of the registered users are requested from the state DMV, from which bills for all the tolls incurred during a specific period are aggregated and sent out to collect payment. Pay by plate tolling not only requires more processing costs, but it results in more revenue loss due to unidentifiable plates and registered owners and lengthens the amount of time to collect toll revenue.

In a pay by plate scenario, HOVs are required to register their license plate in advance of making a trip so the toll system can apply the appropriate toll discount.

Assessment:

Because toll payment by transponder is a proven, accurate solution with a lower transaction cost as compared to pay by plate, it is recommended that RCTC open the I-15 Express Lanes with a requirement that all vehicles have a transponder. Opening with a transponder requirement will encourage motorists to open an account and obtain a transponder. LPR cameras will be used to enforce this requirement and identify vehicles that don't carry a transponder. This policy also allows HOVs to declare their status using a switchable transponder as described in Section 23.

22. Mobile Interface

Description:

Easy access to express lanes information is important to gain customer understanding and compliance. Most toll facilities across the country maintain a website where users can find information about the toll policies and access account information and many of these websites are accessible in a mobile format. In addition, some facilities provide mobile applications that allow users to review recent toll activity and pay tolls without a transponder.

Recommendation:

Implement Mobile Web for FasTrak® customers, but defer the Mobile Toll Payment Application.

Background:

Toll facilities across the country provide different mobile interfaces for customers as described below.

Mobile Website

Many websites currently include desktop and mobile versions. The mobile versions are intended to be viewed from a mobile device such as a smartphone or tablet and typically include the same functionality as the desktop site. A mobile website for express lanes could allow customers to access general express lane information (operating policies, requirements for use, etc.) and to access account information.

Mobile Toll Payment Application

Depending upon business rules, some toll facilities allow users to use mobile devices to pay tolls without the use of a transponder. For example, the TCA facilities in Southern California allow users to pay tolls from a mobile application within five days before or after a trip is made.



Transportation
Corridor Agency
Mobile Application
Interface

Assessment:

RCTC will require all users to carry a transponder (see Section 21), which is inconsistent with the idea of allowing users to pay tolls using a mobile application. Therefore, a Mobile Payment Application will not be deployed. However, users will have access to a mobile website to access Express Lanes information and to make changes or payments to their account.

23. High Occupancy Vehicle Declaration Options

Description:

The primary function of HOV declaration is two-fold: 1) provide a mechanism to easily separate toll payers from those eligible to receive toll discounts, and 2) enable the efficient and effective enforcement of occupancy violations. Two methods of occupancy declaration were considered: the use of self-declaration lanes and switchable transponders.

Recommendation:

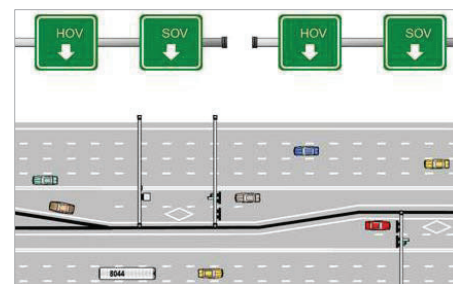
Identify HOV-3+ carpool customers via a switchable transponder.

Background:

There are different ways that express lanes can require toll-paying and toll-free vehicles to use the express lanes. In Southern California, the carpool declaration options generally fall under the “declaration lane” method (as used by the OCTA 91 Express Lanes and the Riverside 91 Express Lanes currently under construction), and the switchable transponder method (as deployed on the I-110 and I-10 ExpressLanes in Los Angeles County).

Self-Declaration Lanes

Many first generation express lanes involved conversion of pre-existing, barrier-separated HOV lanes with adequate right-of-way for positive separation between toll payers and carpoolers. Known as the “declaration lane” option, this was the mechanism designed and implemented on SR-91 in Orange County, the first express lanes facility which opened in 1995. It will also be utilized on the 91 Express Lanes that are under construction in Riverside County. Declaration lane solutions require eligible carpools to diverge from the main travel lanes to a separated lane at toll zones. These vehicles are charged an appropriate discounted or zero-value toll, and (if present) occupancy is validated by enforcement personnel via visual scan. Vehicles without a transponder are considered violators – the same as if they traveled through the main toll lanes without a transponder.



Single occupancy vehicles (SOV) lane tolling zone with separate declaration lane
FHWA Office of Operation/ Proposed I-95 Managed Lanes

Switchable Transponders

This method provides a technological method for declaring carpool status on the express lanes through a “switchable” transponder, as implemented on I-10 and I-110 in Los Angeles. Switchable transponders allow the customer to self-declare their occupancy status on the transponder itself. The Los Angeles transponder transmits multiple identifications (IDs), in order to associate the correct toll for a vehicle

based upon its occupancy status. These IDs can be associated with a single occupancy vehicle, HOV-2, and HOV-3+ setting directly on the transponder. For compliant HOVs, the user declares the vehicle's status on the transponder (e.g., sliding the switch to "HOV2" or "HOV3+"), and the appropriate toll rate would be collected. If the same vehicle is being operated without the required occupancy, it would be required to declare appropriately on the transponder and the correct toll would be collected. If no transponder is present (or if it is malfunctioning), LPR (mounted on gantries or median poles) would be used to collect full toll payment from the user (regardless of occupancy status).



Example Switchable
Transponder

Assessment:

It is recommended that the I-15 Express Lanes use switchable transponders for declaring occupancy. Switchable transponders have been successfully deployed on other toll facilities in the state and nationally. Also, as compared to declaration lanes, switchable transponders are more inexpensive to deploy and do not require drivers to make weaving maneuvers while in the Express Lanes, which may improve operational efficiency. With the enforcement strategy described in Section 11, CHP will have the tools necessary to enforce the proper use of the switchable transponder so that violation rates can be kept to a minimum.

24. Express Lane Operations Facility

Description:

The I-15 Express Lanes will require a facility to house various components of the operations, including a walk-in customer service center, customer call center, back office operations, image processing, finance and administration, system administration and maintenance and traffic management center. RCTC will provide the facility and the toll systems provider will supply the equipment, systems and staff to perform the services.

Recommendation:

Locate the call center, customer service center and traffic management center and administration in close proximity to the Express Lanes.

Background:

As described in Sections 12-14, RCTC will have the responsibility for I-15 Express Lanes maintenance, traffic management and customer service functions. These functions would ideally be located in a single facility to centralize I-15 Express Lanes operations and create synergies associated with co-located services.

Four toll agencies operate in Southern California and each of them has a facility or facilities which house the toll operations functions. Toll programs across the nation have experimented with remote staff working from a contractor owned or sub-contracted facility. While this model has been successful for some, it has the potential to degrade service, complicate supervisory functions and prohibit the synergy gained from co-location of services.

The 91 Express Lanes toll operations staff is being provided under a joint agreement with OCTA. The 91 Express Lanes call center and walk in staff are located at a leased facility near SR-91 and McKinley Street in the city of Corona. The other toll operation services are located in a leased facility near SR-91 and Weir Canyon Road in the city of Anaheim. RCTC's agreement with OCTA to share toll operation services expires in June of 2021. RCTC is currently procuring a toll operator for the I-15 Express Lanes which will require a facility to house the toll operator and RCTC toll operations staff, equipment and walk-in customer service location.





Assessment:

I-15 Express Lanes operations and maintenance are the responsibility of RCTC. To ensure that the goals for the I-15 Express Lanes are met, RCTC will be best served by co-locating the required services in a facility in close proximity to the I-15 Express Lanes. The 91 Express Lanes have set the precedent for local operations and customer service. Therefore, it is recommended that the customer service, traffic management and other administrative functions be located in the local area adjacent to the I-15 corridor, with a specific site to be determined. This facility will be referred to as the RCTC Operations Center, or ROC.