

California Road Charge Program

Annual Report – Federal Fiscal Year 2021



Submitted By:

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Table of Contents

Purpose	3
Background.....	3
FAST Act STSFA Goals mapped to Caltrans Project Goals	4
Budget Status	5
Project Status	7
Conclusion and Next Steps.....	9

Purpose

This is the fifth annual report, required under Section 5(b) of the FAST Act, STSFA grant agreement entered into between FHWA and the California Department of Transportation (Caltrans). This report describes how the demonstration activities carried out in the year of 2021 with grant funds meet the objectives of the FAST Act STSFA Program.

Background

California’s Road Charge Program

As California looks toward a future without gas-powered vehicles, alternative funding sources for our transportation system must be explored. Beginning in 2013, California initiated investigations into a mileage-based user fee. In September 2014, legislation was enacted to conduct a pilot testing road charge as an alternative to the gas tax. The pilot had over 5,000 participants logging over 37 million miles and successfully demonstrating the feasibility of a road charge. However, areas of research remained, with the final report recommending an exploration of pay-at-the-pump opportunities.

The passage of the Road Repair and Accountability Act in 2017 provided California the opportunity to thoughtfully develop a fair and sustainable transportation revenue mechanism to eventually replace the gas tax. California has relied on the gas tax for 100 years, and a decision to move away from this model must be approached thoroughly and carefully. The Road Charge Program has continued to research the key topics outlined in the STSFA goals including minimizing administrative costs of a road charge system, understanding and enhancing public perceptions of transportation, and demonstrating potential road charge technology mechanisms to ease future adoption.

FHWA FAST Act STSFA Grant Awards

Caltrans was awarded federal grant funding from the Federal Highway Administration (FHWA) under the Fixing America’s Surface Transportation (FAST) Act Surface Transportation System Funding Alternatives (STSFA) program in 2016 (Round 1) and 2017 (Round 2). Round 1 has since been completed. In 2018, Caltrans also applied for Round 3 of the STSFA Grant and was awarded funding in early 2019. Round 2 and Round 3 have been combined into California’s Four Phase Demonstration project and the live pilot testing was conducted from January to June 2021. In July 2021, Caltrans was awarded a Round 5 grant and is starting the procurement process for a Public/Private Roads pilot to test GPS road identification.

Grant FFY	FAST Act STSFA Grants	Estimated Cost	Federal Funds	State Funds	State In-Kind Contribution	Projects Completed
2016	Caltrans Award – Round 1	\$1,527,000	\$750,000	\$534,100	\$242,900	January 2019
2017	Caltrans Award – Round 2	\$3,500,000	\$1,750,000	\$750,000	\$1,000,000	In Progress
2018	Caltrans Award – Round 3	\$4,060,000	\$2,030,000	\$940,000	\$1,090,000	In Progress
2020	Caltrans Award – Round 5	\$4,300,000	\$2,150,000	\$1,070,000	\$1,080,000*	Start pending
	Totals	\$13,387,000	\$6,680,000	\$3,294,100	\$3,412,900	

*The State In-Kind Contribution includes \$300,000 in toll credits.

FAST Act STSFA Goals mapped to Caltrans Objectives

The table below summarizes the FAST Act STSFA Goals and maps Caltrans' eight project goals (listed below) to these goals.

FAST Act STSFA Goals	Caltrans Project Goals							
	1	2	3	4	5	6	7	8
1. Test the design, acceptance, and implementation of 2 or more future user-based alternative revenue mechanisms.		✓	✓	✓	✓	✓	✓	✓
2. Improve the functionality of such user-based alternative revenue mechanisms.	✓	✓	✓	✓	✓	✓	✓	✓
3. Conduct outreach to increase public awareness regarding the need for alternative funding sources for surface transportation programs and to provide information on possible approaches.	✓		✓		✓			
4. Provide recommendations regarding adoption and implementation of user-based alternative revenue mechanisms.			✓	✓		✓	✓	✓
5. Minimize the administrative cost of any potential user-based alternative revenue mechanisms.		✓	✓	✓		✓	✓	✓
6. Minimize the administrative costs associated with the collection of fees.		✓	✓	✓		✓	✓	✓

Budget Status

Caltrans FFY 2016 STSFA FAST Act Award – Round 1

Complete

Grant FFY	Task	Estimated Cost	Federal Funds	State Funds	State In-Kind Contribution	Task Completed
	Education & Outreach	\$1,000,000	\$500,000	\$460,600	\$39,400	Jan. 2019
	Organizational Structure and Compliance Program	\$277,000	\$125,000	-	\$152,000	Sept. 2018
	Pay-at-the-Pump / Charge Point Test	\$250,000	\$125,000	\$73,500	\$51,500	Jan. 2019
2016	Total Estimated Cost	\$1,527,000	\$750,000	\$534,100	\$242,900	
	Total Expenditures	\$1,359,190	\$557,671	\$452,563	\$348,956	
	Unused Balance	\$167,810	\$192,329	\$81,537	-\$106,056	
	% Expended thru Completion	89%	74%	85%	144%	

The project funded by the STSFA FAST Act 2016 grant (Round 1) has been completed.

Project goals:

1. Expand Education and Outreach

- a. Provide the public with information related to road usage charge.
- b. Develop research initiatives aimed at informing the public on the current system of generating revenues for transportation infrastructure, how those funds are distributed and used.
- c. Provide an open and transparent forum for the discussion of road charge as an alternative to the gas tax.

2. Develop Organizational Structure and Compliance Program

- a. Define organizational structure for California’s road charge program.
- b. Examine and identify improvements to the current gas tax revenue model.
- c. Identify enforcement and compliance strategies.

3. Test a Pay-at-the-Pump/Charge Point Model

- a. Identify technology solutions for a Pay-at-the-Pump/Charging Station model.
- b. Select viable Pay-at-the-Pump/Charging Station software/applications.
- c. Demonstrate the effectiveness of the Pay-at-the-Pump/Charging Station software/applications through internal testing.

The funds from the 2017 STSFA grant (Round 2) and 2018 STSFA grant (Round 3) are being utilized to conduct a multi-phase road charge demonstration that will feature emerging technologies in transportation. Caltrans performed four live pilot tests from January to June 2021 that explored how a mileage-based road charge can be assessed through Pay-at-the-Pump/Electric Charge Points, Usage-Based Insurance, Transportation Network Companies, and Autonomous Vehicles.

The following table indicates the total estimated cost for each project, as reflected in Caltrans' 2017 STSFA FAST Act Grant Proposal.

Caltrans FFY 2017 STSFA FAST Act Award – Round 2 **In Progress**

Grant FFY	Task	Estimated Cost	Federal Funds	State Funds	State In-Kind Contribution
	Pay-at-the-Pump / Charge Point Demonstration	\$3,500,000	\$1,750,000	\$750,000	\$1,000,000
2017	Total Estimated Cost	\$3,500,000	\$1,750,000	\$750,000	\$1,000,000
	Expended thru Sept. 2021	\$3,680,579	\$1,749,777	\$1,068,173	\$862,629
	Balance	-\$180,579	\$223	-\$318,173	\$137,371
	% Expended thru Sept 2021	105%	100%	142%	86%

Project goals:

- 4. Demonstrate a Pay-at-the-Pump/Charge Point Model**
 - a. Test the viability of a Pay-at-the-Pump/Charge point system through a live demonstration and evaluation of new technologies.
 - b. Evaluate feasibility, cost effectiveness, and public acceptance of a Pay-at-the-Pump/Charge Point model.
 - c. Make recommendations regarding Pay-at-the-Pump/Charge Point implementation.
- 5. Research on Public Attitudes**
 - a. Examine public perception of transportation funding and transportation funding alternatives.
 - b. Execute a multi-channel, multi-lingual transportation funding communication and outreach efforts.
 - c. Evaluate and refine the most effective transportation funding messages and channels.

The following table indicates the total estimated cost for each project, as reflected in Caltrans' 2018 STSFA FAST Act Grant Proposal.

Caltrans FFY 2018 STSFA FAST Act Award – Round 3 **In Progress**

Grant FFY	Task	Estimated Cost	Federal Funds	State Funds	State In-Kind Contribution
	Usage Based Insurance (UBI) Demonstration	\$1,320,000	\$660,000	\$310,000	\$350,000
	Transportation Network Companies Demonstration	\$1,170,000	\$585,000	\$330,000	\$255,000
	Autonomous Vehicles Demonstration	\$1,570,000	\$785,000	\$300,000	\$485,000
2018	Total Estimated Cost	\$4,060,000	\$2,030,000	\$940,000	\$1,090,000
	Expended thru Sept. 2021	\$3,409,039	\$2,030,000	\$771,296	\$607,743
	Balance	\$650,961	\$0	\$168,704	\$482,257
	% Expended thru Sept. 2021	84%	100%	82%	56%

Project goals:

- 6. Usage Based Insurance and Road Charge Demonstration**
 - d. Demonstrate the feasibility of auto insurance companies (those currently utilizing UBI) acting as commercial account managers (CAMs) in the collection of a road charge.
 - e. Assess the cost-effectiveness of auto insurance companies (those currently utilizing UBI) acting as CAMs in the collection of a road charge.
 - f. Build partner and public awareness of this type of road charge model.
- 7. Transportation Network Companies and Road Charge Demonstration**
 - d. Demonstrate the feasibility of collecting a road charge through transportation network companies.
 - e. Assess the cost effectiveness of collecting a road charge through transportation network companies.
 - f. Build partner and public awareness of this type of road charge model.
- 8. Autonomous Vehicles and Road Charge Demonstration**
 - g. Identify road charge opportunities that stem from autonomous vehicle usage of California roadways.
 - h. Build partner and public awareness of this type of road charge model.

Project Status

Round 1

Round 1 is complete.

Round 2 & 3

Innovation and Research

- Began focused research on three specific focus areas: Travel expenditures for California residents, road charge administrative cost factors, and out-of-state mileage revenue impacts. Results will be released by mid-year 2022.
- Completed efforts with UC-Berkeley to research road charge risks, economic impacts, market research, and integration of TNCs

Phased Demonstrations (Pay-at-the-Pump/Charge Point, UBI, TNC, and AV)

Demonstration:

- Developed and executed Pre-Demonstration Test Plan, Participant Recruitment Plan, Demonstration Implementation Plan, and Customer Support Plan.
- Developed the Participant Agreement and related Privacy Policy.
- Conducted the Pay-at-the-Pump/Charge Point, UBI, TNC, and AV phases of the demonstration:
 - Phase 1: Pay-at-the-Pump/Charge Point – January through June
 - Phase 2: Usage-Based-Insurance (UBI) – February through June
 - Phase 3: Transportation Networking Companies (i.e. Ridesharing) – March through June

- Phase 4: Automated Vehicles – April through June
- Enlisted the support of 83 pilot participants who participated in demonstration activities from January to June.
 - Reported 169,928 miles
 - Reported 4,460 gallons of fuel consumed
 - Assessed \$1,475.62 in theoretical road charge
- Established a participant portal and customer support line for participants to raise issues during their road charge experiences. Fielded 21 total calls, with 150 emails and online inquiries. All issues were resolved or escalated within three business days of receipt and all issues were successfully resolved.
- Integrated road charge data from each phase technology provider into the Platform for Road charge Integration and Mobility Evolution (PRIME).
- Presented the capabilities of PRIME at WASHTO.
- Created demonstration operational and financial performance reports.
- Developed the data security audit report.
- Developed predictive analytics and dashboards within PRIME. Dashboard scenarios included: VMT across Caltrans regions and concentrations in urban and suburban areas, theoretical road charge revenues in urban areas relative to each Metropolitan Planning Organization (MPO), evaluation of micro mobility potential across multiple modes, and transit trip potential.
- Conducted road charge data exchange and regional interoperability demonstration with Oregon’s OReGO program. (RUC West STSFA grant)
- Began the independent evaluation of each phase of the road charge program including developing the evaluation criteria, assessing the results of each demonstration phase, and authoring the findings and recommendations, to be released mid-year 2022.
- Compiled final report annotated outlines, style guide and design concepts, and draft content.
- Began developing the four individual phased reports and the comprehensive final report with anticipated completion by mid-year 2022.
- Closed out demonstration accounts, received demonstration hardware, and issued incentives to the eligible participants.
- Compiled demonstration operations closeout materials, including final customer service report, data security assessment, and data warehouse summary.

Communications:

- Issued initial press release introducing the Phased Demonstration, including a call for volunteers.
- Launched three road charge informational videos.
- Developed scripts for three additional road charge specific branded videos.
- Conducted two statewide opinion polls of California residents.
- Deployed nine (9) surveys spanning Pre-Demonstration, Mid-Demonstration, and End of Demonstration surveys for the first three phases (Pay-at-the-Pump/Charge Point, Usage-based Insurance, and Transportation Network Companies (e.g. Rideshare)).
- Analyzed changes and trends in participants attitudes throughout their participation in the demonstration.
- Conducted twelve (12) focus groups to capture reactions and attitudes towards road charge:
 1. Bay Area
 2. Central Valley Urban and Rural Residents
 3. Northern California Urban and Rural Residents
 4. Los Angeles Area

5. Orange County and San Diego Region
 6. Supercommuters
 7. Central Valley Rural Only Residents
 8. Northern California Rural Only Residents
 9. Electric Vehicle Owners
 10. Ridehail Service Drivers
 11. Spanish speakers
 12. Mandarin Chinese speakers
- Reported program updates, demonstration status, and research progress to the California Road Charge Technical Advisory Committee.
 - Developed and disseminated three newsletters

Round 5

Start Pending.

Conclusion and Next Steps

During 2021, the funds from the 2017 and 2018 STSFA grant funds were utilized to design, deploy, and operate a comprehensive road charge demonstration that features emerging technologies in transportation and seeks to understand principles of easy user experience. For 2022, Caltrans will conclude the four-phased demonstration by releasing the final demonstration results and independent evaluation reports. Caltrans is also working on furthering the road charge concept including further state-level research, developing a revenue collection pilot required by the passage of SB 339, and beginning the efforts of Caltrans' most recent grant award to test the viability of current GPS technology to differentiate between public and private roads in a road charge system.

Caltrans also continues to support regional and national road charge initiatives through active participation in the 18-state pooled fund research consortium RUC West, and the Mileage Based User Fee Alliance.

In 2022, the following high-level tasks will be completed through utilization of the 2017 STSFA grant and 2018 STSFA grant awards:

Communications

- Launch three additional charge road charge informational videos.
- Continue updating and maintaining the road charge website (<https://www.caroadcharge.com>).
- Support ad-hoc communications requests from other state agencies, legislators, the road charge Technical Advisory Committee, and key stakeholders.
- Identify trends and knowledge gaps uncovered during surveys, focus groups, and public opinion polls.

Innovation and Research

- Release the findings of the three demonstration research projects.

- Continue evaluating potential risks, mitigation strategies, and policy considerations for deploying a road charge program.
- Conduct another round of public opinion polling.
- Support regional pooled funds studies through RUC West, including impacts to rural communities, a 10-year implementation plan project, and impacts to super commuters.
- Advise on other California and regional road charge initiatives.
- Continue supporting national road charge research and policy initiatives.

Phased Demonstrations (Pay-at-the-Pump/Charge Point, UBI, TNC, and AV)

- Continue supporting analytics and dashboards through PRIME.
- Continue program communications and supporting ad-hoc discussions and presentations on the Four Phased Demonstration results.
- Continue engaging California Road Charge Technical Advisory Committee on program-related considerations.
- Finalize the individual phased reports and the comprehensive demonstration report.
- Prepare an executive presentation highlighting demonstration activities, findings, and recommendations.

Round 5 - Public/Private Roads Project

- Complete procurement and execute contract
- Begin pilot design and implementation