



Appendix-3

Independent Evaluation Report

FINAL REPORT

Evaluation of the California Road Charge Pilot Program

Prepared for

California Department of Transportation

November 2017



MARKET
& OPINION
RESEARCH
SERVICES



SYSTEM
METRICS
GROUP



Forward and Acknowledgements

This report presents the results of the independent evaluation of the California Road Charge Pilot Program (RCPP), addressing the performance of the pilot relative to the goals and criteria established by the Road Charge Technical Advisory Committee. The evaluation effort encompassed several approaches:

- Analyzing aggregated data collected monthly by account managers
- Conducting web-based pilot participant surveys at the pilot's beginning, midpoint, open enrollment period, and end
- Conducting focus groups with a sample of participants at the end of the pilot
- Interviewing members of the Pilot Delivery Team, Interagency Working Group, and account managers at the pilot's beginning, midpoint, and end
- Providing a questionnaire to heavy vehicle fleet managers, with follow up phone calls and discussions, at the end of the pilot
- Reviewing relevant RCPP documentation

No members of the independent evaluation team or their firms were involved in any of the development and implementation activities leading up to the start of the pilot, nor were they involved in pilot operations. As such, this is truly an "independent" evaluation. Moreover, **no judgments or recommendations are included herein**. Where appropriate, explanations are provided regarding what may appear as anomalies in the collected information.

Contents

Forward and Acknowledgements.....	iii
Acronyms and Abbreviations	ix
Executive Summary	ES-1
Background	ES-1
Mileage Reporting Methods and Account Managers.....	ES-2
California Road Charge Pilot Program Evaluation.....	ES-5
Evaluation Results.....	ES-6
Closing	ES-17
1 California Road Charge Pilot Program Overview.....	1-1
1.1 Background	1-1
1.1.1 Need for Alternative Transportation Funding Sources.....	1-1
1.1.2 Establishing the California Road Charge Pilot Program	1-4
1.1.3 Overview of the California Road Charge Pilot Program.....	1-6
1.2 Vehicle Types, Pilot Participants, and Reporting Options	1-7
1.2.1 Participant Recruitment.....	1-7
1.2.2 Vehicle Types	1-8
1.2.3 Participant Demographics.....	1-9
1.2.4 Participant Choices	1-11
1.2.5 Mileage Collected	1-20
1.3 California Road Charge Pilot Program Evaluation	1-20
2 Evaluation Methodology and Results	2-1
2.1 California Road Charge Pilot Program Goals and Criteria.....	2-1
2.2 Information Gathering Approaches and Analysis Methods	2-2
2.2.1 Data Collection.....	2-3
2.2.2 Participant Surveys	2-5
2.2.3 Focus Groups	2-9
2.2.4 Document Review.....	2-11
2.2.5 Interviews	2-12
2.3 Evaluation Results.....	2-12
2.3.1 Revenue	2-13
2.3.2 Costs.....	2-17
2.3.3 Operations	2-20
2.3.4 User Experience	2-32
2.3.5 Privacy.....	2-51
2.3.6 Data Security.....	2-58
2.3.7 Equity	2-61
2.3.8 Communications	2-70
3 Conclusions.....	3-1

Appendixes

Appendix A	California Senate Bill 1077
Appendix B	California Road Charge Pilot Program In-Vehicle Telematics Participating Vehicles
Appendix C	Road Charge Pilot Program Technical Advisory Committee Evaluation Criteria and Analysis Methods
Appendix D	California Road Charge Pilot Program Participant Survey and Focus Group Questions
Appendix E	California Road Charge Pilot Program Interview Forms
Appendix F	California Road Charge Pilot Program Heavy Truck Fleet Questionnaire
Appendix G	California Road Charge Pilot Program Policies and Participant Agreement

Tables

Table ES-1. RCPP Recording and Reporting Methods and Technologies.....	ES-3
Table ES-2. Operational Concepts and Technologies Used in the RCPP—March 2017.....	ES-6
Table ES-3. Privacy Attributes of the California Road Charge Pilot Program.....	ES-14
Table ES-4. Summary of Satisfaction Levels for Various Pilot Program Attributes.....	ES-18
Table ES-5. Summary of California RCPP Evaluation Categories, Goals, and Levels of Achievement ...	ES-19
Table 1-1. Number of RCPP Vehicles Types by Activity (March 31, 2017).....	1-8
Table 1-2. Mileage Reporting Methods by Account Manager.....	1-14
Table 1-3. Operational Concepts and Technologies Used in the RCPP—March 2017.....	1-16
Table 1-4. Total Mileage by Vehicle Category	1-20
Table 2-1. California Road Charge Pilot Program Evaluation Categories and Goals.....	2-1
Table 2-2. Survey Responses and Margins of Errors.....	2-7
Table 2-3. Focus Group Information.....	2-9
Table 2-4. Make-Up of Focus Group Participants	2-9
Table 2-5. Road Charge Reporting Methods of Focus Group Participants	2-10
Table 2-6. Cost Information from Account Manager Interviews	2-17
Table 2-7. Staffing Level of Effort Estimates from Account Manager Interviews.....	2-21
Table 2-8. Percent of Actively Reporting Vehicles at End of RCPP (Azuga)	2-27
Table 2-9. Mileage Reporting Accuracy Test Results	2-37
Table 2-10. Operational Concepts and Technologies Used in the RCPP - March 2017	2-38
Table 2-11. Technical Support Inquiries by Account Manager	2-45
Table 2-12. Average Monthly Road Charge Invoice by Vehicle Type	2-65
Table 2-13. Average Monthly Hypothetical Road Charges and Gas Taxes Paid by Reporting Method...	2-70
Table 2-14. Survey Responses.....	2-71
Table 2-15. Customer Service Total Inquiries by Provider.....	2-71
Table 3-1. Summary of California RCPP Evaluation Categories, Goals, and Levels of Achievement	3-1
Table 3-2. Summary of Satisfaction Levels for Various Pilot Program Attributes	3-3

Figures

Figure ES-1. Increased Fuel Efficiency Decreases Revenues.....	ES-1
Figure ES-2. RCPP Recording and Reporting Methods.....	ES-3
Figure ES-3. Percent of Actively Reporting Vehicles by Automated and Manual Methods— March 2017	ES-4
Figure ES-4. Overall Monthly Road Charge Revenues (Hypothetical) and Gas Taxes Paid by Vehicles with Automated Mileage Reporting.....	ES-7
Figure ES-5. Monthly Net Revenues for Heavy Vehicles using EROAD (Road Charge Less Fuel Tax Credits).....	ES-8
Figure ES-6. IMS Trip Log and Driving Score Smartphone App Display	ES-9
Figure ES-7. Survey Results on Impact of Pilot Program on Driving Behavior	ES-10

Figure ES-8. Comparison of Actively Reporting Vehicles Relative to Total Vehicles Using Manual Methods	ES-11
Figure ES-9 Survey Results on “My Reporting Method is Easy to Use”	ES-12
Figure ES-10. Survey Results on Satisfaction with Accuracy of Data on Invoices	ES-13
Figure ES-11. Survey Results on Satisfaction with Invoice Data Accuracy by Reporting Method	ES-13
Figure ES-12. Survey Results on Clarity of Data Security Protections.....	ES-15
Figure ES-13. Survey Results on Data Security Satisfaction.....	ES-16
Figure ES-14. Survey Results on Fairness of a Road Charge	ES-16
Figure ES-15. Survey Results on Feedback Opportunities	ES-17
Figure ES-16. Levels of Satisfaction with the Pilot Program Overall.....	ES-18
Figure ES-17. Survey Results on Future Road Charge Pilot Programs	ES-19
Figure 1-1. Sales-Weighted Fuel-Economy Rating (Window Sticker) of Purchased New Vehicles.....	1-2
Figure 1-2. Increased Fuel Efficiency Decreases Revenues.....	1-2
Figure 1-3. Average Annual Cost of Selected Items	1-4
Figure 1-4. Road Charge Activities and Functions	1-6
Figure 1-5. California Road Charge Pilot Program Website	1-7
Figure 1-6. Statewide and Pilot Participation Statistics – Age	1-9
Figure 1-7. Statewide and Pilot Participation Statistics – Gender	1-9
Figure 1-8. Statewide and Pilot Participation Statistics – Household Size.....	1-10
Figure 1-9. Statewide and Pilot Participation Statistics – Ethnicity	1-10
Figure 1-10. Statewide and Pilot Participation Statistics – Region	1-10
Figure 1-11. Statewide and Pilot Participation Statistics – Urban/Rural	1-11
Figure 1-12. Statewide and Pilot Participation Statistics – Income	1-11
Figure 1-13. Overview of Pilot Choices	1-12
Figure 1-14. Phone Screen for Manual Odometer Reading.....	1-13
Figure 1-15. Plug-In Device to On-Board Diagnostic System Port	1-13
Figure 1-16. Account Manager Selection from California Road Charge Pilot Program Website.....	1-15
Figure 1-17. Percent of Actively Reporting Vehicles by Automated and Manual Methods – March 2017	1-16
Figure 1-18. Azuga “Driving Scores” Smartphone App Display	1-17
Figure 1-19. Azuga Participant Information Web Portal.....	1-18
Figure 1-20. IMS “Trip IQ” Smartphone App Display	1-18
Figure 1-21. EROAD Driver Dashboard	1-19
Figure 1-22. California Road Charge Pilot Program and Evaluation Timeline.....	1-21
Figure 2-1. Illustrative Linkages California Road Charge Pilot Program Datasets and Socioeconomic Data	2-4
Figure 2-2. Illustrative Analysis Approach.....	2-5
Figure 2-3. Overall Monthly Road Charge Revenues (Hypothetical) and Gas Taxes Paid by Vehicles with Automated Mileage Reporting	2-13
Figure 2-4. Monthly Net Revenues (Road Charge Less Gas Tax Credits)	2-14
Figure 2-5. Overall Monthly Road Charge Revenues (Hypothetical) and Fuel Taxes Paid by Commercial Vehicles (EROAD)	2-15
Figure 2-6. Monthly Net Revenues for Heavy Vehicles using EROAD (Road Charge Less Fuel Tax Credits)	2-15
Figure 2-7. Survey Results on Accuracy of Estimated Gas Tax.....	2-16
Figure 2-8. Comparison of Calculated MPG (based on gas tax credit data) Relative to EPA Estimated MPG	2-16
Figure 2-9. Survey Results on Time Spent on the Pilot Program	2-19
Figure 2-10. Survey Results on Money Spent on the Pilot Program.....	2-20
Figure 2-11. Survey Results on Satisfaction with Account Managers during Enrollment	2-23

Figure 2-12. Survey Results on Satisfaction with Account Managers.....	2-24
Figure 2-13. Survey Results on Factors for Enrolling in the Pilot Program	2-25
Figure 2-14. Monthly Comparison of Actively Reporting Vehicles Relative to Total Vehicles (Compliant) in the Road Charge Pilot Program	2-26
Figure 2-15. Comparison of Actively Reporting Vehicles Relative to Total Vehicles Using Manual Methods	2-27
Figure 2-16. Survey Results on Mileage Reporting for the Odometer Charge	2-27
Figure 2-17. Survey Results on Impact of Pilot Program on Driving Behavior.....	2-29
Figure 2-18. Survey Results on Impact of Pilot Program on Driving Behavior by Reporting Method	2-30
Figure 2-19. Survey Results on “My Reporting Method is Easy to Use”	2-33
Figure 2-20. Number of Customer Service Center and Customer Care Center Inquiries	2-34
Figure 2-21. Call Inquiries to RCPP Customer Service Center (June 2016 - March 2017).....	2-35
Figure 2-22. Email Inquiries to RCPP Customer Service Center (June 2016 - March 2017).....	2-35
Figure 2-23. Survey Results on Satisfaction with Accuracy of Data on Invoices.....	2-36
Figure 2-24. Survey Results on Satisfaction with Invoice Data Accuracy by Reporting Method	2-37
Figure 2-25. Survey Results on Choices Available	2-39
Figure 2-26. Survey Results on Selection of the Right Reporting Method	2-39
Figure 2-27. Survey Results on Preferred Mileage Reporting Method*	2-40
Figure 2-28. Survey Results on Chosen Reporting Method for Participants who Switched	2-41
Figure 2-29. Account Managers and Technology Providers	2-42
Figure 2-30. Vehicles Experiencing Device Errors	2-44
Figure 2-31. Device Error Events.....	2-45
Figure 2-32. Survey Results on Technical Issue Resolution Time	2-46
Figure 2-33. Survey Results on Clarity of Communications	2-48
Figure 2-34. Survey Results on Invoices	2-49
Figure 2-35. Survey Results on User Instructions	2-50
Figure 2-36. Survey Results on Safety Concerns	2-51
Figure 2-37. Survey Results on Privacy Protection	2-52
Figure 2-38. Survey Results on Attitudes towards Privacy	2-52
Figure 2-39. Survey Results on Privacy Concerns	2-53
Figure 2-40. Survey Results on Privacy Concern Experiences.....	2-53
Figure 2-41. Relative Privacy by Mileage Reporting Method	2-58
Figure 2-42. Survey Results on Clarity of Data Security Protections	2-59
Figure 2-43. Survey Results on Data Security Satisfaction.....	2-59
Figure 2-44. Survey Results on Fairness of a Road Charge	2-62
Figure 2-45. Average Monthly Hypothetical Road Charges and Gas Tax Paid by Pilot Participants by Distance Traveled Quartile	2-63
Figure 2-46. Pre-Pilot Survey Results on Hypothetical Average Monthly Road Charge	2-64
Figure 2-47. Survey Results on Average Monthly Road Charge	2-64
Figure 2-48. Average Hypothetical Road Charge Paid by Pilot Participants, by Household Income	2-65
Figure 2-49. Average Gas Taxes Paid by Pilot Participants, by Household Income	2-66
Figure 2-50. Average Hypothetical Road Charge Paid by Pilot Participants, by Geographic Region.....	2-67
Figure 2-51. Average Gas Tax Paid by Pilot Participants, by Geographic Region	2-67
Figure 2-52. Average Hypothetical Road Charge Paid by Pilot Participants, by Urban and Rural	2-68
Figure 2-53. Average Hypothetical Gas Taxes Paid by Pilot Participants, by Urban and Rural	2-69
Figure 2-54. Survey Results on Feedback Opportunities	2-72
Figure 3-1. Levels of Satisfaction with the Pilot Program Overall.....	3-3
Figure 3-2. Survey Results on Future Road Charge Pilot Programs	3-4
Figure 3-3. Monthly Comparison of Actively Reporting Vehicles Relative to Total Vehicles (Compliant) in the RCPP	3-5

Acronyms and Abbreviations

AMO	Account Management Oversight
BOE	Board of Equalization
CalSAM	California State Account Manager
CalSTA	California State Transportation Agency
Caltrans	California Department of Transportation
CAM	Commercial Account Manager
CDTFA	California Department of Tax and Fee Administration
CGW	Combined Gross Vehicle Weight
CTC	California Transportation Commission
DMV	Department of Motor Vehicles
EPA	Environmental Protection Agency
FCCC	Foundation for California Community Colleges
FTE	Full-time equivalent
GPS	Global positioning system
HVAM	Heavy Vehicle Account Manager
IAWG	Interagency Working Group
IFTA	International Fuel Tax Agreement
IMS	Intelligent Mechatronic Systems
IRP	International Registration Plan
MPG	Miles Per Gallon
OBD-II	On Board Diagnostics 2 port
OReGO	Oregon Road Usage Charge Volunteer Program
PDT	Pilot Delivery Team
PII	Personally Identifiable Information
RCPP	Road Charge Pilot Program
SB	Senate Bill
TAC	Technical Advisory Committee
VIN	Vehicle Identification Number

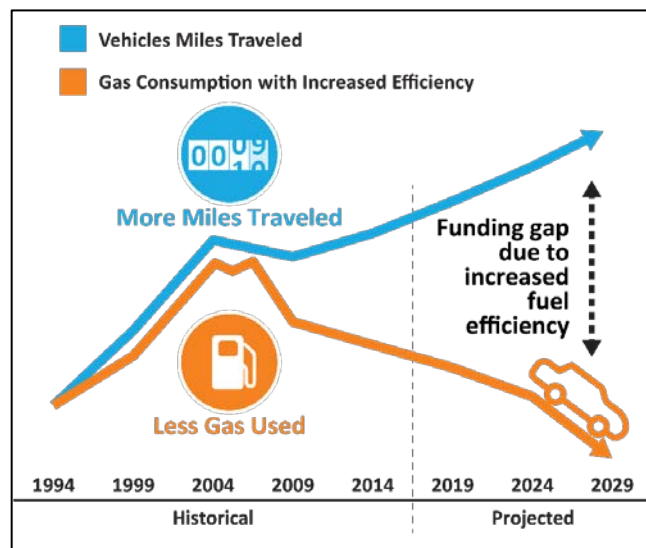
Executive Summary

Background

Constructing, maintaining, rehabilitating, and operating California’s public roads have been historically funded primarily by state fuel excise taxes on both gasoline and diesel, as well as federal funds (obtained primarily from the federal fuel tax). However, the purchasing power of gas tax¹ revenues has been eroding over the past decade, resulting in a shortfall between transportation infrastructure needs and funding available to address those needs. This shortfall is due, in part, to inflation with no corresponding adjustment to the per gallon gas tax; for example, the federal gas tax of 18.4 cents per gallon has not been increased since 1993. California’s base excise tax on gas of 18 cents per gallon had not been increased since 1994—that is, until the passage of Senate Bill (SB) 1² in April 2017.

Another factor contributing to this transportation-funding problem in California is the emergence of more fuel-efficient vehicles on the road. The average fuel efficiency of cars bought each year in the United States has been increasing over the past decade. This increase can partially be attributed to the introduction of highly fuel-efficient cars such as plug-in hybrids and electric vehicles, of which California is the nationwide leader in sales. Such vehicles, with their reduced emissions, are good for the environment, their owners pay little or no gas tax and, therefore, contribute only a fraction to the overall cost of roadway maintenance and operations. Thus, fewer gallons of gas are being sold, which means less money is available to pay for road repairs and ongoing operations (see Figure ES-1).

Figure ES-1. Increased Fuel Efficiency Decreases Revenues



An efficient transportation system is critical for California’s economy and quality of life. The revenues currently available for highways and local roads do not adequately allow for preserving and maintaining existing road infrastructure and providing funds for improvements to reduce congestion and improve safety. The recent passage of SB 1 will certainly help California meet its current and long-term transportation funding needs; however, the pay-at-the-pump gas tax has long-term issues. Even with adjustments for inflation, the gas tax will continue to generate less revenue as cars become more fuel-efficient. By 2030, as much as half of the revenue that might have been collected from the gas tax could potentially be lost to fuel efficiency. Moreover, the widening gap between the most and least fuel-efficient vehicles can lead to an issue of fairness. The concept that **all roadway users should pay their**

¹ The term “gas tax” is primarily used throughout this document to identify the current per-gallon tax paid at the pump for either gas or diesel. Vehicles using both types of fuel were included in the pilot. However, the vast majority of vehicles in the pilot—and the associated number of miles traveled—used gas-powered internal combustion engines. The term “fuel tax” is used in some places to reflect the language in supporting legislation, documents developed by the Technical Advisory Committee (e.g., the various goals objectives and criteria developed by the Technical Advisory Committee on which the evaluation is based), and commonly used naming conventions. This term is also used when discussing results specific to the heavy vehicles included in the Road Charge Pilot Program, most of which use diesel fuel.

² SB 1 increases transportation funding. The additional funds are achieved via an increase in the base excise tax on gasoline by 12 cents per gallon (bringing it to 30 cents), with an inflation adjustment. It also increases the diesel excise tax to 20 cents per gallon, with an inflation adjustment. Both increases take effect on November 1, 2017. SB 1 also increases licensing and registration fees.

fair share based on their use of the transportation network appeals to a fundamental notion of fairness widely accepted by consumers in other marketplaces—making those who use the transportation network pay for that use (the “user pays” principle), thereby contributing to roadway improvement, maintenance, and operation. California needs a long-term sustainable and equitable way to pay for and keep pace with road maintenance and operational needs.

To find a long-term solution to transportation-funding issues and concerns, in 2014, the California State Legislature passed and Governor Jerry Brown signed into law SB 1077. The bill required the Chair of the California Transportation Commission to create a Road Charge Technical Advisory Committee (TAC) in consultation with the Secretary of the California State Transportation Agency (CalSTA). The TAC was assigned the task of making recommendations for the design of a pilot program to explore the benefits and risks of a “road charge” as an alternative to the gas tax and to also consider providing recommendations on the criteria to be used to evaluate the pilot program.

Road charge is a funding mechanism where drivers pay to maintain the roads based on the miles they drive, rather than the amount of gasoline they consume.

The TAC developed several recommendations on the design and evaluation criteria, including the following, for a Road Charge Pilot Program (RCPP) and presented them to the CalSTA:

- **5,000 participating vehicles statewide**—Include a broad cross-section of individuals, households, businesses, and at least one government agency. Additionally, include vehicles that reflect the fleet currently using California’s road network.
- **Multiple mileage reporting methods**—Offer drivers a choice in either manual or automated mileage recording methods, including one that does not require any mileage reporting. Also offer drivers a choice in account managers.
- **Protection of privacy and data security**—Develop a pilot that features specific governance, accountability, and legal protection approaches for protecting privacy and the security of collected data.

Based on the TAC recommendations, CalSTA and the California Department of Transportation (Caltrans) developed the system and procured service providers for the pilot and officially launched the statewide California RCPP on July 1, 2016. The RCPP was a 9-month field trial with more than 5,000 participating vehicles statewide testing various road-charging, mileage reporting methods to compare how their performance measured against an established set goals and criteria as developed by the TAC.

The per-mile rate for the RCPP was 1.8 cents per mile. This value was based on a TAC recommendation to keep the rate revenue neutral and determined by calculating a charge that would result in the average California driver—driving a vehicle getting the state average of approximately 20 miles per gallon (MPG)—paying the same in road charge as gas tax for the same number of miles driven. Moreover, because the road charge is intended to replace the gas tax, information on the amount of gas used allows participants to receive a credit for the amount of gas tax paid at the pump.

Mileage Reporting Methods and Account Managers

The California RCPP provided participants several mileage reporting methods to choose from, including several that do not require technology in the vehicle, one that does not require any mileage reporting, and technology options with and without location capability (refer to Figure ES-2 and Table ES-1). Participants also chose an account manager—an entity that collected road-charging data, distributed mock invoices, and collected simulated payments (no actual funds were paid by participants). Three types of account managers were provided in the California RCPP:

- **Commercial account managers (CAMs)** offered automated mileage reporting methods and other user services.
- **California State account manager (CalSAM)** provided manual mileage reporting options.
- **Heavy-vehicle account manager (HVAM)** offered road-charging and other services to fleets of trucks and other heavy vehicles.

Participants selected a recording and reporting method and account manager when they enrolled in the pilot. At the pilot's midpoint—between November 1 and November 15, 2016—participants were allowed to change their mileage reporting method, account manager, or both during an open enrollment period.

Figure ES-2. RCPP Recording and Reporting Methods

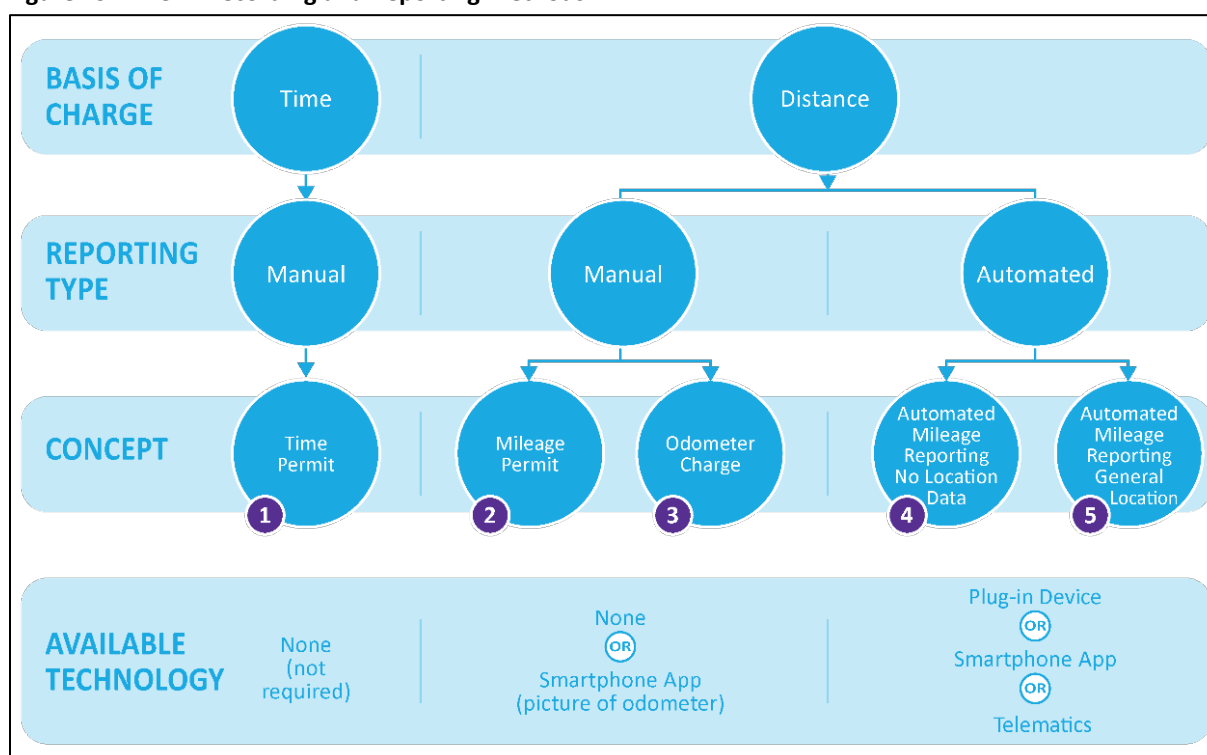


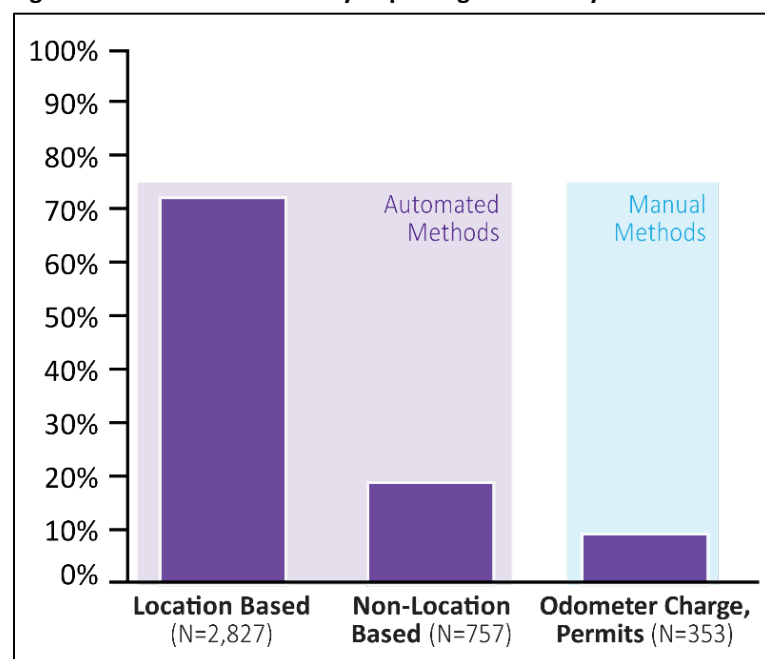
Table ES-1. RCPP Recording and Reporting Methods and Technologies

Recording and Reporting Methods	Technologies
Time permit —Participants made a simulated payment for unlimited road use in California for a specific time period. No data reporting was required, although participants registered with the CalSAM.	No technologies employed. The charge was based on the 95th percentile average annual traffic in California (that is, 25,100 miles per year). The equivalent monthly charge was \$37.50.
Mileage permit —Participants made a simulated payment in advance to drive a certain number of miles—a “block of miles.” The mileage permit was purchased from the CalSAM. Each time a participant purchased a new block of miles, they had to provide a certified reading of their vehicle’s odometer.	A certified reading was required at the pilot’s beginning and end, either by taking the car to an official vehicle inspection station or by using a smartphone app to take a picture of the odometer and sending it to the CalSAM.
Odometer charge —Participants paid a simulated per mile road charge based on periodic odometer readings, with the mileage being reported based on odometer readings performed at the start and end of a reporting period.	

Recording and Reporting Methods	Technologies
Automated mileage reporting (no location)—In-vehicle equipment automatically reported mileage traveled to a CAM, which in turn invoiced the participant based on the number of miles driven. No location information was included—total number of miles driven was charged regardless of where (that is, state) they were driven.	Several technology options were available: • Smartphone apps that use technology to sense vehicle trips and driver actions, along with mileage, trip date and time, and other information. This technology also required the driver to take a picture of the odometer on a recurring basis (using the phone's camera and the app) for verification of the mileage information. • Plug-in devices that plug into the vehicle's onboard diagnostic system (OBD-II) data port and automatically measures the number of miles driven and amount of gas used. • In-vehicle telematics using the computer and communications technology already built into the cars. 
Automated distance charge (general location)—In-vehicle equipment automatically reported mileage traveled to a CAM, which in turn invoiced the participant. The equipment also reported general location data such that the any mileage driven on private roads or outside of California was not charged. The location data were also used to provide other services to the driver.	

Figure ES-3 and Table ES-2 provide information on the mileage reporting methods and technologies used by participants at the end of the RCPP (March 2017). Compliant vehicles are defined as vehicles that enrolled and took the initial steps required to report mileage (e.g., plugged in device, downloaded app, purchased permit), while actively reporting vehicles are vehicles that actually reported mileage information during the RCPP which varied from month to month. Of the 3,937 actively reporting vehicles at the end of the program, **72 percent chose automated mileage reporting methods with location-based technology**, another 19 percent chose an automated method with no location information, and 9 percent reported mileage via manual methods.

Figure ES-3. Percent of Actively Reporting Vehicles by Automated and Manual Methods—March 2017



California Road Charge Pilot Program Evaluation

Caltrans contracted with a third party, which was not involved with developing, implementing, and operating activities associated with the RCPP, to independently evaluate the RCPP. The RCPP evaluation followed the guidance of the TAC and the associated evaluation categories, goals, and criteria as developed and approved by the TAC.

The RCPP evaluation effort encompassed several approaches, including the following:

- **Data analysis**—Quantitatively analyzing and modeling RCPP data collected by the account managers monthly.³ This analysis effort focused on data collected from August 2016 through the end of the RCPP in March 2017. While the pilot started on July 1, 2016, July was considered a “ramp-up” month, and the associated information was not addressed in the analysis. As a general rule, only actively reporting vehicles—those actually reporting data during the month—were included in the analysis effort.
- **Participant surveys**—Conducting web-based pilot participant surveys—at the pilot start, midpoint, and end—to capture attitudinal and experiential opinions relative to a participant’s road charge experience. “Trigger surveys”—such as when participants switched their reporting method or account manager during open enrollment—were also administered. Another form of a trigger survey involved the commercial trucking participants; the eight trucking companies that had their fleets of heavy vehicles included in the pilot with EROAD (the HVAM) as their account manager. These commercial trucking industry participants were provided a questionnaire at the end of the pilot, followed up with telephone interviews. Responses were received from seven of the eight carriers.
- **Focus groups**—Conducting focus groups with a sample of pilot participants to provide additional attitudinal and experiential information regarding the pilot and road charging. Five focus group locations were selected in collaboration with the Caltrans project team. Focus groups were conducted in Orange County (Irvine), Sunnyvale/San Jose, Sacramento, Fresno, and San Luis Obispo. Each focus group consisted of 10 to 12 participants.
- **Interviews**—Interviewing members of the Pilot Delivery Team (PDT),⁴ Interagency Working Group (IAWG), and account managers at the start, midpoint, and end of the pilot.
- **Review of project documentation**—Reviewing documents that address many of the planning, design, and testing activities leading up to the RCPP. The evaluation team reviewed these documents to establish many baseline parameters used in conducting the evaluation.

Agencies Comprising the Interagency Working Group

- Bureau of Automotive Repair
- California Air Resources Board
- California Department of Insurance
- California Department of Motor Vehicles
- California Highway Patrol
- California State Board of Equalization
- California Transportation Commission
- State Controller’s Office

³ Data were provided in reports that were “anonymized” to not include any personally identifiable information.

⁴ The PDT consists of members of Caltrans and its prime contractor, D’Artagnan Consulting, which was collectively responsible for planning, designing, and deploying the RCPP.

Table ES-2. Operational Concepts and Technologies Used in the RCPP—March 2017

Operational Concept	Account Manager	Reporting Method	Number of “Compliant Vehicles” During March¹	Number of “Actively Reporting Vehicles” During March²
Automated Methods	Azuga	Non-location based OBD-II	326	298
		Location based OBD-II	1,693	1,552
		Location-based smartphone app (Driveway)	516	351
		Non-location based smartphone app (Vehcon)	390	335
		Telematics (SmartCar)	37	32
	Total Azuga		2,962	2,568
	Intelligent Mechatronic Systems, Inc. (IMS)	Non-location based OBD-II	139	124
		Location based OBD-II	915	816
		Telematics (SmartCar)	23	23
	Total IMS		1,077	963
	EROAD (Heavy Vehicles)		55	53
Total Automated Methods			4,039	3,584
Manual Method	Arvato (CalSAM)	Odometer	757	258
		Mileage Permit	190	58
		Time Permit	88	37
Total Manual Methods			1,035	353
TOTAL PILOT PROGRAM			5,129	3,937

¹ Compliant—Enrolled vehicle that took the initial steps to report mileage (e.g., plugged in device, downloaded app, purchased permit)

² Actively Reporting—Enrolled vehicles that provided mileage information during the RCPP. The number of “actively reporting vehicles” varied from month to month. The number of actively reporting vehicles for March (i.e., vehicles that reported mileage in March) was 3,937.

Evaluation Results

Overall, the RCPP was successful. Moreover, the program made significant contributions to the road charge knowledge base and moved the state-of-the practice of an alternative funding method forward. Several RCPP attributes and approaches were “firsts” in the area of road charge (at least in North America):

- The RCPP is the largest road charge pilot to date in the United States, encompassing 5,125 vehicles, of which nearly 4,000 provided mileage data.
- The RCPP provided more mileage reporting methods and account managers from which participants could choose than any previous mileage-based collection pilot to date. Several reporting methods—and the associated technologies for measuring mileage—had not been tested in previous road charge pilots, including the use of manual options such as the mileage permit and odometer charge, and highly automated options like reporting mileage via a cell phone photograph, smartphone apps, and the use of in-vehicle telematics.
- The RCPP included fleets of heavy vehicles, along with additional services of interest to commercial fleet managers (for example, safety, International Fuel Tax Agreement [IFTA] reporting).

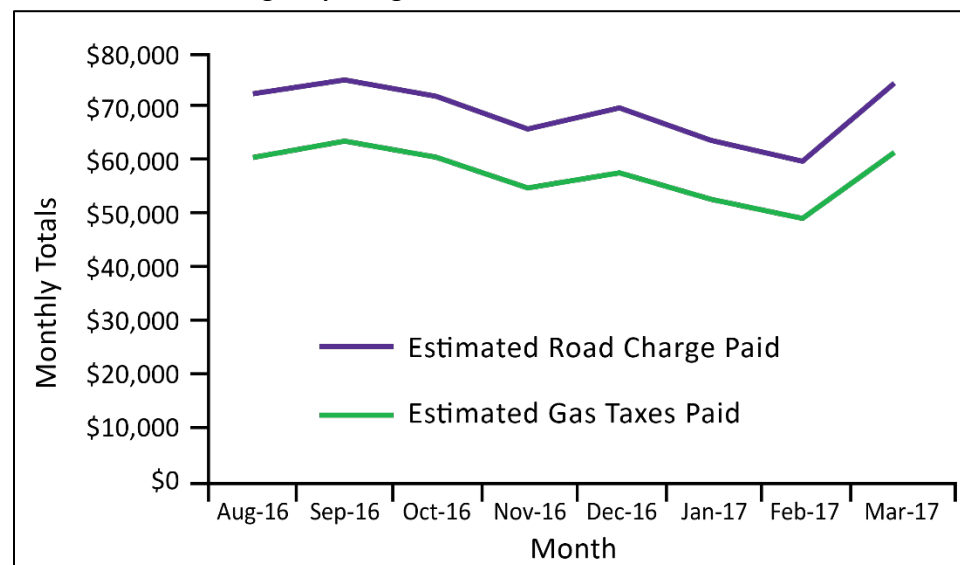
- The independent evaluation of the RCPP assessed the performance of the pilot against eight categories of evaluation criteria encompassing 35 goals adopted by the TAC. Nearly all of these goals were completely satisfied, with highlights provided below for each of the eight goal categories. The blue tables provide a brief description of each of the eight evaluation categories and the goals.

Category	Goals	
Revenue —Ability of road charging to serve as a suitable replacement revenue source for fuel taxes	• Create a revenue stream that can match the fuel tax at time of implementation	• Avoid double taxation of road charge and fuel tax

SB 1077 notes it is “important that the state begin to explore alternative revenue sources that may be implemented in lieu of the antiquated gas tax structure now in place.” This category addresses the ability of road charge to serve as a suitable replacement revenue source for gas taxes.

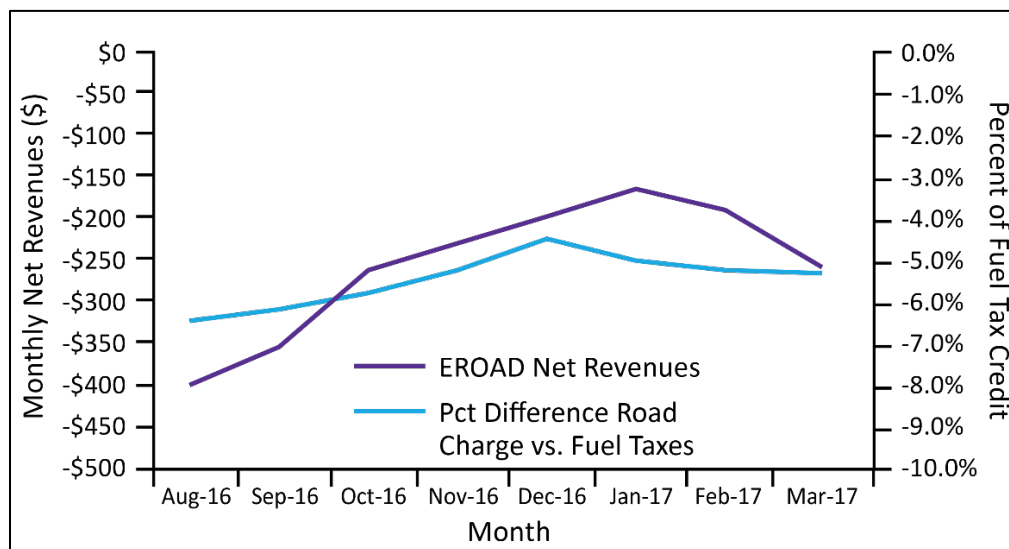
As shown in Figure ES-4, the road charge for light-duty vehicles resulted in greater revenues being generated (hypothetically) as compared with the gas tax. These results should not be construed to mean that the road charge approach cannot match gas tax revenues—that is, be “revenue neutral.” Fuel efficiency was the primary reason for the difference. The average MPG rating for those participating vehicles that used the automated plug-in device⁵—nearly 72 percent of all vehicles—was approximately 24.3 MPG, a value greater than the 20 MPG used in calculating the pilot per mile charge of 1.8 cents. As such, less gas was purchased for these vehicles than the statewide average, resulting in smaller gas credits, leading to the difference between the gas tax and the comparative road charge.

Figure ES-4. Overall Monthly Road Charge Revenues (Hypothetical) and Gas Taxes Paid by Vehicles with Automated Mileage Reporting



As shown in Figure ES-5, heavy vehicles generated approximately 5 percent less in road charge revenues as compared with the fuel tax. Based on the information analyzed, the revenue neutral road charge rate for EROAD participants (heavy vehicles) would have been closer to 1.6 cents per mile.

⁵ This technology was the only one that measured fuel consumed as well as miles driven.

Figure ES-5. Monthly Net Revenues for Heavy Vehicles using EROAD (Road Charge Less Fuel Tax Credits)

Category		Goals
Cost —Costs associated with administering and collecting road charges, both from a user perspective and from an agency perspective	• Administer road charges efficiently • Incorporate cost efficiencies where available	• Provide users with low-cost compliance options • Implement projects on time and on budget

SB 1077 requires the TAC to consider the cost of recording and reporting highway use, along with the cost of collecting taxes and fees as an alternative to the current system of taxing highway use through motor vehicle fuel taxes.

The PDT and IAWG interview participants all indicated that pilot delivery costs (relative to budget) and schedule parameters were met. The initial budget set for the RCPP was approximately \$10 million, while the actual pilot delivery costs were approximately \$8.97 million, or \$1.03 under the initial budget estimate provided by the Legislature.

This RCPP budget equates to approximately \$2,700 per vehicle per year; but it should not be interpolated to estimate costs for a statewide mandated pilot. The \$10 million budget included a significant amount of planning and oversight administration as part of the research effort, including facilitating TAC meetings and preparing associated documents. Moreover, all account managers noted that **pilot cost values do not provide a viable financial model**. The level of resources required to develop, implement, and administer the initial pilot would not map to a statewide program.

Estimating the cost to the state for such a future mandated system, and how much these costs would compare to costs associated with administering the current gas tax system, is difficult. Following are some insights from the evaluation:

- All account managers noted that economies of scale would be available in a statewide scenario. Moreover, in general discussions with account managers regarding costs, their respective business models appear to be based on “millions of vehicles” included in a road charge system, with the road charge component becoming a “value added” to other services they provide to customers.
- Several of these other services (discussed later herein) are already available to the general public. The monthly subscription rate varies between \$25 and \$60, depending on services provided and

whether the hardware (for example, plug-in device) is purchased or leased. The additional cost of providing road charge as a value-added component is unknown.

- In addition to account manager costs (presumably to be reimbursed by the agency as part of a statewide program), direct agency costs also will be incurred for managing the system and ensuring compliance. The PDT did not provide any cost estimates for a statewide program, noting (as did the account managers) that there are too many variables to make such a determination.
- The future cost of road charge will also depend on a number of policy decisions, particularly how California will engage with account managers under an open system framework (as recommended by the TAC) to implement and operate the road charge system. Privacy requirements and audit stipulations will likely also impact account manager pricing.
- Technical assumptions will also impact the future costs of a statewide mandated RCPP, such as the types of operational concepts offered and how many of each are chosen by California residents, as well as the availability of technology in the market place. Caltrans will soon be commencing a project to investigate a pay-at-the-pump and/or charging station option that replicates the current gas tax collection mechanism, along with the potential use of connected vehicle technology (for example, vehicle to infrastructure concepts and standards) in a road charge system.

Category	Goals	
Operations —How well road-charge collections operate, both from customer and agency perspectives	• Be easy to administer • Clearly identify responsibilities • Maintain compliance • Be enforceable • Have neutral behavior impacts	• Integrate with other charges • Optimize collection of charges in accordance with enforcement features recommended by TAC • Be compliant with financial guidelines

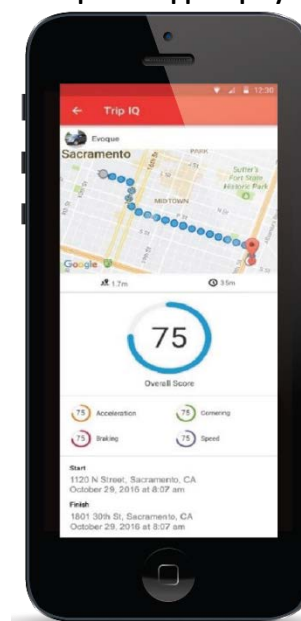
SB 1077 requires the TAC to consider the ease of recording and reporting highway use, along with the ease of collecting road charge fees. This category addresses these operational aspects of road charging from both the customer and agency perspectives. As such, this category has numerous goals. The following touches on a few of them.

Integrate with Other Charges

Prior to the engagement in the RCPP, several account managers and technology providers had developed their business models, systems, and technologies for vehicle-related services, such as user-based insurance. Providing mileage reporting for road charge as part of an established suite of services was a simple addition to their existing functionality. In the RCPP, participants who chose an automated recording and reporting method were offered several vehicle-related services at no additional cost during the pilot. The data collected for these value-added services were not shared with the PDT or Caltrans. For light duty vehicles, these included the following:

- **Visual trip logs**, (Figure ES-6) providing detailed trip logs that identify where the car has been driven, including details about each trip like duration, cost, and carbon footprint

Figure ES-6. IMS Trip Log and Driving Score Smartphone App Display



- **Driving scores**, based on key driving behaviors (for example, idling, braking, acceleration, high speed) to indicate driver safety
- **Safe zones**, allowing users to establish geographical areas and notification when the vehicle (for example, driven by one's teenage child) has crossed those zones
- **Vehicle health**, monitoring the engine, charging system, battery, and cooling system, as well as providing explanations of vehicle trouble codes in driver-friendly terms
- **Parked car instructions**, guiding users back to their parked cars

EROAD (the HVAM) provided additional services of interest to fleet managers of trucks and other heavy vehicles, including the following:

- **IFTA**—Automated and electronic IFTA and International Registration Plan reporting
- **Safety**—Over-speed dashboard, virtual speed camera, pre- and post-trip inspection reporting, driver safety report, and maximum speed alert
- **Fleet management**—Historical daily fleet activity; truck, traffic, and satellite map layers; and geofencing and geofence site activity
- **Fuel management**—Fuel efficiency and usage reports and fuel exception report
- **Fleet optimization reports**—Fleet summary reports, idle reports, trip investigators, off-highway fuel usage reports

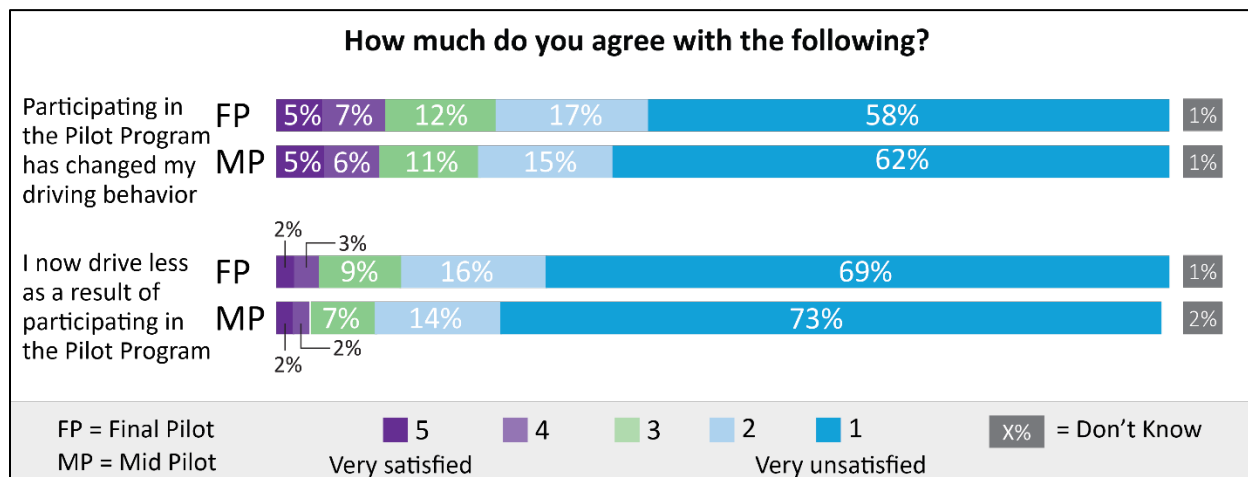
Two commercial fleets involved in the RCPP will be continuing these services following the pilot.

The data collected for these value-added services—such as location, routing, and driving behavior—were not shared with the PDT or Caltrans.

Change Behavior

As shown in Figure ES-7 (from the participant surveys), the road charge had minimal impact on the driving behavior of the participants, with approximately 75 percent of the survey responders indicating that it did not change their behavior. Moreover, an even larger percentage (86 percent) indicated that they were not driving any less (although no real money was exchanged in the pilot which could have impacted this result). Survey respondents who used the plug-in device with location services were most likely to agree (16 percent) that participating in the RCPP changed their driving behavior (and it should be noted that this reporting and recording method provided other services such as driving scores).

Figure ES-7. Survey Results on Impact of Pilot Program on Driving Behavior



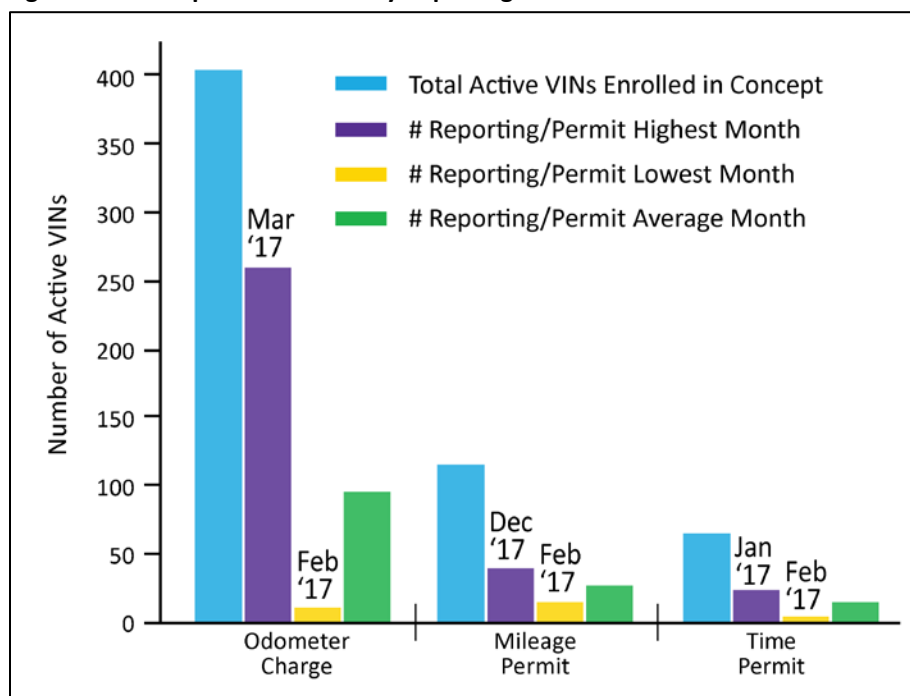
Be Enforceable and Maintain Compliance

The TAC decided not to address enforcement in the RCPP, so this aspect of the “enforceability” goal was not addressed during the pilot evaluation. Account managers did note during interviews that enforcement is an important aspect of a full-scale program. The account managers also detected zero instances of attempted tampering or fraud across all operational concepts, and no evidence of data tampering or fraud was reported by the PDT or IAWG.

There were some compliance issues during the pilot; specifically, a number of vehicles did not provide mileage data from month to month (a very important consideration if and when real funds become part of the program). The automated methods involving the OBD-II plug-in devices had the highest percent of actively reporting vehicles every month—around 91 to 92 percent. The telematics method had 86 percent actively reporting vehicles. Potential reasons for these automated methods not attaining 100 percent, as noted in the account manager interviews, include the following:

- Non-connecting device data events were found to be due to devices not being plugged in after vehicle maintenance, vehicle crash, or vehicle sale. These unplugged events typically occurred just once or twice a month for most vehicles; although there were a few instances of the plug-in device being unplugged three or more times in a month.
- Other non-fraud anomalies included vehicle identification number (VIN) code inconsistencies that were worked out with the subcontractor; a smog check referee error; and a logistical issue with participant name change during the pilot.
- The greatest compliance issues occurred with the manual methods (as provided by the CalSAM). Moreover, as shown in Figure ES-8, of the manual methods, the odometer charge method appeared to have the greatest percentage of non-reporting vehicles. The most likely reason for this anomaly in reporting mileage is that participants were not required to submit monthly odometer readings, but could report every few months.

Figure ES-8. Comparison of Actively Reporting Vehicles Relative to Total Vehicles Using Manual Methods

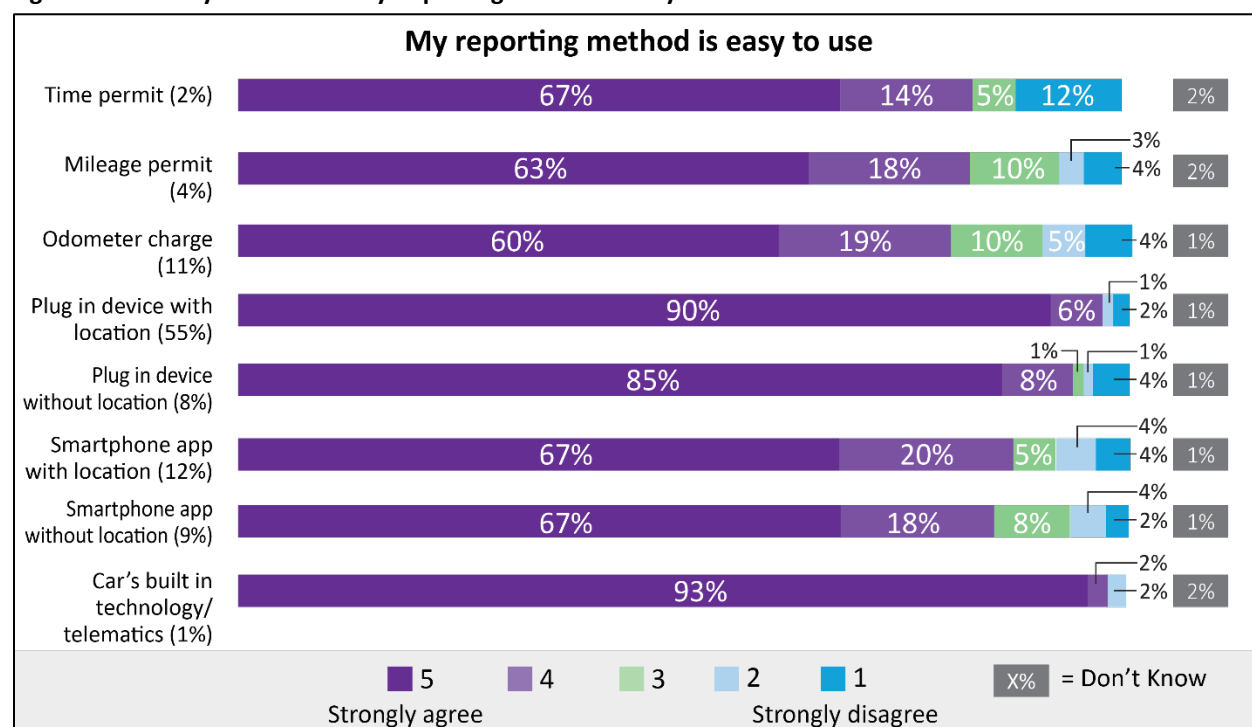


Category	Goals	
User Experience —How users interface with the road-charging system.	• Administer road charges effectively • Allow user choice • Keep pace with change over the long term	• Provide methods that are available, adaptable, reliable, and secure • Be transparent about how charge works • Do not negatively impact safety

SB 1077 notes that “bundling fees for roads and highways into the gas tax makes it difficult for users to understand the amount they are paying for roads and highways.” This category addresses how users interface with the RCPP and their experiences in that regard.

As previously noted, RCPP participants had numerous choices from which to use—more than in any previous road charge pilot. Moreover, as shown in Figure ES-9 (from the final participant surveys), most participants believed that their reporting method was easy to use, with the plug-in devices and telematics being the easiest (in terms of the percentages agreeing that these methods were easy).

Figure ES-9 Survey Results on “My Reporting Method is Easy to Use”

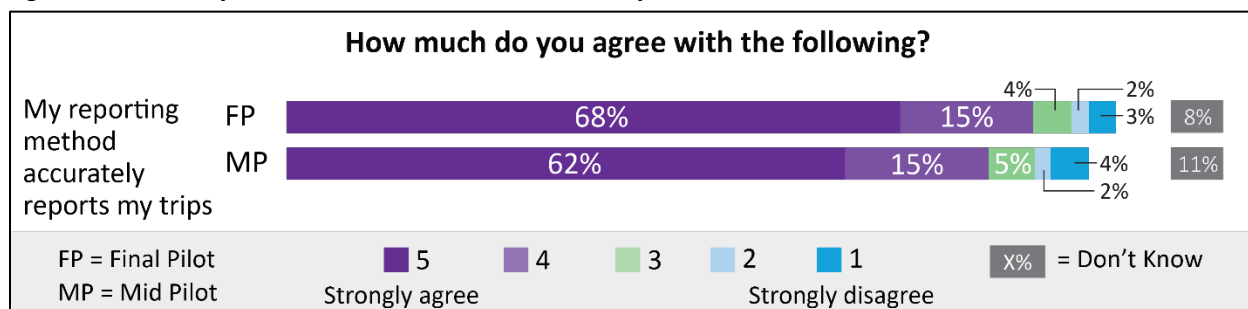


When asked about the overall ease of participating in the RCPP, five of the six commercial trucking managers who responded gave this category the highest rating (that is, a 5 for very satisfied), with the other responding manager providing a 4 rating. One manager noted that “after installation, all we had to do was drive the trucks: it was very simple.”

The “administer road charges effectively” goal included a criterion of the accuracy of the highway use data reported. Prior to the start of the pilot, the PDT conducted accuracy testing of the automated mileage reporting technologies. The testing involved comparing the mileage reported by each automated technology with the “true distance” as measured by a GPS-based system certified for accuracy. The results of this pre-pilot testing indicated a significant degree of accuracy, easily within the range of accuracy for most odometers, which is typically +/-3 percent. Additionally, as shown in Figure ES-10 from the participant surveys, a very large percentage (83 percent) of the participants were

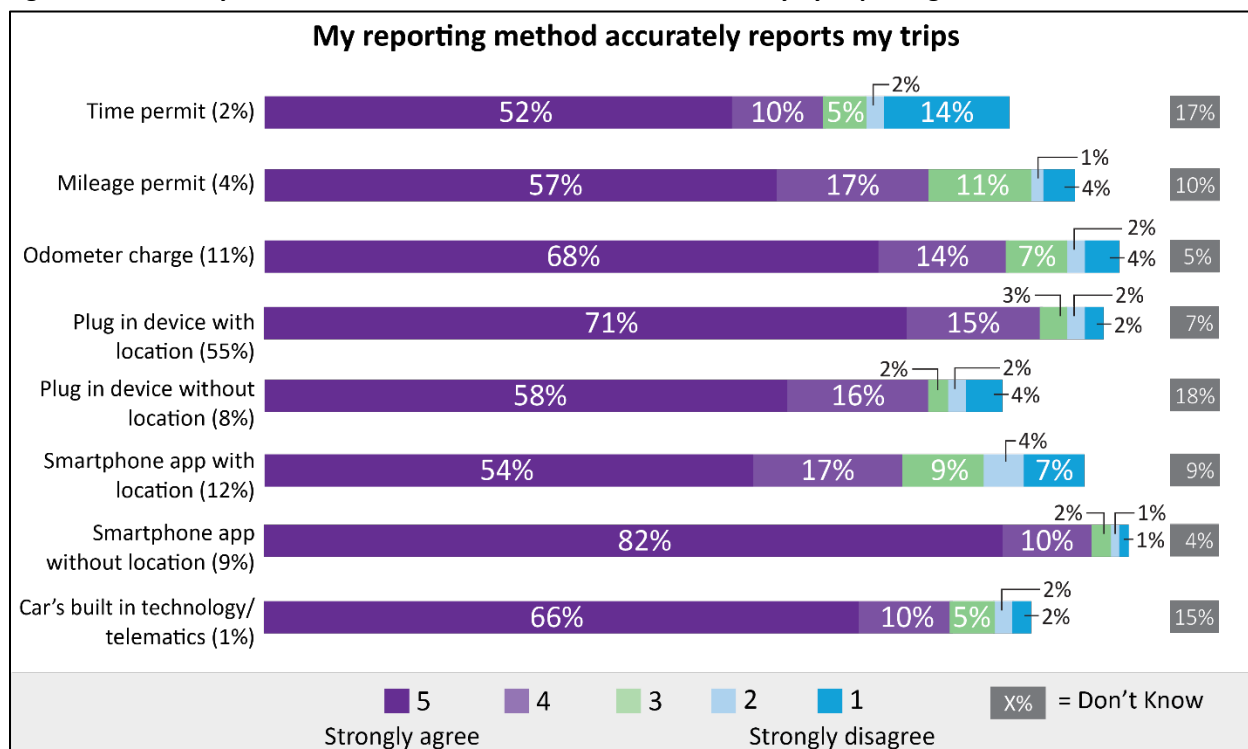
satisfied with the accuracy of the road use data reported on their invoices. This percentage increased slightly from the mid-pilot surveys to the end-of-pilot surveys. Only 5 percent of the participants disagreed with the notion that the invoices accurately reported their trips.

Figure ES-10. Survey Results on Satisfaction with Accuracy of Data on Invoices



Looking at the final pilot survey results by the recording and reporting method used (Figure ES-11) indicate the plug-in device with location has the highest level of agreement with regard to accurate reporting of mileage, while the time permit had the greatest level of disagreement in this regard (16 percent), followed by the smartphone app with location (11 percent). Remembering the time permit participants did not record or report mileage is important, so such disagreement with the notion of “accurately reporting one’s trips” for the time permit is not completely unexpected.

Figure ES-11. Survey Results on Satisfaction with Invoice Data Accuracy by Reporting Method



From the perspective of the commercial trucking managers, the average responses—on a scale of 1 to 5, with 5 being “very satisfied” and 1 “being very unsatisfied”— were as follows:

- Data provided was accurate—4.67 (with one no response)

- Correctly identified gas tax credits—4.75 (with three not applicable)

Category	Goals
Privacy —Privacy protection measures built into the RCPP.	• Honor personal privacy through privacy policies • Protect personally-identifiable information • Ensure identity protection using location data even after removal of personally-identifiable information • Respect user privacy trade-offs
	• Ensure privacy protection when using location data with other technologies • Protect privacy pursuant to Article I Section 1 of the California Constitution with respect to data access by public agencies (including law enforcement) and private firms

Privacy concerns are among the most commonly cited concerns with a road charge program. SB 1077 addresses privacy, with the initial section (legislative findings and intent section) stating that “Privacy implications must be taken into account, especially with regard to location data. Travel locations or patterns shall not be reported, and legal and technical safeguards shall protect personal information.” SB 1077 also requires CalSTA to implement an RCPP that accomplishes the following privacy-related objectives:

- Collect a minimum amount of personal information, including location tracking information, necessary to implement the RCPP.
- Ensure that processes for collecting, managing, storing, transmitting, and destroying data are in place to protect the integrity of the data and safeguard the privacy of drivers.
- Ensure public or private agencies do not disclose, distribute, make available, sell, access, or otherwise provide for another purpose, personal information or data collected through the road charge program to any private entity or individual unless authorized by a court order, as part of a civil case, by subpoena issued on behalf of a defendant in a criminal case, by a search warrant, or in aggregate form with all personal information removed for the purposes of academic research.
- The RCPP addressed privacy in many ways, as shown in Table ES-3. Moreover, very few (4 percent) final pilot survey respondents said they experienced a privacy concern while participating in the RCPP. Most participants reported they experienced a privacy concern because they were allowing their location to be tracked and were unsure how secure the data are.

Table ES-3. Privacy Attributes of the California Road Charge Pilot Program

Privacy Goal	How Goal was Addressed in the RCPP
Allow motorists choice in how mileage will be reported.	Five basic options—both automated and manual—were offered to participants.
Do not require use of specific locational information, including specific origins or destinations, travel patterns, or times of travel.	The automated OBD-II plug-in and smartphone methods both offered location and non-location options. Any routing information and origin-destination data were not sent to the PDT; only the number of miles driven—differentiated by state and/or public/private as appropriate—was provided.
Offer motorists a time-based system of paying for road use as an alternative payment method for individuals concerned about payment based on miles driven.	This was the “time permit.”
Have motorists who chose to release personally identifying information provide consent in a clear, unambiguous, and expressed manner.	No known incidents of unauthorized release of identifying information occurred.

Privacy Goal	How Goal was Addressed in the RCPP
Design, implement, and administer the road charge system in a manner transparent to the public and to individual motorists.	Per the surveys, many participants (46 percent) were satisfied with the protection of their privacy related to the RCPP. However, about half of the participants were unable to rate their satisfaction, perhaps indicating that privacy protections were not clear (that is, transparent).
Do not retain data beyond the period of time necessary to ensure proper mileage account payment. Any data retained for a longer period must have all personally identify information removed and may only be used for the public purposes (that is, improve the safety of the traveling public).	Detailed mileage data were purged every 30 days.
Allow motorist access to all personal data collected to review it for accuracy and ensure only data required for proper accounting and payment of road charges is being collected.	This feature was available, but used sparingly if at all.

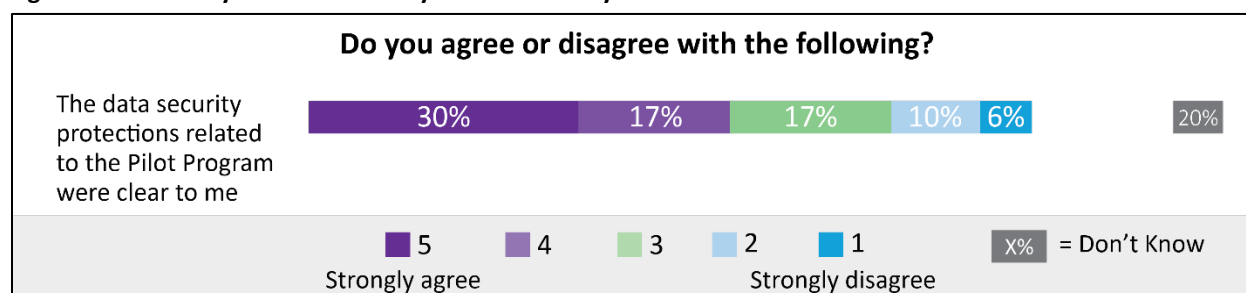
Category	Goals
Data Security —Security of participant data collected, transmitted, stored, and used in the RCPP.	- Honor personal privacy through data security - Ensure data are secure from external breaches - Ensure data are secure from abuse based on internal process exposure

SB 1077 requires the TAC to consider the “security of methods that might be used in recording and reporting highway use.” This category addresses the security of participant data collected, transmitted, stored, and used in the RCPP.

Prior to the start of the RCPP, a security survey of the participating account managers and technology vendors was conducted, looking at several ISO/IEC 27002⁶ information security standards. The vendors surveyed were compliant with most security standards, with most compliant in all areas listed. During the account manager interviews, they reported zero data-compromising events for all operational concepts for the duration of the RCPP.

As shown in Figure ES-12, a little less than half of participants agreed that the data security protections were clear to them, while 20 percent said they did not know, and 16 percent disagreed that the protections were clear.

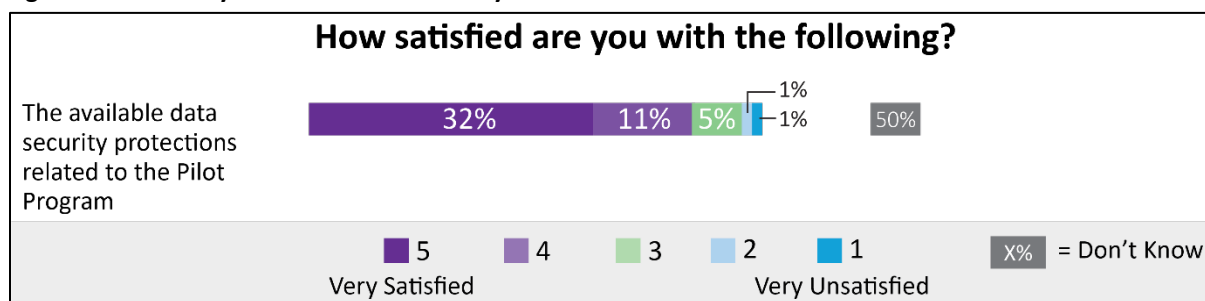
Figure ES-12. Survey Results on Clarity of Data Security Protections



That said, Figure ES-13 shows many participants were satisfied with available data security protections related to the RCPP. However, half of participants were unable to rate their satisfaction in this regard.

⁶ This is part of the ISO 27000 family of standards addressing organizational security.

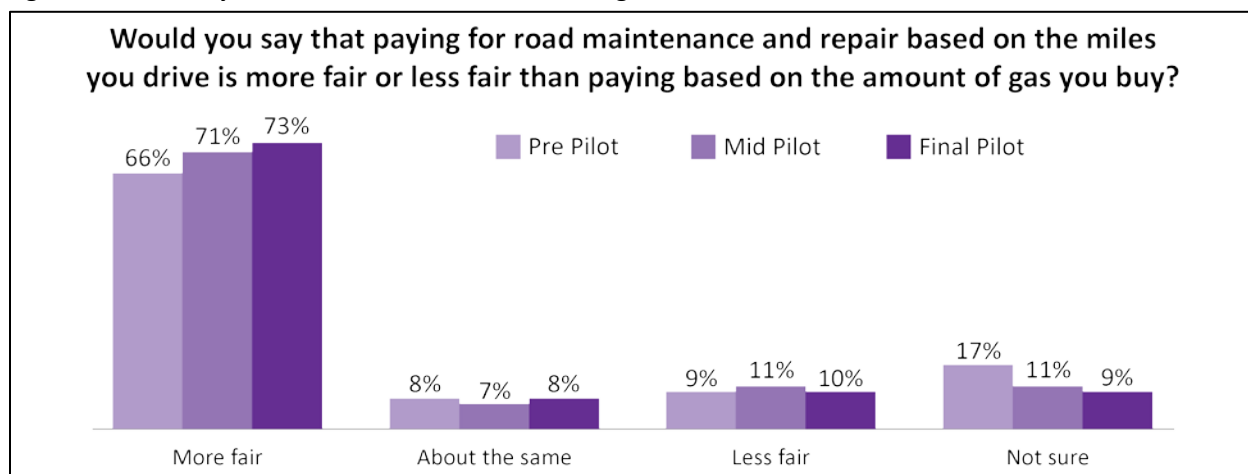
Figure ES-13. Survey Results on Data Security Satisfaction



Category	Goals
Equity —Equity, perceived and real, along several dimensions	• Be fair and equitable • Preserve or improve horizontal equity (relative to fuel taxes), which provides that people of similar abilities to pay would pay at the same (effective) rates • Preserve or improve spatial equity (relative to fuel taxes)

This category addresses the equity of a road charge—both perceived and real—along several dimensions. Per the surveys, most participants (73 percent) believed that paying for a road charge is “more fair” than paying based on the amount of fuel you buy, and 8 percent believe it is about the same. Figure ES-14 shows that, over the course of the program, the number of participants agreeing that a road charge is “more fair” than a gas tax has increased by 7 percent, coming mostly from those who were unsure at the beginning of the RCPP.

Figure ES-14. Survey Results on Fairness of a Road Charge



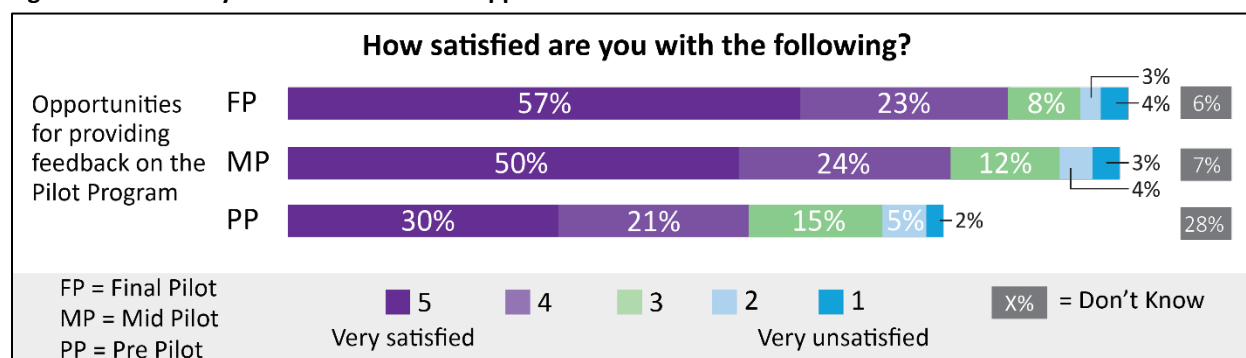
Category	Goals
Communications— Communications with the RCPP participants and the public	Engage the public meaningfully

This category addresses communications with the RCPP participants and the public. Participants had a number of opportunities to provide feedback during the RCPP, including the following:

- RCPP website and newsletter correspondence
- RCPP customer service center (for example, call centers, email inquiries)
- Account manager customer care centers (for example, call centers, email inquiries)
- Account manager websites
- Account manager online accounts
- TAC meetings open to the public
- State and local partners
- Independent evaluation via surveys and focus groups

As shown in Figure ES-15, 80 percent of final survey participants reported they were satisfied or very satisfied with the opportunities to provide feedback on the RCPP. This was a significant change from the 51 percent who were satisfied during the pre-pilot survey.

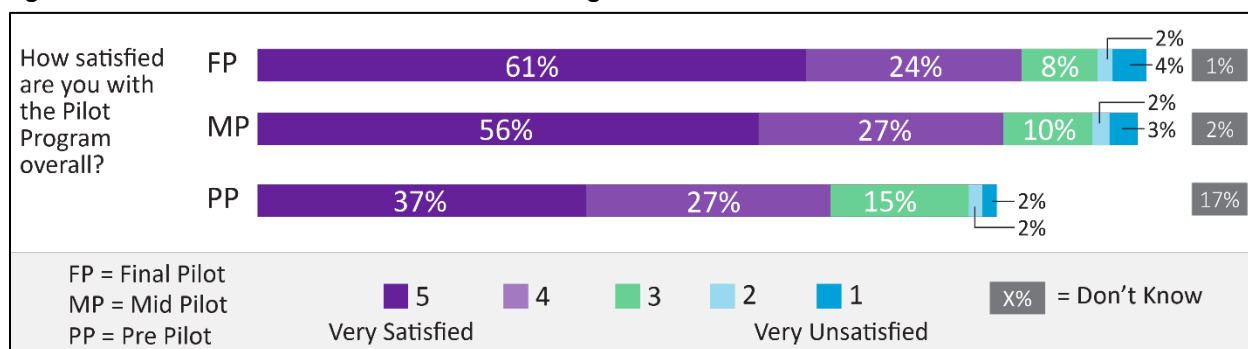
Figure ES-15. Survey Results on Feedback Opportunities



When asked about the clarity of the communications and instructions received about the RCPP—on a scale of 1 to 5, with 5 representing “very satisfied” and 1 representing “very unsatisfied”—of the six commercial trucking managers who responded, four gave this a 5, one gave a 4, and one gave a 3. Additionally, all those responding (five of seven) noted that the training provided was adequate.

Closing

One broad conclusion that can be made is that—as shown in Figure ES-16 and based on the final pilot participant survey responses—the overall satisfaction with the RCPP was very high, with the level of satisfaction increasing (and with a corresponding reduction in “don’t know” responses) over the course of the pilot. Moreover, any differences between different demographics (for example, age group, ethnicity, region, income levels, urban/rural) were relatively minor.

Figure ES-16. Levels of Satisfaction with the Pilot Program Overall

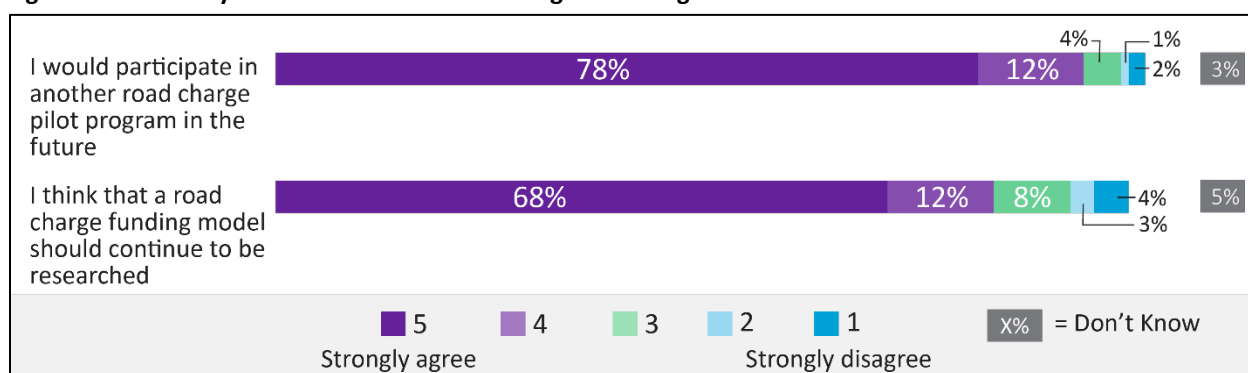
Participant satisfaction levels with various aspects of the RCPP from the final pilot survey are summarized in Table ES-4. The levels of participant dissatisfaction were very low for most pilot activities and attributes; however, several instances occurred when survey participants provided a “don’t know” response. This “unknown” response may be the result of an attribute that did not apply to the participant or they did not have enough information to make an informed decision.

Table ES-4. Summary of Satisfaction Levels for Various Pilot Program Attributes

Pilot Program Attribute	Percent “Satisfied” or “Agree”	Percent “Unsatisfied” or “Disagree”	Percent “Neutral” or “Don’t Know”
The mileage reporting options you had to choose from	79	6	15
Satisfaction with the mileage reporting method that you chose	86	7	6
Reporting method accurately reports my trips	82	5	12
Accuracy of the estimated gas tax	56	5	39
Communications with your account manager	47	4	49
Ability of your account manager to resolve issues	35	4	60
Protection of privacy during the RCPP	46	2	52
Security of personal information provided to account manager	39	2	59
The available data security protections related to the RCPP	43	2	55

From the perspective of the commercial trucking managers, when asked about their overall levels of satisfaction with the RCPP—on a scale of 1 to 5, with 5 representing “very satisfied” and 1 representing “very unsatisfied”—three managers gave a 5, two gave a 4, and two gave a 3. Also notable is that two managers who gave the RCPP a “5” rating are also continuing with the other services (for example, IFTA reporting, safety information) provided by the EROAD (the HVAM) following the pilot.

Another important conclusion is that the RCPP participants are optimistic about the future. Most think they would participate in another road charge program, and most think that a road charge funding model should continue to be researched, as shown in Figure ES-17 from the participant surveys.

Figure ES-17. Survey Results on Future Road Charge Pilot Programs

As shown in Table ES-5, nearly all goals for the California RCPP were fully achieved. Nothing in the independent evaluation indicated any sort of fatal flaw in the feasibility of a road charge in California, such that all users of the roadway pay their fair share based on their use of the transportation network. The RCPP did not address every goal, because it was a proof-of-concept, and many issues still need to be addressed in terms of a potential future road charge program; these include administrative costs of a statewide-mandated system, the impact of changing technology, and compliance and enforcement approaches. However, California's recent federal grant under the Surface Transportation System Funding Alternatives program will investigate several of these issues.

Table ES-5. Summary of California RCPP Evaluation Categories, Goals, and Levels of Achievement

Category	Goals	Achievement	Report Page Reference
● = Goal Achieved, ◐ = Goal Somewhat Achieved, ○ = Goal Not Achieved, N/A = Not evaluate			
Revenue	• Create a revenue stream that is able to match the fuel tax at time of implementation.	◐	Pg. 2-13
	• Avoid double taxation of road charge and fuel tax.	●	Pg. 2-16
Cost	• Administer road charges efficiently.	◐	Pg. 2-17
	• Incorporate cost efficiencies where available.	◐	Pg. 2-18
	• Provide users with low-cost compliance options.	◐	Pg. 2-19
	• Implement projects on time and on budget.	●	Pg. 2-20
Operations	• Be easy to administer.	◐	Pg. 2-21
	• Clearly identify responsibilities.	●	Pg. 2-21
	• Maintain compliance.	◐	Pg. 2-24
	• Be enforceable.	N/A	Pg. 2-28
	• Have neutral behavior impacts.	◐	Pg. 2-29
	• Integrate with other charges	●	Pg. 2-29
	• Optimize collection of charges in accordance with enforcement features recommended by the TAC.	N/A	Pg. 2-31
	• Be compliant with financial guidelines.	●	Pg. 2-31

Table ES-5. Summary of California RCPP Evaluation Categories, Goals, and Levels of Achievement

Category	Goals	Achievement	Report Page Reference
 = Goal Achieved,  = Goal Somewhat Achieved,  = Goal Not Achieved, N/A = Not evaluate			
User Experience	• Administer road charges effectively.		Pg. 2-32
	• Allow user choice.		Pg. 2-38
	• Keep pace with change over the long term.		Pg. 2-42
	• Provide methods that are available, adaptable, reliable, and secure.		Pg. 2-43
	• Be transparent about how charge works.		Pg. 2-48
	• Do not negatively impact safety.		Pg. 2-50
Privacy	• Honor personal privacy through privacy policies.		Pg. 2-52
	• Protect personally-identifiable information.		Pg. 2-54
	• Ensure identity protection using location data even after removal of personally-identifiable information.		Pg. 2-55
	• Ensure privacy protection when using location data with other technologies.		Pg. 2-55
	• Protect privacy pursuant to Article I Section 1 of the California Constitution with respect to data access by public agencies (including law enforcement) and private firms.		Pg. 2-56
	• Respect user privacy trade-offs.		Pg. 2-57
Data Security	• Honor personal privacy through data security.		Pg. 2-58
	• Ensure data are secure from external breaches.		Pg. 2-59
	• Ensure data are secure from abuse based on internal process exposure.		Pg. 2-61
Equity	• Be fair and equitable.		Pg. 2-61
	• Preserve or improve horizontal equity (relative to fuel taxes), which provides that people of similar abilities would pay at the same (effective) rates.		Pg. 2-62
	• Preserve vertical equity (relative to fuel taxes), which provides that people of differing abilities would pay at different (effective) rates.		Pg. 2-65
	• Preserve or improve spatial equity (relative to fuel taxes).		Pg. 2-66
	• Preserve or improve procedural equity (relative to fuel taxes).		Pg. 2-69
Communications	• Engage the public meaningfully.		Pg. 2-70

California Road Charge Pilot Program

Overview

1.1 Background

1.1.1 Need for Alternative Transportation Funding Sources

Constructing, maintaining, rehabilitating, and operating California’s transportation infrastructure has historically been funded primarily by state fuel⁷ excise taxes on both gasoline and diesel, and federal funds (obtained primarily from the federal gas tax). However, the purchasing power of pay-at-the-pump gas tax revenues has been eroding over the past decade. As a result, the transportation system in California is facing a serious problem. The money collected to pay for roadway maintenance, repair, and operations has been on a steady decline. Having less money to maintain and manage California roadways means that the transportation system will continue to worsen each year while the amount of demand on the network increases. Factors contributing to this transportation funding problem in California are summarized below.

1.1.1.1 Aging Roadways

Most of California’s major roadways are more than 40 years old and have reached or exceeded their design life. As the roadway network ages, more repairs are needed. Exacerbating this issue is ever-increasing congestion, which requires active management and operations of the transportation network to maximize safety and travel reliability.

1.1.1.2 More Fuel-Efficient Vehicles

As shown in Figure 1-1, the average fuel efficiency of cars bought each year in the United States has been increasing over the past decade. This increase is due, in part, to the introduction of highly fuel-efficient cars such as hybrids and electric vehicles. California is the leader in sales of plug-in electric vehicles, with over 280,000 sold since 2011—46% of the total sold throughout the United States.⁸ These vehicles, with their reduced greenhouse gas emissions, are good for the environment; yet they pay little or no gas tax and, therefore, contribute only a fraction of the overall cost of roadway maintenance and operations. Thus, fewer gallons of gas are being sold, which means less money is available to pay for road repairs and ongoing operations (see Figure 1-2).

Per a 2013 report prepared by the California Board of Equalization (BOE),^{9,10} California and United States gasoline consumption on roads and highways have both generally been trending downward since 2005. The report notes that the state’s gas consumption has fallen almost twice as fast as United States gas

⁷ The term “gas tax” is primarily used throughout this document to identify the current per-gallon tax paid at the pump for either gas or diesel. Both gasoline and diesel fuels are petroleum-derived liquid mixtures that are used in internal combustion engines, and vehicles using both types of fuel were included in the pilot. However, the vast majority of the vehicles in the pilot – and the associated number of miles traveled – used gas-powered internal combustion engines. The term “fuel tax” is used in some places to reflect the language in supporting, legislation, documents developed by the Technical Advisory Committee (TAC) (e.g., the various goals objectives, and criteria developed by the TAC on which the evaluation is based), and commonly used naming conventions. It is also used when discussing the results specific to the heavy vehicles included in the pilot program, most of which use diesel fuel.

⁸ California Plug-In Electric Vehicle Collaborative (<http://www.pevcollaborative.org/>), as of April 2017.

⁹ Beginning July 1, 2017 most duties performed by the California State Board of Equalization were transferred to the newly created California Department of Tax and Fee Administration (CDTFA) and the Office of Tax Appeals. This reorganization is a result of the recent enactment of Assembly Bill 102, the *Taxpayer Transparency and Fairness Act* of 2017.

¹⁰ “California On-Road Gasoline Consumption Trends”; State Board of Equalization; Publication 329; February 2013

consumption over this time period. The factors identified for this decrease in gas consumption—and the associated reduction in gas tax revenues—include crude oil prices, numbers of drivers, and technologies. The report also notes that “improved technologies have increased gas mileage and new technologies such as hybrid vehicles and electric cars serve to reduce gas consumption.” Another potential factor noted in the 2013 report is a preference for “more green technology, that may be somewhat unique to California compared to the nation as a whole.”

Figure 1-1. Sales-Weighted Fuel-Economy Rating (Window Sticker) of Purchased New Vehicles

(Source: University of Michigan Transportation Research Institute, November 2017)

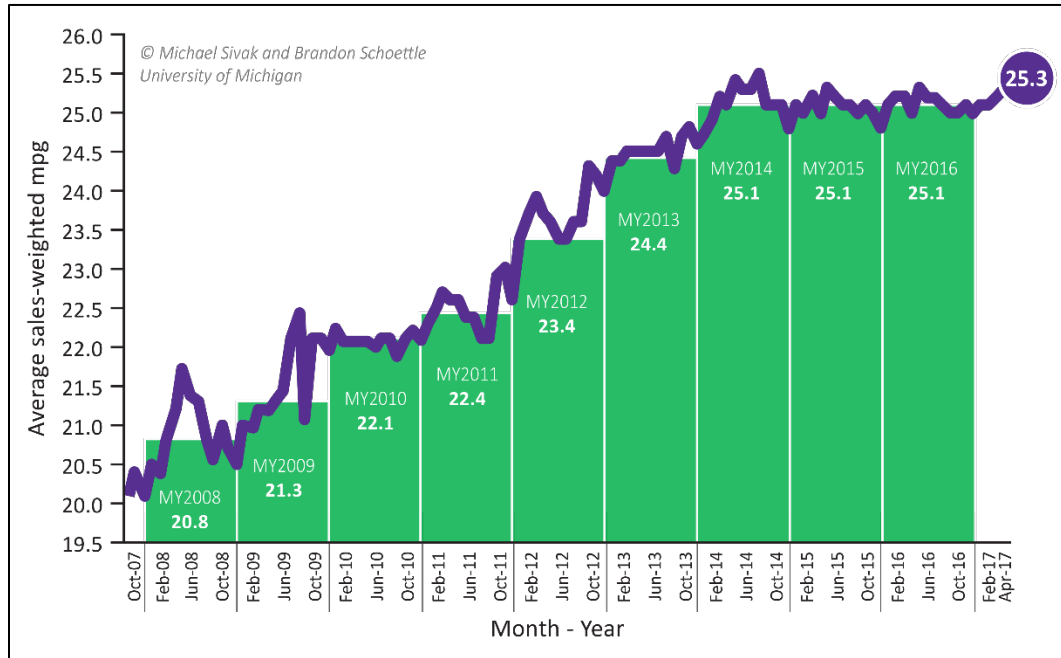
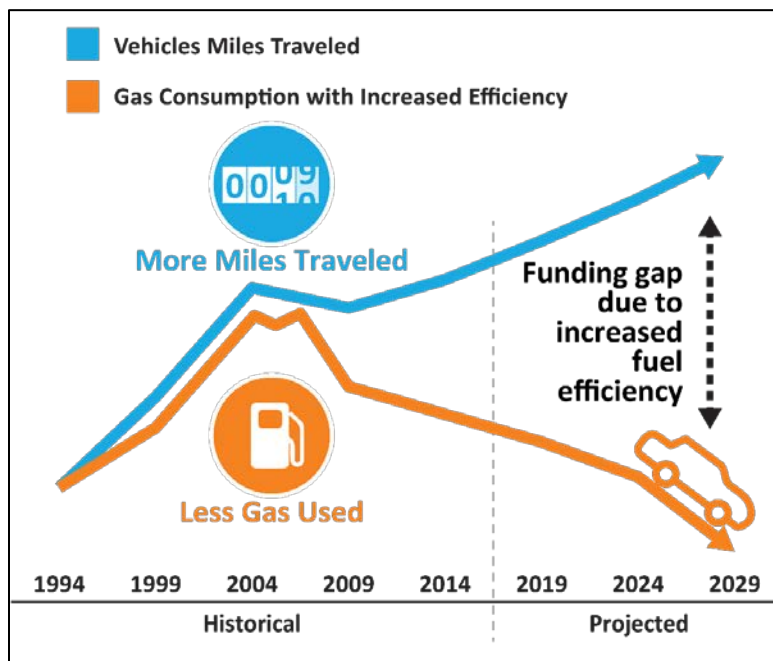


Figure 1-2. Increased Fuel Efficiency Decreases Revenues



Increased fuel efficiency and new technologies, such as plug-in electric vehicles, are beneficial for the environment and for reducing the nation’s dependence on fossil fuels. However, the widening gap between the most and least fuel-efficient vehicles can lead to an issue of fairness. The concept—**all users of the roadway should pay their fair share based on their use of the transportation network**—appeals to a fundamental notion of fairness widely accepted by consumers in other marketplaces - making those who use the transportation network pay for that use (the “user pays” principle), thereby contributing to the improvement, maintenance, and operation of the roadways.

1.1.1.3 Inflation

Over the last 20 years, the purchasing power of gas tax revenues has diminished due to inflation. Two state excise taxes are levied on gasoline in California:

- State base excise tax**—Prior to the passage of Senate Bill (SB) 1¹¹ in April 2017 (see information to the right), the base excise tax of 18 cents per gallon was last raised in 1994. This resulted in a backlog of \$130 billion in repair and replacement projects throughout the state. According to the *2015 Ten-Year State Highway Operation and Protection Program Plan*,¹² California Department of Transportation (Caltrans) will need approximately \$80 billion over the next 10 years to address current and future needs of the state highway system, to which they are contributing \$23 billion. Additionally, there are similar funding needs for the city street and county road system, a network that makes up 80% of California’s roadways. Per the *2016 California Statewide Local Streets and Roads Needs Assessment Report*,¹³ this local system is facing a \$73 billion funding shortfall over the next decade to bring pavements into good condition, address deficient bridges, and fix essential components such as storm drains, sidewalks, and signage.
- Price-based excise tax**—The state price-based excise tax is adjusted annually by the California State Board of Equalization. It is designed to be revenue neutral, ensuring overall state taxes paid by consumers at the pump is equal to what would have been generated had the sales and use tax and excise tax rates remained unchanged. For fiscal year 2016-17, the price-based excise tax is set at 9.8 cents per gallon, but will increase 1.9 cents to 11.7 cents effective July 1, 2017.

New Legislation: California State Legislature passed Senate Bill 1

The California State Legislature passed SB 1 in early April 2017 to increase transportation funding. The bill creates the Road Maintenance and Rehabilitation Program to address deferred maintenance on the state highway system and the local street and road system. The additional funds are achieved via the following:

- Increase the base excise tax on gasoline by 12 cents per gallon (bringing it to 30 cents), with an inflation adjustment. This takes effect on November 1, 2017.
- Eliminates the annual adjustment required by the “gas tax swap” of 2010 and re-establishes the price-based excise tax at its original rate of 17.3 cents, with an inflation adjustment. This takes effect on July 1, 2019.
- Increase the diesel excise tax to 20 cents per gallon, with an inflation adjustment. This takes effect on November 1, 2017.
- Add new transportation improvement fee (as part of the Vehicle License Fee) with a varying fee between \$25 and \$175 based on vehicle value, with an inflation adjustment. This takes effect January 1, 2018.
- Add a new \$100 annual vehicle registration fee for zero-emission vehicles model year 2020 and later, with an inflation adjustment.

¹¹ Additional information on SB 1 can be found at https://leginfo.ca.gov/faces/billNavClient.xhtml?bill_id=201720180SB1.

¹² California Department of Transportation (Caltrans). 2015. *2015 Ten-Year State Highway Operation and Protection Program Plan*. Available at <http://www.dot.ca.gov/hq/transprog/shopp.htm>. California Department of Transportation, Division of Transportation Programming. April.

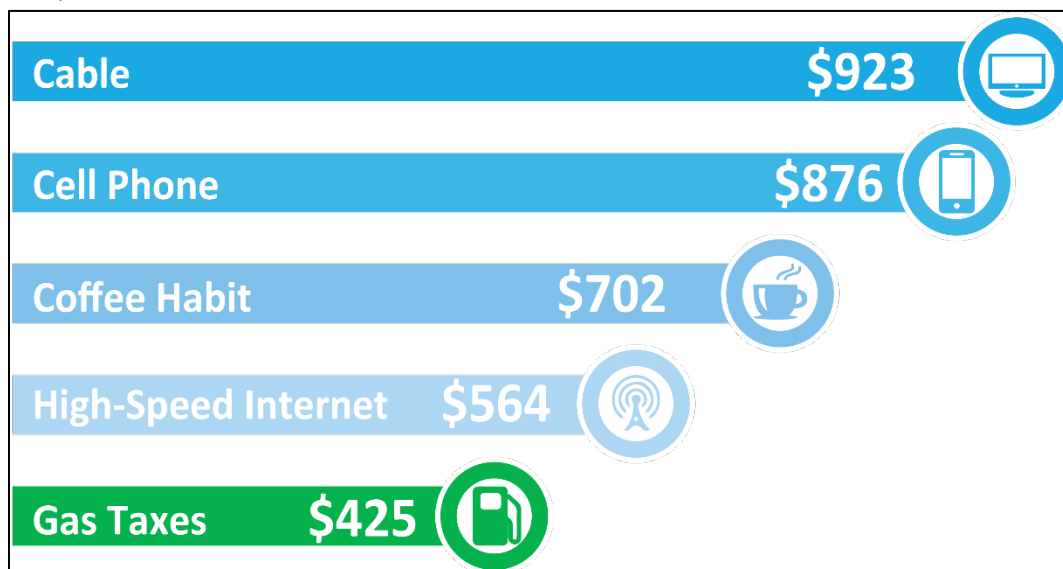
¹³ <https://www.cacities.org/Member-Engagement/Professional-Departments/Public-Works-Officers/California-Statewide-Local-Streets-and-Roads-Needs>.

The SB 1 adjustment restores the purchasing power of gas tax to reflect inflation since 1994, and indexes the tax going forward to account for future inflation. An efficient transportation system is critical for California’s economy and quality of life. The revenues currently available for highways and local roads do not adequately allow for preserving and maintaining existing road infrastructure and providing funds for improvements that would reduce congestion and improve safety.

The average California driver currently pays approximately \$291 per year in gas taxes (including federal, state, and local gas and sales taxes).¹⁴ When SB 1 goes into effect, this annual outlay will increase to \$425. However, as shown in Figure 1-3, this new amount will still be significantly less than what the average California driver pays for other services and necessities.

Figure 1-3. Average Annual Cost of Selected Items

(Source: Caltrans Division of Budgets, Revenue Forecasting and Financial Analysis Branch, September 2017)



The passage of SB 1, and the associated increase in transportation revenues, will certainly help California address current transportation funding needs, spurring immediate investments in transportation infrastructure that were postponed in prior years due to financial constraints. However, the gas tax has long-term issues. Even with adjustments for inflation, it will continue to generate less revenue as vehicles become more fuel-efficient and more alternative fuel vehicles enter the California marketplace. Thus, California needs a long-term, sustainable, and equitable way to pay for and keep pace with road maintenance and operational needs.

1.1.2 Establishing the California Road Charge Pilot Program

To find a long-term solution to transportation funding issues and concerns, in 2014, the California State Legislature passed and Governor Jerry Brown signed SB 1077 into law (full text is included in Appendix A). The bill required the Chair of the California Transportation Commission (CTC) to create a Road Charge Technical Advisory Committee (TAC) in consultation with the Secretary of the California State Transportation Agency (CalSTA). The TAC was assigned the task of making recommendations (to CalSTA) on the design of a pilot program to explore the benefits and risks of “road

Road charge is a funding mechanism where drivers pay to maintain the roads based on the miles they drive, rather than the amount of gasoline they consume.

¹⁴ California Department of Transportation (Caltrans) 2017

charge” as an alternative to the gas tax, and to also consider providing recommendations on the criteria to be used to evaluate the pilot program. The bill also required CalSTA, based on the TAC recommendations, to implement a pilot program to identify and evaluate issues related to the potential implementation of a road charge program.

In 2015, the 15-member TAC, representing a broad spectrum of diverse interests, publicly convened monthly throughout the State to discuss various policy and technical issues related to designing and implementing a Road Charge Pilot Program (RCPP). SB 1077 was the guiding framework that provided policy, design criteria, and privacy protections guidance to assist with the TAC’s deliberations and recommendations, which included:

- Analyzing alternative means of collecting road usage data, including at least one alternative that does not rely on electronic vehicle location data
- Collecting a minimum amount of personal information, including location tracking information necessary to implement the California Road Charge Program
- Ensuring that processes for collecting, managing, storing, transmitting, and destroying data are in place to protect the data integrity and safeguard driver privacy

In addition, gathering public comment on issues and concerns related to the RCPP was critical to its design. The TAC held 12 public meetings throughout the state, allowing not only California residents to provide direct feedback, but also more than 400 stakeholder groups and elected officials representing California. Furthermore, public surveys and focus groups were conducted to gain a baseline understanding of the public’s views and opinions on transportation funding and their reaction to road charge as a replacement for the gas tax. Throughout the year-long process, the TAC, CTC, and Caltrans also briefed reporters and newspaper editors to elicit help in providing full transparency to the public.

The TAC developed the following recommendations on the design and evaluation criteria for an RCPP, presenting them to the Secretary of CalSTA in December 2015:

- **5,000 participating vehicles statewide**—Include a broad cross-section of individuals, households, businesses, and at least one government agency.
- **Diversity in vehicle types**—Include vehicles that reflect the fleet currently using California’s road network.
- **Commercial and state account managers**—Offer drivers a choice in account managers.
- **Multiple mileage reporting methods**—Offer drivers a choice in either manual or automated mileage recording methods, including one that does not require any mileage reporting.
- **Protection of privacy and data security**—Develop a pilot that features specific governance, accountability, and legal protection approaches for protecting privacy and the security of collected data.

Based on the TAC recommendations, CalSTA and Caltrans began developing the systems and procuring service providers for the pilot, and officially launched the statewide pilot program to explore road charge on July 1, 2016. The RCPP was a nine-month field trial with more than 5,000 participating vehicles statewide testing various road charge mileage reporting methods to compare how the performance of each concept measures against an established set of criteria.

Groups Represented in TAC Membership

- Telecommunications industry
- Highway user groups
- Data security and privacy industry
- Privacy rights advocacy organizations
- Regional transportation agencies
- National research and policymaking bodies (e.g., Transportation Research Board, American Association of State Highway and Transportation Officials)
- Members of the Legislature
- Other relevant stakeholders as determined by the chair

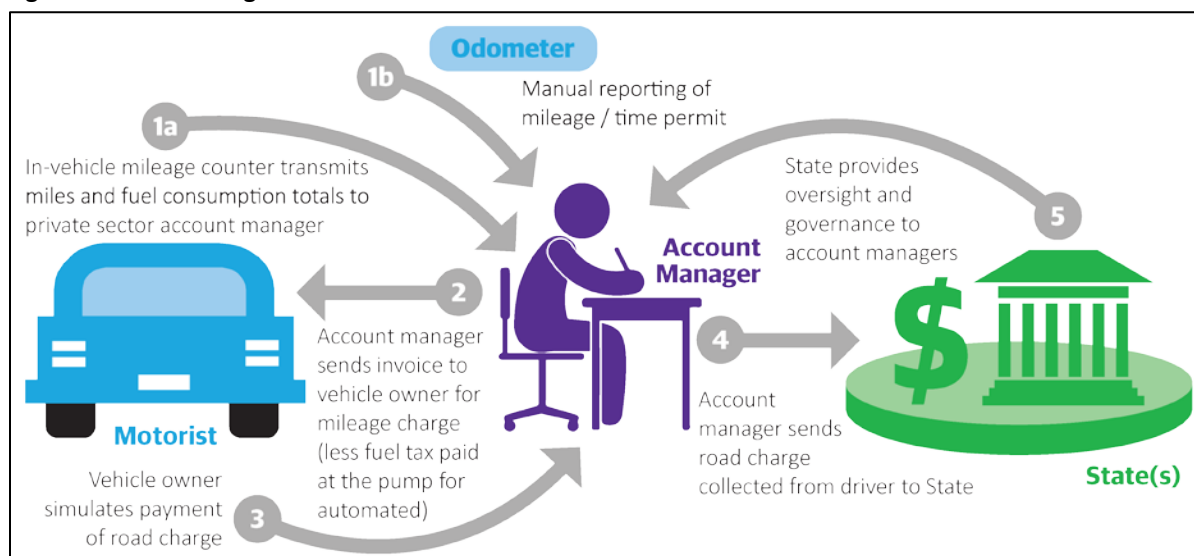
1.1.3 Overview of the California Road Charge Pilot Program

Figure 1-4 provides an overview of the RCPP concept, including the following major components and activities:

- Data collection and reporting**—As directed by the TAC, the RCPP provided multiple methods—both automated and manual—for collecting and reporting mileage and other data, such as fuel usage. With an automated approach, this information was transmitted to the account manager via secure wireless communications (“1a” on Figure 1-4). For some automated methods, location and routing data were collected to test mileage exemptions from driving out-of-state or on private roads, and also to support in-vehicle and driver-oriented services; but such location-based information was not reported to the State. Manual methods (“1b” on Figure 1-4) include recurring odometer readings, pre-paying for mileage blocks, and time-based flat-rate fees involving no mileage reporting. These manual methods involved some vehicle information (e.g., VIN number, odometer readings) being provided to an account manager, but very little or no personally identifiable information (PII). They could also be offered to those vehicle owners and lessees who did not want to or could not use a technology-based approach.

Because the road charge is intended as a replacement of the fuel tax, information on the amount of fuel used allows the participant to receive a credit for the amount of fuel tax paid at the pump.

Figure 1-4. Road Charge Activities and Functions



- Account management**—This feature encompassed several functions and activities, starting with “transaction processing”—transforming vehicle data into a per-mile charge by applying the appropriate fee per mile and any applicable gas tax credits. Transaction processing also sometimes involved using location information to differentiate between in-state and out-of-state mileage, and to identify the number of miles driven on private roads. Other account management functions included setting up accounts for payers and their respective vehicles, issuing invoices and statements (“2” on Figure 1-4), receiving simulated payments (“3” on Figure 1-4), and providing customer service activities and supporting audit activities.

- Accounting**—Only simulated financial transactions were performed during the pilot, therefore, accounting was not a major activity of the RCPP. This function is envisioned as a government activity that would merge pertinent data on all per-mile charges and perform accounting and auditing for any potential future system ensuring all mandated vehicles are participating in the system and verifying that vehicles enrolled in the program paid correctly. The accounting entity would receive account information from the account managers, provide auditing and reconciliation functions, and ensure that the road charge payments are ultimately provided to the state. Accounting functions may also include supporting enforcement activities, certifying private entity providers and account managers, and evaluating system performance.

Road charge fees were not actually collected from participants – only online simulated payments.

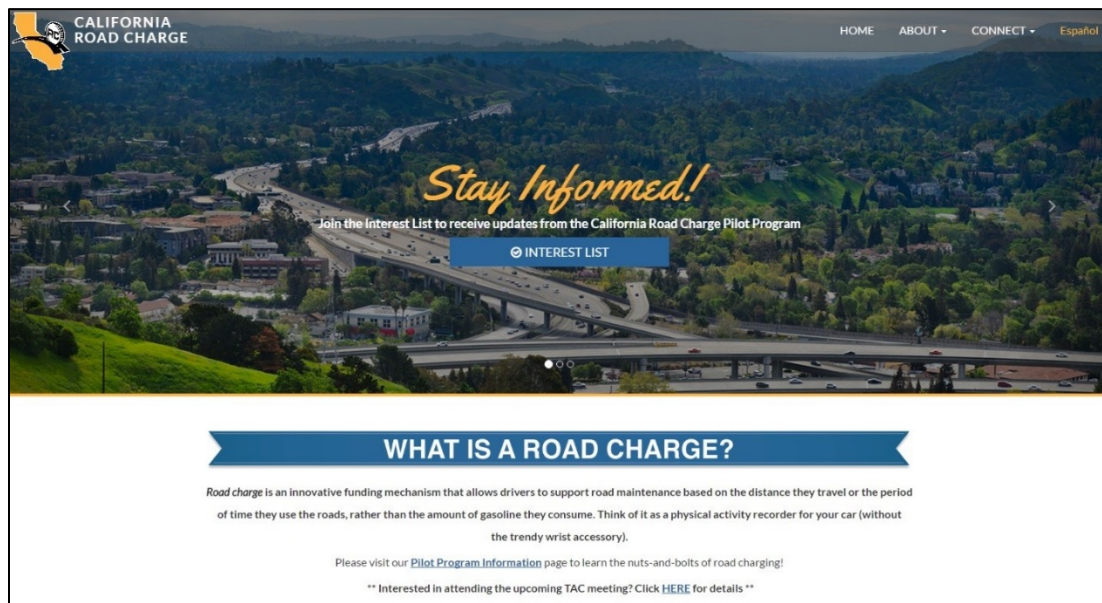
The rate used for the RCPP was 1.8 cents per mile. This value was based on a TAC recommendation to keep the rate revenue neutral, and was determined by calculating a charge that would result in the average California driver paying the same in road charge as gas tax for the same number of miles driven. The calculation involved dividing a five-year average of the State gas tax rate of 35.4 cents per gallon by the statewide average fuel economy of approximately 20 miles per gallon (MPG).¹⁵

1.2 Vehicle Types, Pilot Participants, and Reporting Options

1.2.1 Participant Recruitment

Caltrans employed several methods to inform the public and recruit volunteers to participate in the RCPP. These recruitment strategies included using the California Department of Motor Vehicles (DMV) and other state departments to increase public awareness of the volunteer opportunity and to engage partners to reach out and recruit a large volunteer pool for the pilot. Public outreach tactics, such as media relations and stakeholder outreach, were also used to raise awareness about the program and the opportunity to participate was presented to the public. The RCPP website (Figure 1-5) provided for volunteer signup and updates on pilot progress.

Figure 1-5. California Road Charge Pilot Program Website



¹⁵ For light vehicles, as estimated by the California Air Resources Board

1.2.2 Vehicle Types

In addition to volunteers who owned or leased private light-duty vehicles (such as passenger cars, with a gross vehicle weight rating of 10,000 pounds or less), the RCPP also included the following vehicle types:

- Government agency vehicles
- Commercial vehicles are defined¹⁶ as any vehicle which is used or maintained for the transportation of persons for hire, compensation, or profit or designed, used, or maintained primarily for the transportation of property. The RCPP had two distinct categories of commercial vehicles:
 - Light-duty commercial, including “for hire” passenger vehicles or pickup trucks
 - Heavy trucks, defined in the California Vehicle Code as being subject to the Federal Heavy Vehicle Use Tax, and includes those trucks with an unladen weight of 8,001 pounds or more, and/or operated at a combined gross vehicle weight (CGW) of 55,000 pounds or more.¹⁷ Information presented to the TAC identified “heavy duty vehicles” as having gross vehicle weight rating of 26,001 pounds or more. This corresponds to the criteria used by the United States Department of Transportation and by the International Fuel Tax Agreement (IFTA).¹⁸ For the purpose of the RCPP, these vehicles were considered as “heavy.”
- Vehicles registered out-of-state (volunteer participants)
- Vehicles registered to Native Americans living on tribal lands (volunteer participants)

Definitions used during the RCPP and by the independent evaluation team for describing vehicles and their pilot program activities are provided below:

- Enrolled vehicle—Vehicle signed up with an account manager.
- Compliant vehicle (used by the Pilot Delivery Team [PDT])—Enrolled vehicle that took the initial steps to report mileage (e.g., plugged in device, downloaded app, purchased permit) at some point during the RCPP.
- Actively Reporting Vehicle (used by the independent evaluation team)—Enrolled vehicles that provided mileage information during the RCPP. The number of “actively reporting vehicles” varied from month to month. Actively reporting vehicles were used for the data analysis part of the evaluation.

Table 1-1 provides the number of RCPP vehicles by type at the end of the pilot (March 31, 2017).

Table 1-1. Number of RCPP Vehicles Types by Activity (March 31, 2017)

Vehicle Classification	Enrolled ¹	Compliant ²
Private (Light Duty)	4,504	4,471
Government Agency Vehicles	333	333
Commercial Vehicles	261	261

¹⁶ Per Section 260 of the California Vehicle Code

¹⁷ California Vehicle Code 4757.

¹⁸ IFTA is an agreement among states in the United States and provinces in Canada to report fuel taxes by interstate motor carriers. Commercial trucking companies can register in California if they have an established place of business in the State, accrue mileage in the state, and if they operate in at least one other IFTA jurisdiction. The motor vehicle must weigh over 26,000 pounds, or have three or more axles on the power unit. Under the IFTA, commercial fleets are issued an IFTA license and one set of state IFTA decals for their trucks, which will allow the fleet manager's trucks to operate in all other IFTA jurisdictions without buying additional decals from those jurisdictions. IFTA offers several advantages to interstate motor carriers, including a single fuel tax license authorizing their vehicles to travel in all member jurisdictions, plus a single tax return filed each quarter (with the California Board of Equalization) containing mileage and fuel use information for all member jurisdictions.

Table 1-1. Number of RCPP Vehicles Types by Activity (March 31, 2017)

Vehicle Classification	Enrolled ¹	Compliant ²
Out of State	6	6
Tribal Land	4	3
Heavy Trucks	55	55
TOTAL	5,163	5,129

¹ Enrolled—Vehicle was signed up with an account manager

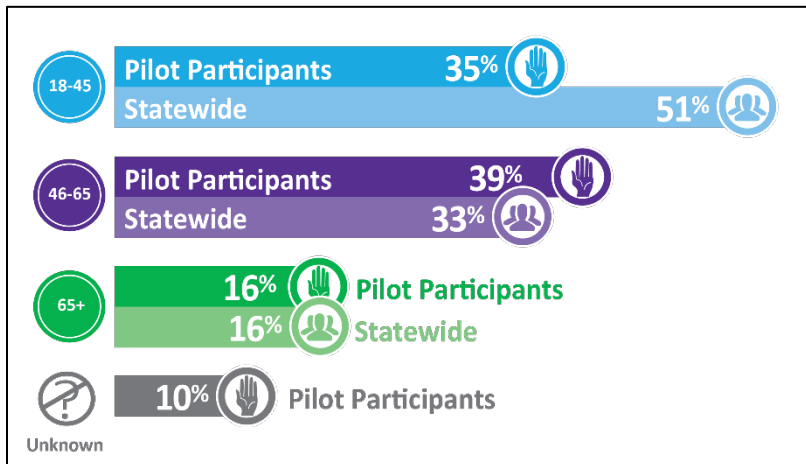
² Compliant—Enrolled vehicle that took the initial steps to report mileage (e.g., plugged in device, downloaded app, purchased permit) at some point during the RCPP

1.2.3 Participant Demographics

Figures 1-6 through 1-12 provide demographic information on the participant mix (for the light duty vehicles, based on participant surveys), relative to the statewide averages (per the 2010 census).

Figure 1-6. Statewide and Pilot Participation Statistics – Age

Note: Unknown = participant did not provide information

**Figure 1-7. Statewide and Pilot Participation Statistics – Gender**

Note: Unknown = participant did not provide information

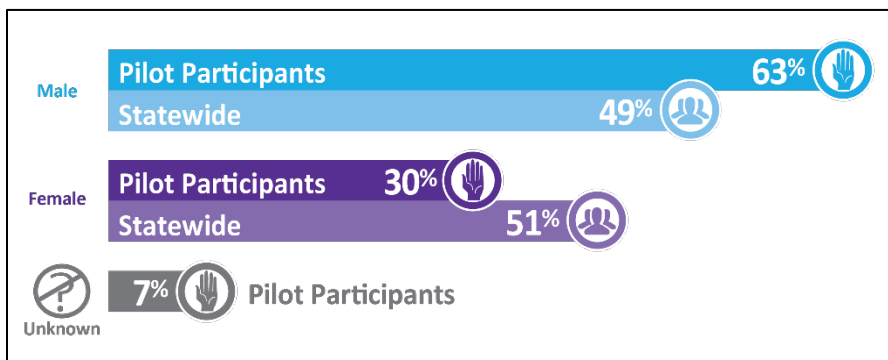
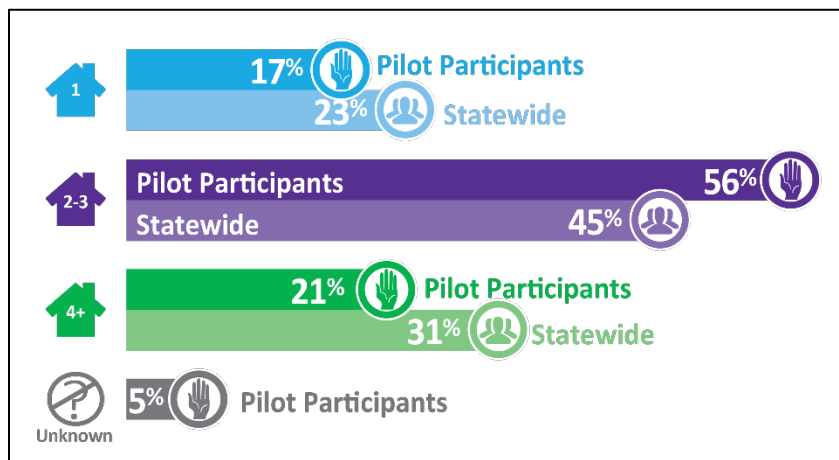
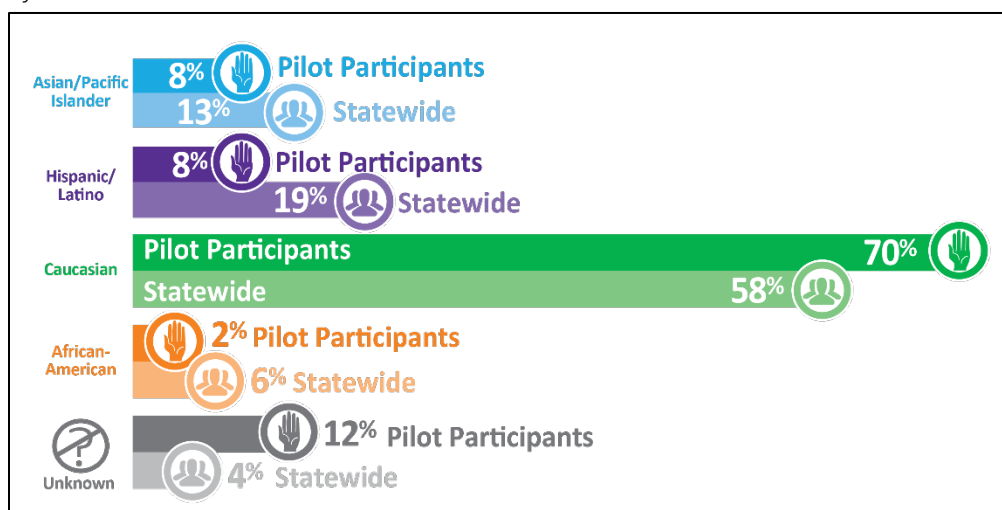


Figure 1-8. Statewide and Pilot Participation Statistics – Household Size

Note: Unknown = participant did not provide information

**Figure 1-9. Statewide and Pilot Participation Statistics – Ethnicity**

Note: Other/Refused = Participants could select more than one ethnicity, so participants with two or more selections were summarized under the “other” category. Some participant did not provide this information.

**Figure 1-10. Statewide and Pilot Participation Statistics – Region**

Note: Unknown = participant did not provide information

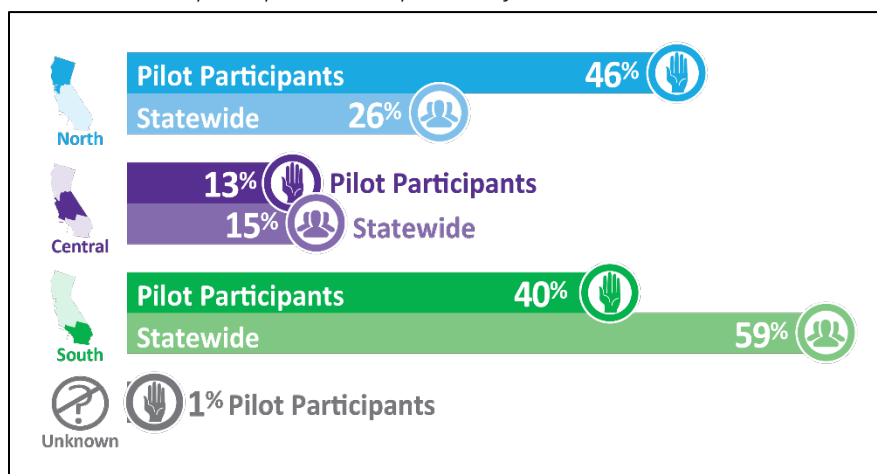
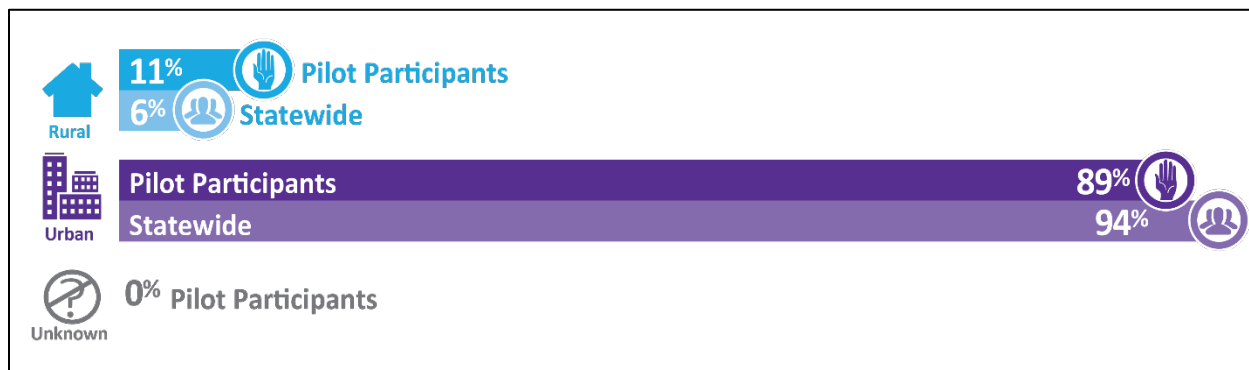


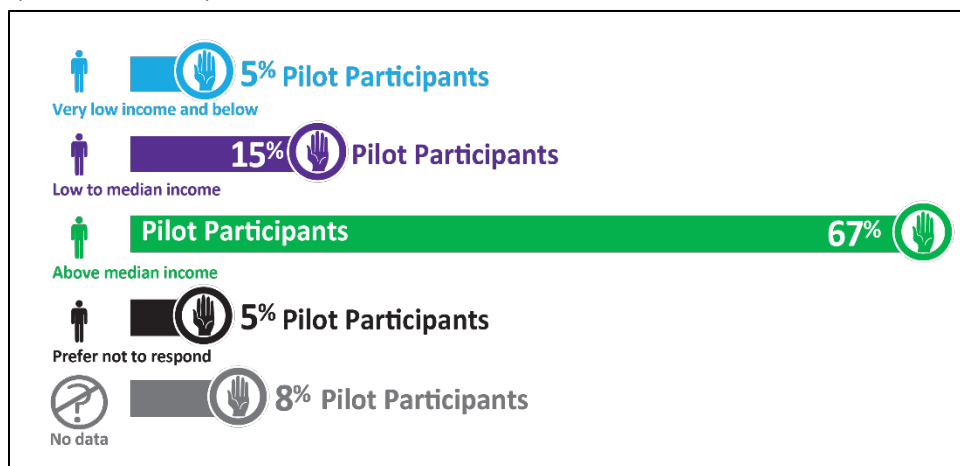
Figure 1-11. Statewide and Pilot Participation Statistics – Urban/Rural

Note: Unknown = participant did not provide information

**Figure 1-12. Statewide and Pilot Participation Statistics – Income**

Note: No data = participant did not provide information. Also, no statewide figures are provided for income level.

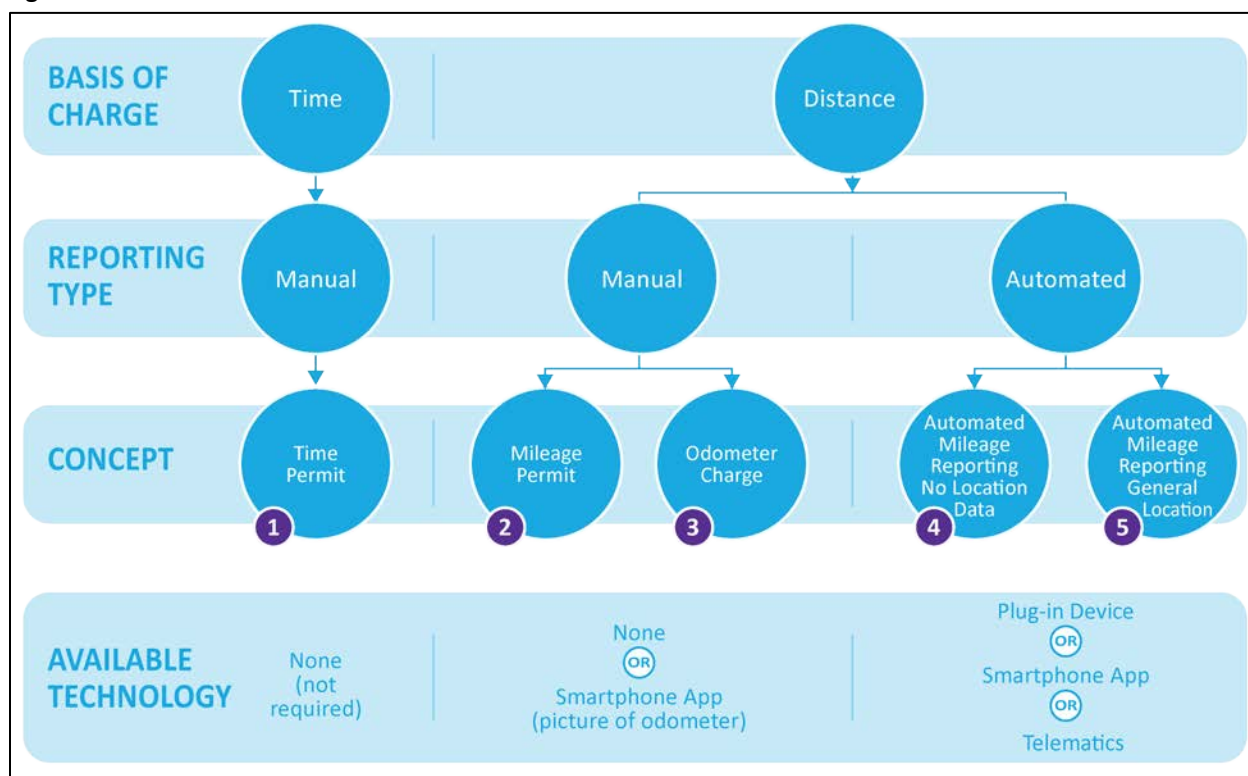
The distinctions of “very low income and below,” “low to median income,” “above median income,” and the associated income limits are based on information developed by the California Department of Housing and Community Development. The income levels for each category vary by household size and by individual county.



1.2.4 Participant Choices

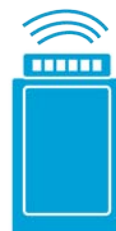
1.2.4.1 Mileage Reporting Methods

The RCPP provided participants several mileage reporting methods and technologies to choose from, including several that do not require technology in the vehicle (per SB 1077) and one that does not require any mileage reporting (refer to Figure 1-13).

Figure 1-13. Overview of Pilot Choices

Volunteers chose from the following mileage reporting methods (as shown in Figure 1-13):

1. **Time permit**—Participants made a simulated payment for unlimited road use in California for a specific period (e.g., 10, 30, or 90 days). No data reporting was required (although participants had to register with the State’s account manager).
2. **Mileage permit**—Participants made simulated payments in advance to drive a certain number of miles—a “block of miles” (e.g., 1,000, 5,000, 10,000). The mileage permit was purchased from the State’s account manager via website or by phone. Each time a participant purchased a new block of miles, they had to report their vehicle’s odometer reading. A certified reading was required at the pilot’s beginning and end, either by taking the car to an official vehicle inspection station or by using a smartphone app to take a picture of the odometer and sending it to the account manager.
3. **Odometer charge**—Participants paid a simulated per-mile road charge based on periodic odometer readings, with the mileage being reported based on odometer readings performed at the start and end of a reporting period. The odometer reading was verified at an official vehicle inspection station or via the smartphone app and photograph.
4. **Automated mileage reporting (no location)**—In-vehicle equipment automatically reported mileage traveled to a third-party (private sector) account manager, which in turn invoiced the participant based on the number of miles driven. No location information was included—total number of miles driven was charged regardless of where (i.e., state) they are driven.
5. **Automated distance charge (general location)**—In-vehicle telematics, automatically reported mileage traveled to a third-party (private sector) account manager, which in turn invoiced the participant. The equipment also reported general location data such that the any mileage driven on private roads or outside of California was not charged.



For those mileage reporting methods that did not include location data—except the time permit and mileage permit—participants had the option of filling out a form to request a deduction for any miles driven outside California or on private roads. This was intended to mimic refund processes in place today for fuel excise taxes, such that someone purchasing fuel for a lawn mower, tractor or boat can submit receipts for off-highway or road use today. Over the course of the pilot, only 13 manual refund forms were submitted, all for out-of-state mileage.

1.2.4.2 Mileage Reporting Technologies

All mileage reporting methods, except for the time permit, incorporated one or more technologies, as summarized below.

- Smartphone app for manual odometer readings**—This technology option, which was used for both the mileage permit and odometer charge options, allowed participants to provide odometer readings to account managers without having to drive to a specified location for verification. To get started, participants downloaded and installed an app on their smartphone (Figure 1-14), and then used their phones to photograph their odometer, license plate, and VIN number. Periodically, the app prompted participants to take additional photos of the odometer, with the mileage reading transmitted to the account manager.
- Smartphone app for automated mileage reporting**—Additional smartphone apps were provided as an automated option—one app with location and one without location. These smartphone apps used technology to sense vehicle trips and driver actions,¹⁹ along with mileage, trip date and time, and other information, all of which were transmitted to an account manager. Both location- and non-location-based options were provided. It is noted that this approach required the driver to take a picture of the odometer on a recurring basis (using the phone's camera and the app) for verification of the mileage information.
- Plug-in device for automated mileage reporting**—This automated technology option involved a mileage meter that plugged into the vehicle's onboard diagnostic system (OBD-II) data port (Figure 1-15). These devices were originally developed for the user-based insurance industry, but have evolved to include road charge capabilities. They automatically measure the number of miles driven, and amount of gas used for some vehicles (to provide a credit for the gas tax paid), and wirelessly transmit this information to an account

Figure 1-14. Phone Screen for Manual Odometer Reading

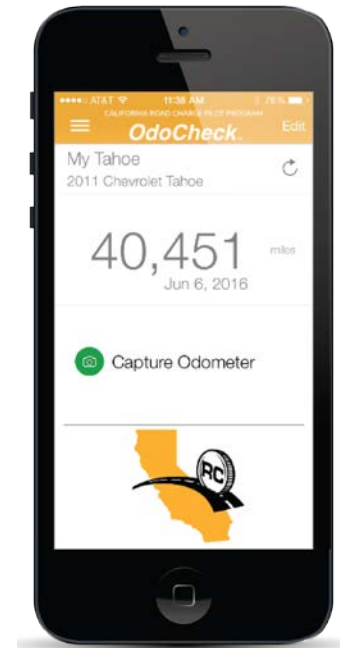


Figure 1-15. Plug-In Device to On-Board Diagnostic System Port



¹⁹ This includes such features as an accelerometer. Patented technology is also included for determining if the phone user is the driver by analyzing how the individual gets into and out of a car, and the movement of the phone during that transition (indicating driver's side access). Additionally, the position of the phone in the vehicle relative to the vehicle frame is equally important.

manager. Participants chose a device either with or without location capability. With the location-based device (using global positioning system [GPS]), the mileage was differentiated between in-state and out-of-state miles and between miles driven on public and private roads, with out-of-state and off-road miles automatically exempt from the road charge. The location-based device also provided other services to participants that are discussed in Section 1.2.4.4.

- **In-vehicle telematics**—With this automated option, account managers interfaced directly with the computer and communications technology already built into the vehicles, known as in-vehicle telematics. No external plug-in devices or smartphones were required. Vehicles wirelessly reported the current odometer reading to account managers. Appendix B includes vehicle types providing this capability in the pilot.

1.2.4.3 Account Managers

Account managers in the RCPP collected road charge data, distributed mock invoices, and collected simulated payments (no actual funds were paid by participants). Three types of account managers were provided in the pilot:

- **Commercial account managers (CAMs)** offered automated mileage reporting methods and other user services.
- **California state account manager (CalSAM)** provided the manual mileage reporting methods.
- **Heavy vehicle account manager (HVAM)** offered road charge and other services to fleets of trucks and other heavy vehicles.

Table 1-2 identifies account managers and the associated reporting methods and technologies used in the RCPP.

Table 1-2. Mileage Reporting Methods by Account Manager

Mileage Reporting Method and Technology	Azuga™ (CAM)	Intelligent Mechatronic Systems, Inc. (CAM)	Arvato (CalSAM)	EROAD (HVAM)
Time permit			●	
Mileage permit			●	
Odometer charge ¹			●	
Automated (smartphone app with no location) ²	●			
Automated (smartphone app with location) ³	●			
Automated (plug-in device with no location)	●	●		
Automated (plug-in device with location)	●	●		
Automated (vehicle telematics)	●	●		
Heavy commercial-vehicle mileage meter				●
Other user services (see Section 1.2.4.4)	●	●		●

¹ Smartphone app for odometer reading and verification in support of mileage permit and odometer charge methods—"OdoCheck"—provided by Vehcon, Inc.

² Smartphone app for automated approach (no location)—"MVerity"—provided by Vehcon, Inc.

³ Smartphone app for automated approach (with location)—provided by Driveway.

During the initial enrollment period, RCPP volunteers were directed to the program website (Figure 1-16) to select their mileage reporting method and account manager as part of the enrollment process. Information was available to help participants decide which mileage reporting method was most suitable for them. A contact form and customer service number were also provided to answer questions and provide guidance with choosing a mileage reporting method.

Following this initial enrollment, participants were given the option to change their initial selection of mileage reporting method, account manager, or both at the pilot's midpoint between November 1 and November 15, 2016. During this timeframe, 90 participants representing 92 compliant vehicles (out of a total of 4,951 compliant vehicles at the end of October 2016, not counting heavy vehicles) opted to change their account manager and/or mileage reporting method. Of these 90 participants, 51% changed their reporting method, 29% changed their account manager, and 19% changed both.

Table 1-3 and Figure 1-17 provide information on the mileage reporting methods and technologies used by participants at the end of the RCPP (March 2017). As previously noted, compliant vehicles are defined as vehicles that enrolled and took the initial steps required to report mileage (e.g., plugged in device, downloaded app, purchased permit), while actively reporting vehicles are vehicles that actually reported mileage information during the RCPP which varied from month to month. Additional information on why these numbers are so different is provided in Section 2.3.3. Of the 3,937 actively reporting vehicles at the end of the program, **72% chose automated mileage reporting methods with location-based technology**, another 19% chose an automated method with no location information, and 9% reported mileage via manual methods.

Figure 1-16. Account Manager Selection from California Road Charge Pilot Program Website

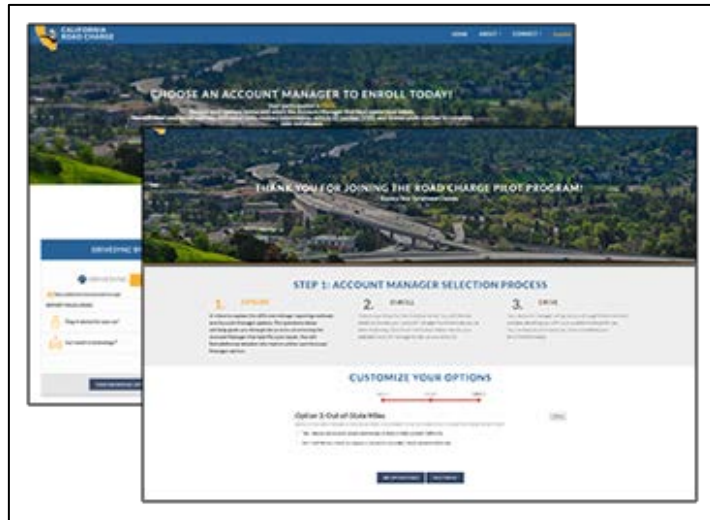
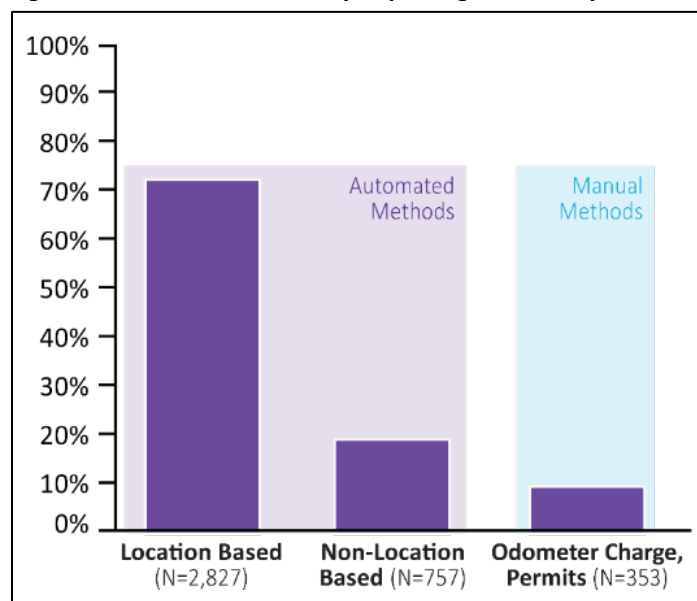


Table 1-3. Operational Concepts and Technologies Used in the RCPP—March 2017

Operational Concept	Account Manager	Reporting Method	Number of “Compliant Vehicles” During March ¹	Number of “Actively Reporting Vehicles” During March ²
Automated Methods	Azuga	Non-location based OBD-II	326	298
		Location based OBD-II	1,693	1,552
		Location-based smartphone app (Driveway)	516	351
		Non-location based smartphone app (Vehcon)	390	335
		Telematics (SmartCar)	37	32
	Total Azuga		2,962	2,568
	Intelligent Mechatronic Systems, Inc. (IMS)	Non-location based OBD-II	139	124
		Location based OBD-II	915	816
		Telematics (SmartCar)	23	23
	Total IMS		1,077	963
	EROAD (Heavy Vehicles)		55	53
Total Automated Methods			4,039	3,584
Manual Method	Arvato (CalSAM)	Odometer	757	258
		Mileage Permit	190	58
		Time Permit	88	37
Total Manual Methods			1,035	353
TOTAL PILOT PROGRAM			5,129	3,937

¹ Compliant—Enrolled vehicle that took the initial steps to report mileage (e.g., plugged in device, downloaded app, purchased permit)

² Actively Reporting—Enrolled vehicles that provided mileage information during the RCPP. The number of “actively reporting vehicles” varied from month to month. The number of actively reporting vehicles for March (i.e., vehicles that reported mileage in March) was 3,937.

Figure 1-17. Percent of Actively Reporting Vehicles by Automated and Manual Methods – March 2017

1.2.4.4 Other Services Offered to Participants

Prior to the engagement in the RCPP, several account managers and technology providers had developed their business models, systems, and technologies for other vehicle-related services, such as user-based insurance. Providing mileage reporting for road charge as part of an established suite of services was a simple addition to their existing functionality. Today, tax collection by third parties on behalf of the State is already happening. For instance, tourism taxes are collected by hotels and telecommunications taxes are collected by cell phone carriers, both as part of the billing process.

In the RCPP, participants who chose an automated recording and reporting method were offered several vehicle-related services at no additional cost during the pilot. **The data collected for these value-added services – such as location, routing, and driving behavior – were not shared with the PDT or Caltrans.**

Azuga additional services included:

- **Visual trip logs** provide detailed trip logs that identify where the car has been driven, including details about each trip like duration, cost, and carbon footprint.
- **Driving scores** (Figure 1-18) provide an indication of driver safety, based on key driving events (for example, idling, braking, acceleration, high speed) to improve driver awareness and safety.
- **Safe zones** allow users to establish geographical areas and notification when the vehicle (for example, driven by one's teenage child) has crossed those zones.
- **Vehicle health** includes information about what is happening with the vehicle when the "Check Engine" light illuminates, as well as providing explanations of vehicle trouble codes in driver-friendly terms.
- **Battery voltage** notifies users how well the vehicle's battery is performing.
- **2MyCar** guides users back to their cars using their smartphones either with turn-by-turn instructions or by a straight-line route.
- **Achievements** are "badges" that unlock for good driving behavior; users can compete with friends and family to see who can unlock the most badges. This tool keeps drivers engaged and connected with their driving.

Figure 1-18. Azuga "Driving Scores" Smartphone App Display

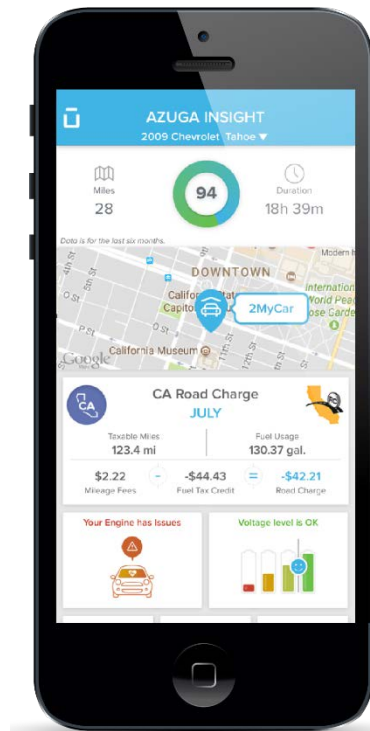
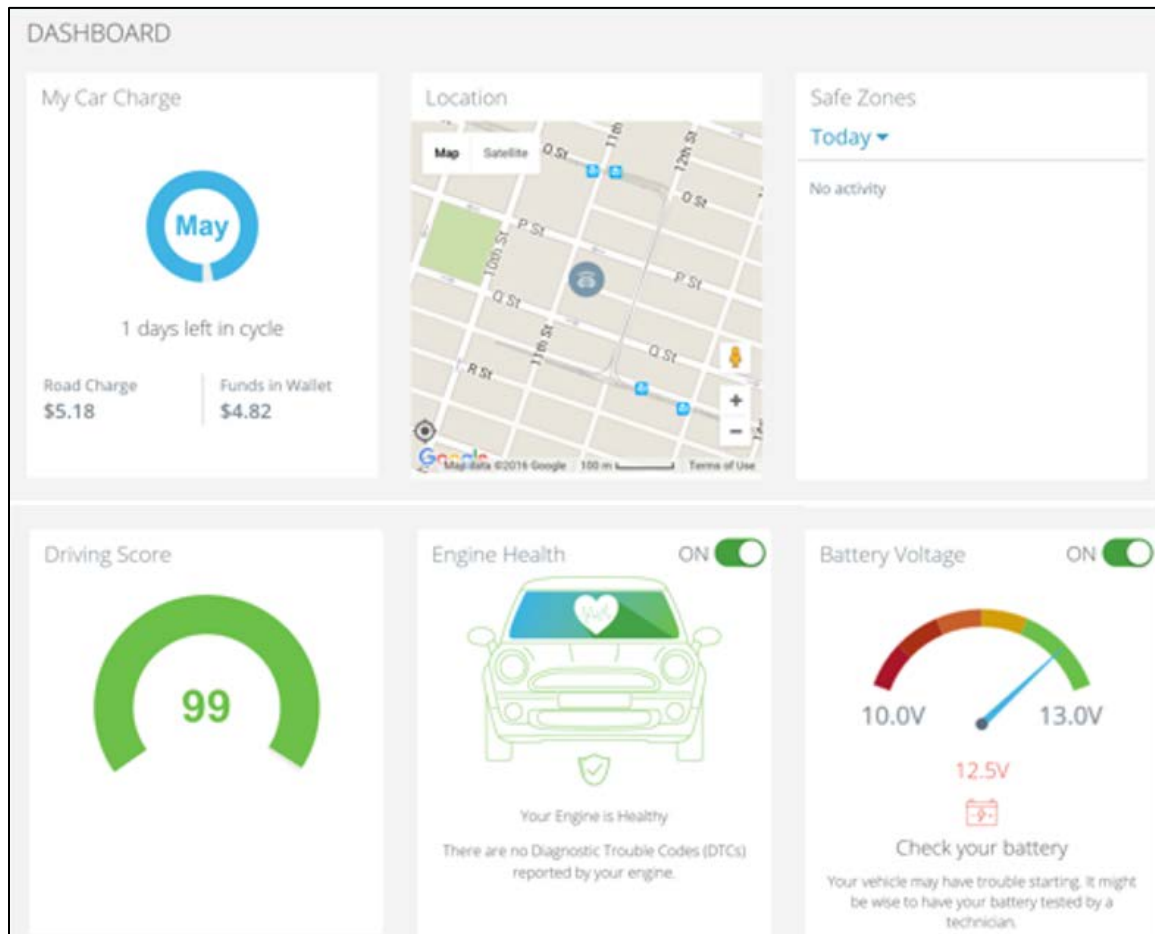


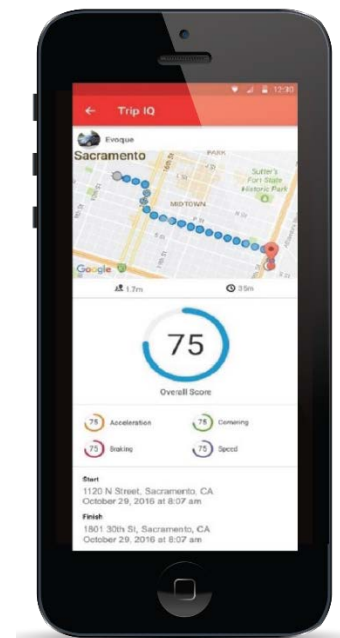
Figure 1-19 is a representation of the information provided to the individual participants via a web portal dashboard or via a smartphone app (see Figure 1-18).

Figure 1-19. Azuga Participant Information Web Portal

IMS offered several additional services as part of their DriveSync® personal telematics, including the following:

- **“Trip IQ”** (Figure 1-20) provides detailed trip log and route map along with driving scores across multiple factors (for example, acceleration, cornering, braking, speed) to improve driver safety.
- **“Find My Vehicle”** provides navigation instructions back to one’s parked car.
- **Vehicle health** monitors the engine, charging system, and cooling system, as well as provides explanations of vehicle trouble codes in driver-friendly terms.
- **Incident assistance** captures collision details, including license and insurance information, takes vehicle damage photographs, and initiates claims process.
- **On-demand roadside assistance** is provided with their tow-truck partner.

It is noted that these services are not yet available to the general public except as part of a road charge pilot (such as the RCPP) or

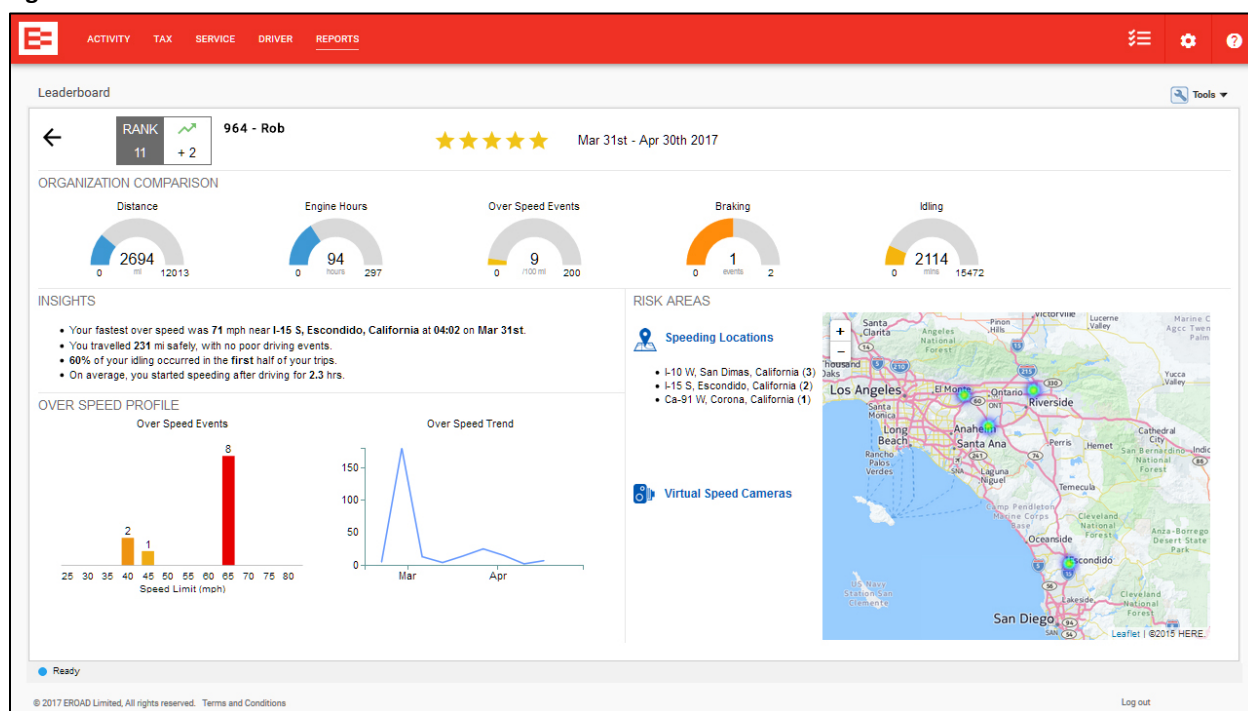
Figure 1-20. IMS “Trip IQ” Smartphone App Display

in the State of Oregon (OReGO²⁰). The account managers that offered these services in the pilot, plan to offer them sometime in the future, alongside other vehicle-related requirements like insurance and emissions monitoring and reporting—potentially important considerations should road charge and associated pilots increase in number and scope (i.e., number of participants).

EROAD provides additional services of interest to fleet managers of trucks and other heavy vehicles, including the following:

- **IFTA**—Automated and electronic IFTA and International Registration Plan (IRP) reporting²¹
- **Safety**—Over-speed dashboard, virtual speed camera, pre- and post-trip inspection reporting, driver safety report, max speed alert (Figure 1-21)
- **Fleet management**—Historical daily fleet activity; truck, traffic, and satellite map layers; and geofencing and geofence site activity
- **Fuel management**—Fuel efficiency and usage reports and fuel exception report
- **Fleet optimization reports**—Fleet summary reports, idle reports, trip investigators, off-highway fuel usage reports
- **Other**—Federal Motor Carrier Safety Administration-compliant hours of service, driver account management, and hours-of-service violations reports

Figure 1-21. EROAD Driver Dashboard



²⁰ <http://www.myorego.org/>

²¹ IFTA is an agreement among states in the United States and provinces in Canada that simplifies fuel use tax reporting by motor carriers that travel both inside and outside California. IFTA offers several advantages to interstate motor carriers, including a single fuel tax license authorizing your vehicles to travel in all member jurisdictions and a single tax return filed each quarter with the jurisdiction where you are licensed, containing your mileage and fuel use information for all member jurisdictions. IRP is a registration reciprocity agreement among states of the United States, the District of Columbia, and provinces of Canada providing for payment of apportionable fees based on total distance operated in all jurisdictions.

1.2.5 Mileage Collected

In all, 37,258,866 miles were collected during the RCPP. Table 1-4 shows the miles driven (and reported) by vehicle category. Heavy trucks comprised approximately 1% of the total compliant vehicles in the RCPP, but accounted for 8% (over 2.8 million miles) of the total miles driven.

Table 1-4. Total Mileage by Vehicle Category

Vehicle Category	Percent of Total Compliant ¹ Vehicles	Miles	Percent of Total Miles
Private	87.1%	29,004,293	78%
Light Commercial	5.1%	3,008,334	8%
Agency	6.5%	2,323,886	6%
Heavy Vehicle	1.1%	2,860,817	8%
Tribal	0.1%	46,726	Less than 1%
Out of State	0.1%	14,811	Less than 1%

¹ Compliant—Enrolled vehicle that took the initial steps to report mileage (e.g., plugged in device, downloaded app, purchased permit). See Table 1-1 for number of compliant vehicles by type.

1.3 California Road Charge Pilot Program Evaluation

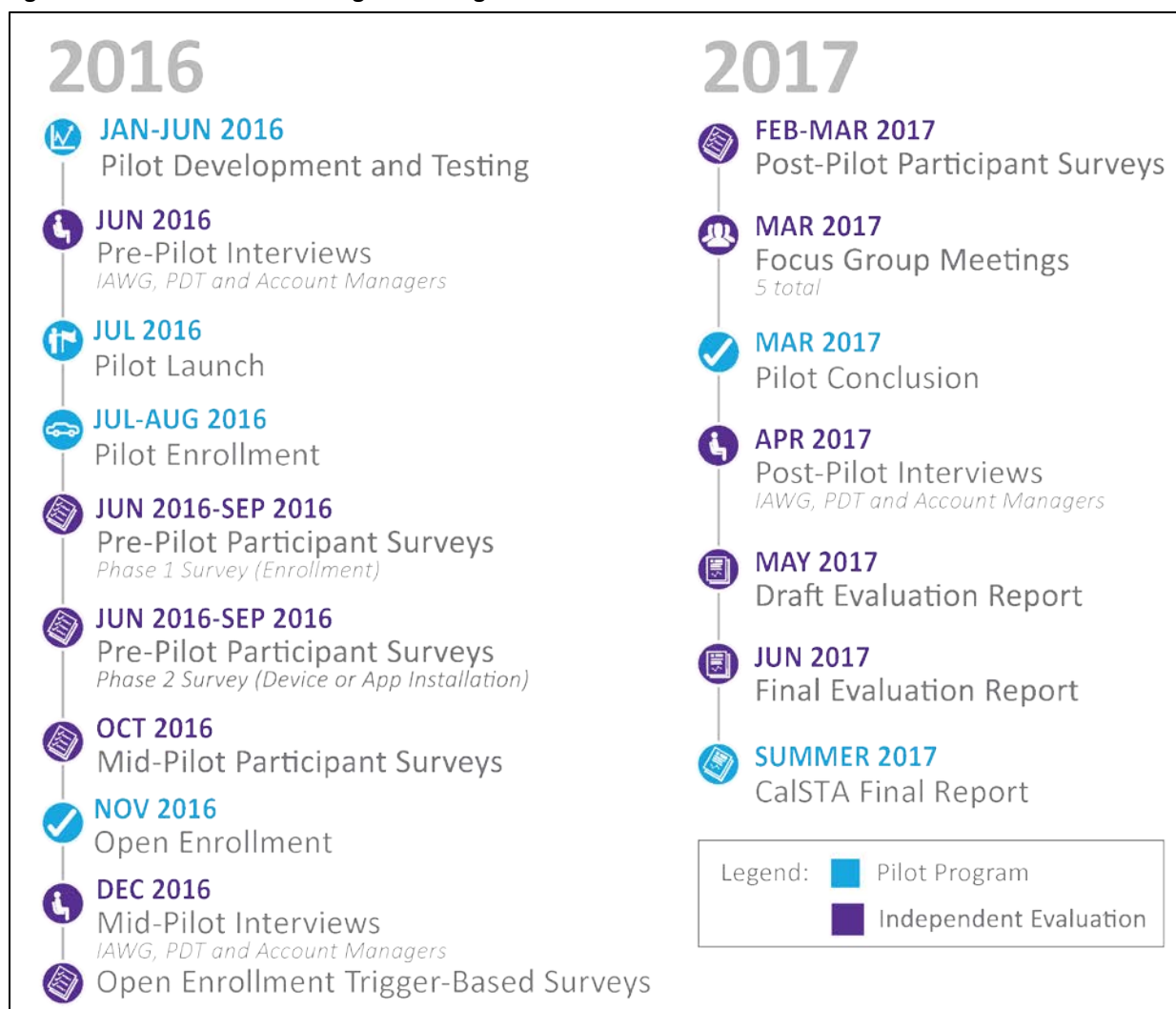
As part of providing a comprehensive feasibility study of road charge, Caltrans contracted with a third-party vendor outside of the pilot development process to conduct an independent evaluation of the RCPP. This evaluation assesses the performance of the pilot against a multitude of evaluation criteria, developed by the TAC, using several evaluation methods.

The RCPP evaluation follows the guidance of the TAC and the associated goals and recommended criteria. The primary goal of the independent evaluation is to provide an unbiased assessment of the RCPP.

The evaluation team developed comprehensive approaches for conducting the assessment based on the defined evaluation objectives, performance metrics, and additional methods and tools to further refine and successfully evaluate each goal and criterion. The RCPP evaluation effort encompassed several approaches, including the following:

- Review all relevant project documentation
- Quantitatively analyze and model data collected by the account managers on a monthly basis
- Conduct web-based pilot participant surveys at the pilot start, midpoint, and end (including heavy truck fleet managers at the end of the pilot) to capture attitudinal and experiential opinions relative to a participant's road charge experience
- Conduct focus groups with a sample of pilot participants to provide additional attitudinal and experiential information regarding the pilot and road charge
- Interview members of the Interagency Working Group (IAWG), PDT, and account managers at the pilot start, midpoint, and end

The specific tasks associated with each approach, evaluation goals and criteria, and results from the independent evaluation effort are discussed in Section 2. Figure 1-22 shows the timeline for the pilot and these evaluation activities.

Figure 1-22. California Road Charge Pilot Program and Evaluation Timeline

Evaluation Methodology and Results

This section presents the results of the RCPP independent evaluation, which comprises the following subsections:

- RCPP goals and criteria
- Information gathering approaches and analysis methodologies
- Evaluation results for each goal and the associated criteria

2.1 California Road Charge Pilot Program Goals and Criteria

The independent evaluation of the RCPP followed the guidance of the TAC. SB 1077 identified the following issues the TAC considered in developing the pilot design recommendations, and the associated goals and criteria:

- Availability, adaptability, reliability, and security of methods that might be used in recording and reporting highway use
- Necessity of protecting all PII used in reporting highway use
- Ease and cost of recording and reporting highway use
- Ease and cost of administering and collecting taxes and fees as an alternative to the current system of taxing highway use through motor vehicle fuel taxes
- Effective methods of maintaining compliance
- Ease of re-identifying location data, even when PII has been removed from the data
- Increased privacy concerns when location data are used in conjunction with other technologies
- Public and private agency access, including law enforcement, to data collected and stored for road charge purposes to ensure individual privacy rights are protected pursuant to Section 1 of Article I of the California Constitution

In addition to SB 1077 items, the TAC consulted several other sources for prospective evaluation criteria, including the road charge “principles” laid out in the California Transportation Infrastructure Priorities white paper and similar evaluation programs in California. This consultation resulted in the TAC recommending eight categories of criteria that encompass 35 goals summarized in Table 2-1. Specific criteria and measurement approaches were also recommended for each goal²² (see Appendix C).

Table 2-1. California Road Charge Pilot Program Evaluation Categories and Goals

Category	Goals
Revenue —Ability of road charge to serve as a suitable replacement revenue source for fuel taxes.	• Create a revenue stream that is able to match the fuel tax at time of implementation. • Avoid double taxation of road charge and fuel tax.
Cost —Costs associated with administering and collecting road charges, both from a user perspective and from an agency perspective.	• Administer road charges efficiently. • Incorporate cost efficiencies where available. • Provide users with low-cost compliance options. • Implement projects on time and on budget.

²² See Section 5 of the California Transportation Commission and California Road Charge Technical Advisory Committee *Road Charge Pilot Design Recommendations*, December 2015

Table 2-1. California Road Charge Pilot Program Evaluation Categories and Goals

Category	Goals
Operations —How well road charge collections operate, both from customer and agency perspectives.	• Be easy to administer. • Clearly identify responsibilities. • Maintain compliance. • Be enforceable. • Have neutral behavior impacts. • Integrate with other charges. • Optimize collection of charges in accordance with enforcement features recommended by the TAC. • Be compliant with financial guidelines.
User Experience —How users interface with the road charge system.	• Administer road charges effectively. • Allow user choice. • Keep pace with change over the long term. • Provide methods that are available, adaptable, reliable, and secure. • Be transparent about how charge works. • Do not negatively impact safety.
Privacy —Privacy protection measures built into the RCPP.	• Honor personal privacy through privacy policies. • Protect personally-identifiable information. • Ensure identity protection using location data even after removal of personally-identifiable information. • Ensure privacy protection when using location data with other technologies. • Protect privacy pursuant to Article I Section 1 of the California Constitution with respect to data access by public agencies (including law enforcement) and private firms. • Respect user privacy trade-offs.
Data Security —Security of participant data collected, transmitted, stored, and used in the RCPP.	• Honor personal privacy through data security. • Ensure data are secure from external breaches. • Ensure data are secure from abuse based on internal process exposure.
Equity —Equity, perceived and real, along several dimensions.	• Be fair and equitable. • Preserve or improve horizontal equity (relative to fuel taxes), which provides that people of similar abilities to pay would pay at the same (effective) rates. • Preserve vertical equity (relative to fuel taxes), which provides that people of differing abilities to pay would pay at different (effective) rates. • Preserve or improve spatial equity (relative to fuel taxes). • Preserve or improve procedural equity (relative to fuel taxes).
Communications —Communications with the RCPP participants and the public.	• Engage the public meaningfully.

2.2 Information Gathering Approaches and Analysis Methods

The independent evaluation of the RCPP involved the following information gathering approaches:

- Data collected from account managers and provided by the Account Management Oversight (AMO) entity
- Pilot participant surveys

- Focus groups
- Review of relevant project documentation
- Interviews with members of the PDT, the IAWG, account managers, and commercial fleet managers (using EROAD technology)

The methodologies used to obtain and then analyze the information are discussed in Section 2.2.1.

2.2.1 Data Collection

2.2.1.1 Description

Over the course of the RCPP, the AMO entity provided a series of monthly reports. These reports summarized participant data as made available from the account managers and included the following:

- **Mileage and Road Charge Revenue Report**—Provides miles, road charges, gas tax credits, and net revenue by account manager
- **VIN Summary Report**—Summarizes all VINs and related data managed by account managers used to check data provided in the Mileage and Road Charge Revenue Report
- **VIN Manual Methods Summary report**—Summarizes all VINs using manual methods managed by the CalSAM and the associated revenues for each method (account managers who do not support manual methods did not provide information)
- **Errors and Events Report**—Provides monthly exception (or health) codes on mileage reporting and account manager hardware or data gathering to monitor system performance
- **Customer Service Logs**—Summarizes the number of customer support issues and the types of issues logged by each account manager and the RCPP Customer Service Center
- **Account and VIN Update**—Summarizes the number of added, dropped, and active RCPP vehicles by account manager
- **Participant Demographics**—Lists participants by six-digit unique identifiers (no specific personal information) and their associated key demographics (age, gender, ethnicity, income bracket, geographic location, and urban/rural area)
- **Participant Mileage Method and Account Manager Selections Report**—Lists participants by six-digit unique identifiers (no specific personal information) and their selected mileage reporting method and account manager
- **AMO Compliance Reports**—Reports all enrolled vehicles by account manager and their compliance rate

These reports were “anonymized” to not include any PII. Each participant was given a six-digit unique identifier number as part of their initial enrollment, and this unique identifier was used by the AMO to provide account-specific information without compromising a participant’s personal information. The AMO maintained the list of unique identifiers and associated participants—information that was not provided to the evaluation team.

2.2.1.2 Analysis

The analysis effort focused on the RCPP data collected from August 2016 through the end of the pilot program in March 2017. While the pilot started on July 1, 2016, July was considered a “ramp up” month, and the associated information was not addressed in the analysis. Except where noted in the description of results, only actively reporting vehicles—those actually reporting data—were included in the analysis effort. More specifically, the following applies:

- For monthly road charge and gas tax results, information from all vehicles that reported data in that particular month was used
- For socioeconomic trend analysis, only information from those that reported data for all eight months (August 2016—March 2017) of the pilot evaluation period was used

Microsoft Excel 2013 was recommended by the evaluation team as the primary tool to analyze data from the RCPP datasets and participant socioeconomic data. The RCPP datasets contain only the necessary data used to generate the various AMO reports summarized above. Where applicable, data were linked to demographic and socioeconomic data. However, some participants were employees of heavy-duty truck operators working for a fleet owner (and reporting through the EROAD account manager), and such personal information was not available.

More than 98% of RCPP participants were California residents who enrolled one or more private personal vehicles in their household. These participants were asked voluntarily to provide the following demographic, geographic, and socioeconomic information about themselves and their households:

- Age
- Gender
- Household size
- Ethnicity
- County (used to identify California region)
- Zip code (used to identify rural/urban status)
- Household income (reported by income ranges)

Figure 2-1 illustrates how the RCPP datasets were linked to socioeconomic data. Some measures explicitly call for a stratification by income (for example, “Average hypothetical road charge paid by pilot participants, by household income”), while others call for other socioeconomic variables (for example, “by region,” “by urban/rural”). As another example, vehicle mileage and fuel charge data provided in the datasets were used to evaluate measures that attempt to assess the accuracy of road charges.

Figure 2-1. Illustrative Linkages California Road Charge Pilot Program Datasets and Socioeconomic Data

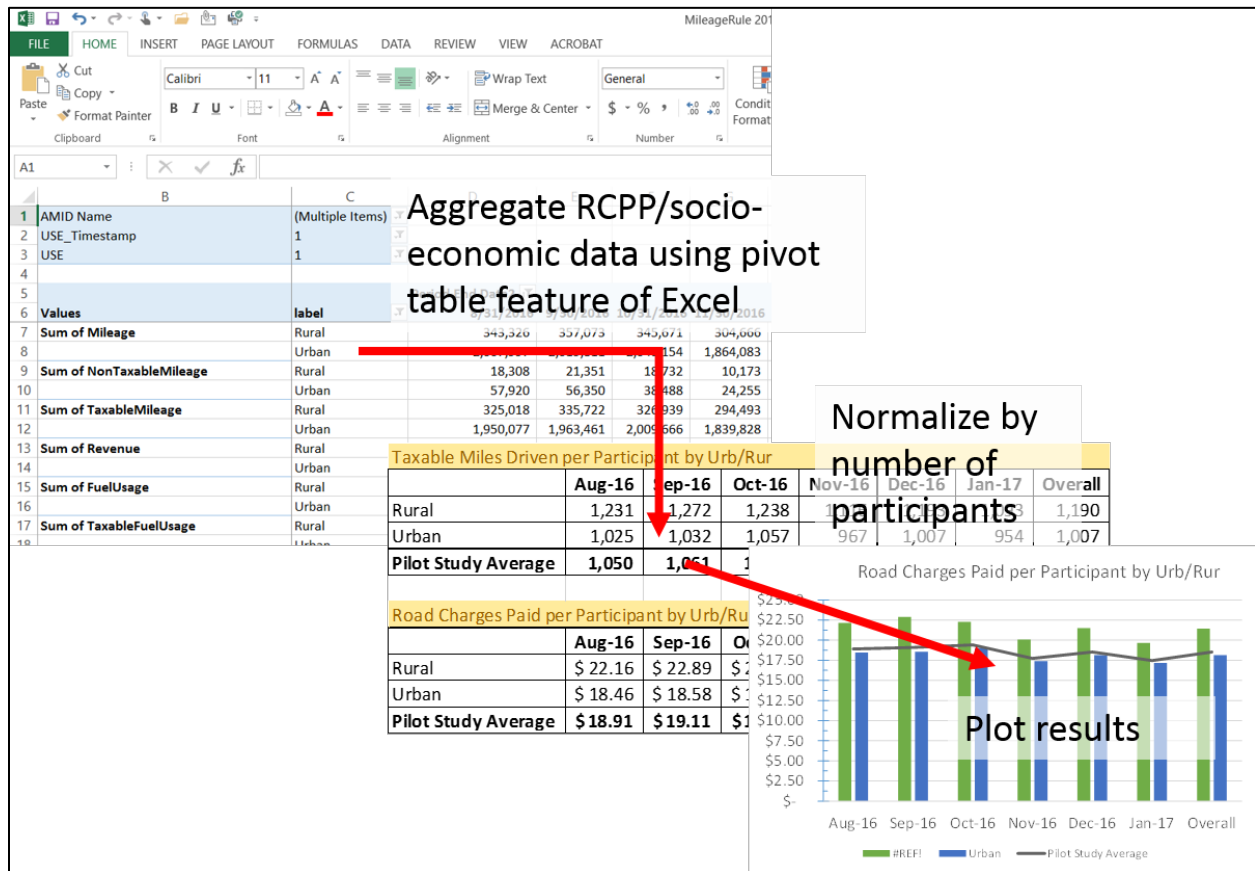
The screenshot shows an Excel spreadsheet with three main data sections: 'RCPP dataset mileage data', 'RCPP dataset vehicle data', and 'Participant socio-economic data'. Red arrows indicate the linkages between these datasets. The 'Participant socio-economic data' section includes columns for Age, Gender, HH_Siz, Ethnicity, Zip_Co, County, Income, and Vehicle. The 'RCPP dataset vehicle data' section includes columns for VIN, Year, Make, Model, and Color. The 'RCPP dataset mileage data' section includes columns for FuelUse, Taxable, FuelTax, Balance, VSMDC, NonTax, MROD, and FuelUse. The spreadsheet also shows a 'Bad' column for data quality and a 'Good' column for data quality.

RCPP dataset mileage data	RCPP dataset vehicle data	Participant socio-economic data
FuelUse	VIN	Age
Taxable	Year	Gender
FuelTax	Make	HH_Siz
Balance	Model	Ethnicity
VSMDC	Color	Zip_Co
NonTax		County
MROD		Income
FuelUse		Vehicle

These data were aggregated as appropriate. For example, gas tax credits and road charge revenues were aggregated by VIN to assess road charge accuracy. The same statistics were aggregated by “Activation Code” (the anonymous six-digit participant identification code) to produce comparative socioeconomic

results for RCPP performance measures. Figure 2-2 illustrates how data were aggregated, normalized, and reported by the study team.

Figure 2-2. Illustrative Analysis Approach



2.2.2 Participant Surveys

2.2.2.1 Description

The evaluation team conducted the following five participant surveys:

- **Pre-Pilot Survey: Phase 1**—Initial attitudes toward the RCPP and the enrollment process
- **Pre-Pilot Survey: Phase 2**—Attitudes about installing the plug-in device or smartphone app
- **Mid-Pilot Survey**—Updated attitudes about the RCPP and understanding of specific program processes
- **Trigger Survey**—Survey of participants that switched their reporting method or account manager during open enrollment to gain a deeper understanding of this process
- **Final Pilot Survey**—Final update on attitudes and measuring reported behavior changes

All surveys were administered primarily via internet; however, paper versions were provided to off-line participants. Surveys focused on the following two distinct sets of data:

- **Attitudinal data**—Data providing subjective information such as opinions from participants on their understanding of road charge, their attitudes towards the equity of road charge, their level of satisfaction with the overall RCPP, their concerns related to privacy and data security, and other

non-pilot specific categories that will capture the holistic understanding of participants. Baseline attitudinal data were captured during the pre-pilot survey, which was monitored over the course of the pilot to identify any changes in behaviors and the root causes for those changes.

- **Experiential data**—Data based on a participant’s unique experiences with the pilot. These data focused on each participant’s experiences, including enrollment, installation of technology (where appropriate), understanding of invoices, navigation and use of account manager websites (where appropriate), specific customer complaints, and any key themes or concerns from the interviews.

In general, the participant survey questions focused on the following issues:

- Participants’ satisfaction with their choices of operational concept and account manager
- Whether they had concerns or issues and how they were resolved
- Satisfaction with the accuracy of their reported road use and miles driven
- Whether they had any concerns about the security of their data
- Understanding of invoices and the accuracy of the data provided on the invoice
- The fairness and usability of road charge relative to the gas tax
- Satisfaction with information that was disseminated and methods for providing feedback

A copy of the complete survey form is provided in Appendix D. Participants received an email with a unique web-link inviting them to participate in each survey. Each link was tied to the participant’s six-digit unique identifier allowing demographic and participant data to be analyzed alongside the survey data. These unique links and identifiers allowed the evaluation team to compare responses over time from the various surveys, within subgroups and across subgroups to determine differences in response to RCPP participation. The evaluation team developed the survey communications materials (including invitations and reminders), which were delivered to participants by the PDT. Participants were asked to complete the surveys and received entries into the *Miles of Thanks Sweepstakes* to encourage direct feedback on their pilot experience.

Pre-Pilot Survey

The pre-pilot survey was distributed to all participants with light vehicles during the enrollment (or registration) phase with questions focusing on current driving behaviors, knowledge of transportation funding, pre-pilot opinions of road charge, and enrollment activities. The pre-pilot survey was administered in two parts: the first survey focused on attitudinal and initial understanding questions with a few experiential questions on the overall enrollment process. The second survey was distributed only to participants who had additional enrollment steps beyond the enrollment process (that is, technology-based options that required device installation) and focused primarily on experiential questions related to the additional steps. Commercial trucking participants received a separate survey described under the “Trigger Surveys” section below.

Mid-Pilot Survey

The mid-pilot survey was distributed to all participants at the pilot’s midpoint with questions focusing on driving behaviors, mid-pilot opinions of road charge concepts, pilot activities and experiences, and any issues experienced.

Trigger Surveys

The open enrollment period (November 1 through November 15, 2016), allowed participants to change their mileage reporting method and/or account manager. After open enrollment, the TAC requested the PDT provide some additional insights on the open enrollment process. Therefore, additional surveys were distributed only to participants that made changes. These surveys focused on why they changed account management and/or mileage reporting methods and experiential questions on the open enrollment process and communications.

Another form of “trigger” survey involved the commercial trucking participants – the eight trucking companies that had their fleets of heavy vehicles included in the pilot with EROAD (the HVAM) as their account manager. These commercial trucking industry participants were provided a questionnaire at the conclusion of the pilot, followed up with telephone interviews, allowing them to provide information on their overall experience during the RCPP. Responses were received from seven of the eight carriers. This questionnaire is discussed in more detail under Section 2.2.2.3.

Final Pilot Survey

The final pilot survey was distributed to all participants at the end of the pilot with questions focusing on driving behaviors, opinions about transportation funding mechanisms, overall RCPP experience, and any issues that came about during the pilot process.

Miles of Thanks Sweepstakes

To encourage maximum participation in all surveys, the *Miles of Thanks Sweepstakes* was available to those participants who completed their surveys. This sweepstakes consisted of three period-specific sweepstakes (during the pre-, mid-, and final pilot surveys) and a grand prize at the end of the pilot.

Sample Size and Margin of Error

The number of surveys distributed, completed, associated response rates, and the margin of error for each of the surveys in the RCPP evaluation are shown in Table 2-2. The margin of error calculations for the survey results are based on the number of active participants at the time of each survey, incorporating the finite population correction factor and the number of completed interviews. Each margin of error calculation uses a 95% confidence interval.

Table 2-2. Survey Responses and Margins of Errors

Survey	Number Distributed	Number Completed	Response Rate (%)	Margin of Error (%)
Pre-Pilot Survey Part 1	4,237	3,529	83	± 0.7
Pre-Pilot Survey Part 2	3,760	2,885	77	± 0.9
Mid-Pilot Survey	4,198	2,533	60	± 1.2
Trigger Survey (Open Enrollment)	90	68	76	± 5.9
Final Pilot Survey	3,998	2,748	69	± 1.1

For example, the number of active RCPP participants when the final pilot survey commenced was 3,998, with 2,748 participants completing the survey. This equates to a maximum margin of error at the 95% confidence interval of ±1.1 percentage points. This margin of error applies to every response category in the associated survey. For example, if 85% of respondents to the survey say they are “Satisfied” with the RCPP overall, we can say that there is a 95% chance that 85% ± 1.1 percentage points, or 83.9% to 86.1%, includes the average level of satisfaction in the whole participant population.

2.2.2.2 Analysis

Upon completion of the surveys, an extensive analysis of the data gathered was completed. The following are the primary analysis steps used for that effort:

- **Analysis of single variable statistics**—The process begins by analyzing the percentage distribution of responses on each question, which are referred to as “topline” results. This is the widest view and interpretation of the results and shows the overall attitudes, awareness, and opinions of participants. Comparisons are noted between similar question types and questions with the same scale to identify areas of highest and lowest agreement with survey statements, program satisfaction and dominant attitudes and behaviors.

- **Variable modification**—In this step, analysts “collapsed” survey questions to help enable a deeper investigation of opinions. This included grouping residents by demographic difference (for example, gender, age, geography, income level) and by their attitudes, behaviors, and reporting options.
- **Analysis of bivariate and multivariate frequency distributions**—Extensive tables of these statistics, also known as cross-tabulation output or crosstabs, are generated for the entire survey among significant demographic and attitudinal variables. These tables are systematically analyzed to determine the relationship between variables (for example, opinion differences between men and women or between location-aware device users and non-location-aware device users). In this stage, comparisons can be made between geographic regions, gender, and many other variables. Differences between these variables are identified to better understand the significant differences in subpopulations.

From this information, guided by the evaluation criteria adopted by the TAC, the evaluation team collected additional insights and findings, and developed charts and tables to display those findings in an easily digestible manner.

2.2.2.3 Heavy Truck Fleet Questionnaire

The RCPP was the first pilot in the United States to include heavy vehicles with light vehicles. How heavy trucks are taxed for their use of the road will have a major impact on any ultimate road charging approach and the long-term sustainability for transportation funding. This is particularly true for California. Freight movement generates about a third of California’s economy,²³ the sixth largest economy in the world,²⁴ with trucking being the predominant mode. In 2012, trucks transported 80% of the total tonnage of shipments to and from California, or over 4 million tons per day.²⁵ In 2013 trucks moved 78% of intrastate shipments by value in California, one of the highest percentages in the nation (with the average being 54% of intrastate shipments nationwide).²⁶ Per Caltrans statistics, trucking serves every community in California. Over 78% of all California communities depend exclusively on trucks to move their goods.²⁷

The Caltrans statistics also note that in 2008, the trucking industry paid 36% of all taxes and fees owed by California motorists, even though trucks represented only about 8% of vehicle miles traveled in the state. A similar finding was identified during the RCPP in that while heavy vehicles made up approximately 1% of the RCPP vehicles, their mileage represented 8% of the total miles. Moreover, the heavy trucks in the RCPP had an average gross mileage charge (before fuel tax credit) of \$89.17 per month per vehicle, as compared to the overall average gross mileage charge (before fuel tax credit) of \$19.02 per month per vehicle for all actively-reporting vehicles.

Eight heavy truck fleet managers were included in the RCPP covering nine different industries. Given the impact of heavy trucks on roadways and transportation funding, especially in California, the perspectives of

Heavy Truck Industries in RCPP

- Large Integrated Fleet
- Large Private Fleet
- Intermodal Owner/Operators
- Over-the-Road Owner/Operators
- Agriculture – Exporters
- Agriculture – Seasonal Operators
- Agriculture – Private Fleet
- Construction
- Energy

²³ California Trade Corridor Improvements, 2017 (<http://www.rebuildingca.ca.gov/trade-corridor.html>)

²⁴ International Monetary Fund, World Economic Outlook Database, April 2017 (<https://www.imf.org/external/pubs/ft/weo/2017/01/weodata/index.aspx>) and California Department of Finance, Gross State Product, May 2017 (http://www.dof.ca.gov/Forecasting/Economics/Indicators/Gross_State_Product/)

²⁵ USDOT Bureau of Transportation Statistics, 2012 Commodity Flow Survey (https://www.rita.dot.gov/bts/sites/rita.dot.gov/bts/files/2012%20CFS%20State%20Summary%20Report_5-26-16_FINAL.pdf)

²⁶ USDOT Bureau of Transportation Statistics; “Freight Facts and Figures – 2015”/

²⁷ FAST FREIGHT FACTS, www.dot.ca.gov/hq/tpp/offices/ogm/.../Fast_Freight_Facts_Trucks_bk_040612.pdf

these fleet managers regarding the RCPP were important to the research effort.

Incorporating the commercial trucking industry participants was accomplished via a questionnaire that was sent out to the participating fleet managers, followed up with telephone interviews during the latter half of April 2017. The questionnaire, which is provided in Appendix F, addressed several aspects of the RCPP, including satisfaction with the overall pilot program and the account manager (EROAD), drivers' reactions, any issues and suggested resolutions, use of IFTA and other fleet management services, and any potential barriers and challenges to road charge from the commercial trucking participants' perspective.

2.2.3 Focus Groups

2.2.3.1 Description

Five focus groups of 10 to 12 participants were conducted towards the end of the RCPP in the cities listed in Table 2-3. The focus groups were structured to evaluate attitudes, opinions, and experiences of participants over the course of the RCPP.

Table 2-3. Focus Group Information

City	Date	Participants
Irvine (Orange County)	March 14, 2017	10
Sunnyvale/San Jose	March 15, 2017	11
Sacramento	March 16, 2017	11
Fresno	March 21, 2017	12
San Luis Obispo	March 22, 2017	11

The five focus group locations were selected in collaboration with the Caltrans project team. Focus group locations were based on the population density of RCPP participants to ensure a group could be recruited, as well as the diversity of demographics and reporting methods among local pilot participants were met. Each group was recruited to include a mix of demographic characteristics, to ensure representation from different types of pilot participants in each group.

Tables 2-4 and 2-5 provide additional information about the composition of the focus groups.

Table 2-4. Make-Up of Focus Group Participants

	Orange County	San Jose	Sacramento	Fresno	San Luis Obispo
Gender					
Women	4	5	5	5	4
Men	6	6	6	7	7
Age					
18 to 29	2	3	3	0	2
30 to 49	2	4	3	3	6
50 and above	6	4	5	9	3
Location					
Urban	2	6	4	1	3
Suburban	8	5	6	5	3
Rural	0	0	0	6	6

Table 2-4. Make-Up of Focus Group Participants

	Orange County	San Jose	Sacramento	Fresno	San Luis Obispo
Income					
Less than \$60,000	3	0	3	3	2
\$60,000 to \$150,000	3	7	8	6	7
More than \$150,000	4	4	0	3	2

Table 2-5. Road Charge Reporting Methods of Focus Group Participants

Reporting Method	Orange County	San Jose	Sacramento	Fresno	San Luis Obispo
Time Permit	0	0	0	0	0
Mileage Permit	1	1	0	0	0
Odometer	2	1	2	0	2
Plug-In (Location)	2	6	3	8	6
Plug-In (No Location)	0	0	1	0	0
Smartphone (Location)	2	1	4	2	0
Smartphone (No Location)	3	1	1	1	2
Telematics	0	1	0	1	1
Switched During Pilot	2	2	2	1	2

Focus group participants were recruited in two stages. In the first stage, all participants in the selected areas were sent a short online survey to assess their interest in participating in a focus group. Those that expressed interest were then sorted into demographic and program-related categories such as vehicle type, mileage reporting method, or had self-reported interactions with the pilot program (i.e. experienced technical or privacy issue, contacted Customer Service Center, switched reporting method or account manager in the middle of the RCPP). Approximately 20 were selected via a rough quota for each location to ensure a diverse focus group that mirrored as closely as possible the pilot participants in the region where the group was held. Among those, 12 pilot participants were recruited with a follow-up telephone call to give them the location details and confirm their participation. The other eight participants were held as standby and called if one or more of the first 12 contacted were not available.

The focus groups addressed relevant evaluation measures through exploration of questions and discussion (discussion guide and questions are provided in Appendix D). Open-ended discussions during the focus group sessions were effectively used to get participants to more freely express concerns, both attitudinal and experiential, related to their unique experiences in the pilot. Each of the focus group participants were compensated for their time.

2.2.3.2 Analysis

Focus group conversations were primarily employed to investigate the complexity and depth of opinions around the RCPP and elicit responses that would not have otherwise been available as part of the quantitative research program and surveys. While extremely useful for statistical analysis, questions designed for quantitative analysis (surveys) do not allow for a breadth of responses, forcing participants to answer using a predefined set of categories. The focus groups were used to recover that missing information by asking participants to respond to similar questions and discuss the RCPP in their own words.

During the focus groups, evaluation team analysts transcribed the conversations and paid special attention to the participants' thinking processes, emotions, and language used while discussing the road charge concept and the RCPP. Once completed, the analysis and interpretation of focus group data aimed at converting qualitative data into information and knowledge that could be used to address evaluation criteria recommended by the TAC. A significant emphasis was placed on understanding which conversation topics were most important to participants and elicited the strongest responses. Individual issue areas were reviewed topic by topic and focus group findings were then organized by topic.

2.2.4 Document Review

2.2.4.1 Review of Documentation

Project documents formed an important component of the independent evaluation. These documents addressed many of the planning and design activities leading up to the deployment of the RCPP. The evaluation team reviewed these documents to establish many of the baseline parameters used in conducting the evaluation. Some of the RCPP documents reviewed are listed below:

- **SB 1077** – Legislation establishing the TAC and the RCPP, providing policy guidance and timeframes for completion.
- **TAC Road Charge Pilot Design Recommendations Report**—Identifies the operational concepts, key requirements, organizational framework, and evaluation criteria for the pilot.
- **Project Implementation Schedule**—The project schedule used to procure, design, and deploy the pilot.
- **Board of Equalization Fuel Tax Information**—Information on the current revenues and costs of the California fuel tax used as a comparison against road charge costs and revenue.
- **Concept of Operations**—The operational scenarios for each road charge mileage reporting method used in the RCPP.
- **Final Independent Security Audit Results Report**—Outcomes of an independent security audit conducted on each account manager's data security methods and systems.
- **RCPP Operations Responsibility Matrix**—Identifies the roles and responsibilities of the PDT and the IAWG leading up to and during the pilot.
- **RCPP Participant Agreement**—The agreement between pilot participants and the RCPP explaining the pilot's purpose, expectations for participants, and explanation and disclaimers related to the retention and dissemination of personal information.
- **TAC Master Briefing Book**—Contains all memorandums, presentations, and meeting minutes of the TAC over the course of the pilot's design phase.
- **Pre-Pilot Testing Results**—Includes various tests conducted of account manager mileage reporting methods and technologies (for example, for accuracy of collected data) prior to the pilot's start.
- **RCPP Account Manager Audit Report**—Summarizes the results of audits of the account managers
- **Account Manager Processes, Frequently Asked Questions, and Screenshots**—Contains various information published by each account manager that identifies the processes and methods they use to administer the pilot.
- **Simulated Interoperability Implementation Memorandum**—Contains information on the ability of Account Managers to support simulated interoperability and includes requirements, schedule, and test procedures for interoperability.

2.2.5 Interviews

The evaluation team conducted a series of interviews to capture information relative to the implementation and internal administration of the RCPP. These were conducted at three points during the project: pre-pilot, mid-pilot, and post-pilot. Additionally, a post-pilot questionnaire and follow-up interview was conducted with each of the heavy truck fleet managers serviced by EROAD (the HVAM). All the interview forms, which were structured using the categories identified by the TAC, were developed by the evaluation team and are provided in Appendix E. There were three categories of interviewees:

- **Project Delivery Team**—The PDT is the entity responsible for planning, designing, and deploying the RCPP. The PDT consists of members of Caltrans and its prime contractor, D’Artagnan Consulting. The PDT interview questions focused on program implementation and administration, account managers’ compliance with RCPP requirements and TAC recommendations, the protection of personally identifiable information, dissemination of information to participants and the public, and what would be needed to support a larger scale road charge program.
- **Interagency Working Group**—The IAWG consists of other California governmental organizations that either already perform functions pertaining to the current gas tax or may take on larger roles for administering, enforcing, and supporting a large-scale statewide road charge program. The IAWG collaborated with the PDT to define the various roles and responsibilities, identify needed resources and infrastructure for any potential future road charge program. The IAWG comprised several agencies (see text box).
- **Account Managers**—Account managers provided the primary interface for pilot participants. They supported the mileage reporting, data management, and customer service. In addition, account managers reported to the AMO on the mileage traveled by participants, potential road charge each participant would pay, gas tax credits (if available), and customer issues encountered over the course of the pilot. Technology providers subcontracted their services to the account managers; however, they were not interviewed because they were not directly involved in account management activities.

Agencies Comprising the IAWG

- Bureau of Automotive Repair
- California Air Resources Board
- California Department of Insurance
- California Department of Motor Vehicles
- California Highway Patrol
- California State Board of Equalization
- California Transportation Commission
- State Controller’s Office

2.3 Evaluation Results

This section is organized by the eight categories of evaluation criteria adopted by the TAC (Table 2-1). Each subsection provides an overview of the evaluation goals, criteria, measures and analysis method, and provides the results of the evaluation using a combination of text and graphics. It is important to note the following:

- For the survey results, comparisons across all three surveys (pre-, mid-, and final pilot surveys) are shown whenever applicable. However, the pre-pilot survey focused mostly on the process of enrollment, while the mid-pilot and final pilot surveys focused more on different aspects of actively participating in the program. Where possible, similar questions were grouped and compared between the mid and final pilot surveys, thereby showing general shifts in opinions as the pilot progressed.
- For focus groups, involving small numbers of participants provided an excellent way to explore how participants talk about their experiences during the pilot program. While the information is qualitative and anecdotal in nature—and may not be representative of all participants—focus

groups help provide a more intimate understanding of attitudes and can help to put the quantitative results in context, which may also provide an indication of potential issues that merit further research.

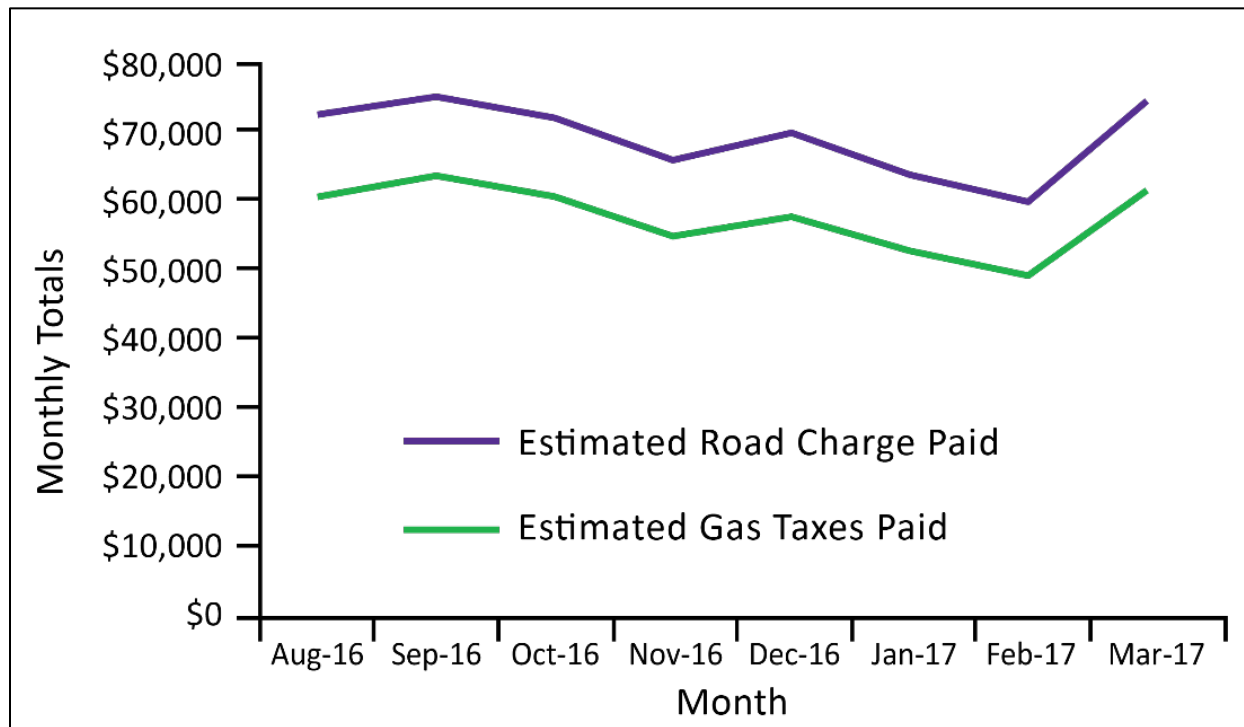
2.3.1 Revenue

SB 1077 notes it is “important that the state begin to explore alternative revenue sources that may be implemented in lieu of the antiquated gas tax structure now in place.” This category addresses the ability of road charge to serve as a suitable replacement revenue source for fuel taxes.

ID	Goal	Criteria	Measures	Analysis Method(s)
Rev01-01	Create revenue stream that can match the fuel tax at implementation	Road charge revenue's ability to match fuel tax revenue at implementation	Estimated fuel tax revenues paid by pilot participants	Data analysis
Rev01-02			Estimated road charge (hypothetical) paid by pilot participants	Data analysis

Figure 2-3 shows the estimated monthly road charges and gas taxes paid by vehicles with automated mileage reporting.

Figure 2-3. Overall Monthly Road Charge Revenues (Hypothetical) and Gas Taxes Paid by Vehicles with Automated Mileage Reporting

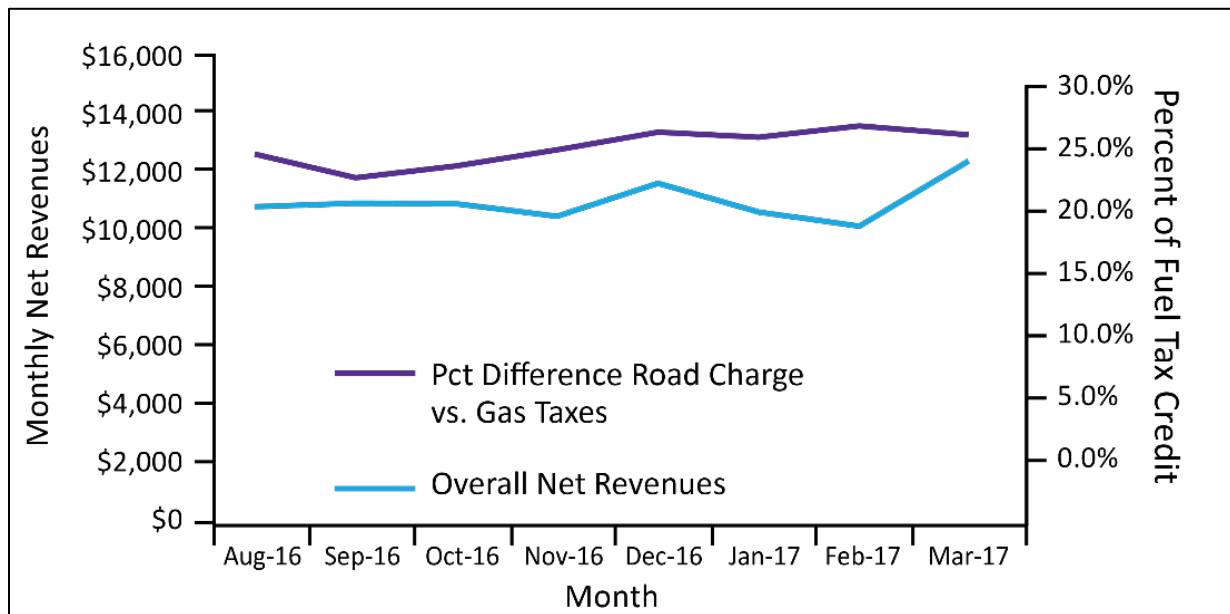


As shown in Figure 2-4, the road charge for light-duty vehicles resulted in greater revenues being generated (hypothetically) as compared to the gas tax. These figures should not be construed to mean that the road charge approach cannot match gas tax revenues (that is, be “revenue neutral”).

Fuel efficiency was the primary reason for the difference. The average MPG rating for those participating vehicles that used the automated plug-in device²⁸ was approximately 24.3 MPG, a value that is greater than the 20 MPG used in calculating the pilot per mile charge of 1.8 cents. As such, less gas was purchased for these vehicles than the statewide average, resulting in smaller gas tax credits, leading to the difference between the gas tax and the comparative road charge. Some specifics in this regard include:

- The road charge of 1.8 cents per mile generated about \$11,600 in net revenue (hypothetically) over the gas tax credits at \$0.354 per gallon, approximately 20% more than the gas tax.
- This equates to around \$3.93 more in net revenue per participant per month.
- The revenue neutral rate for the sample of light-duty vehicles in the RCPP would have been closer to 1.5 cents per mile.

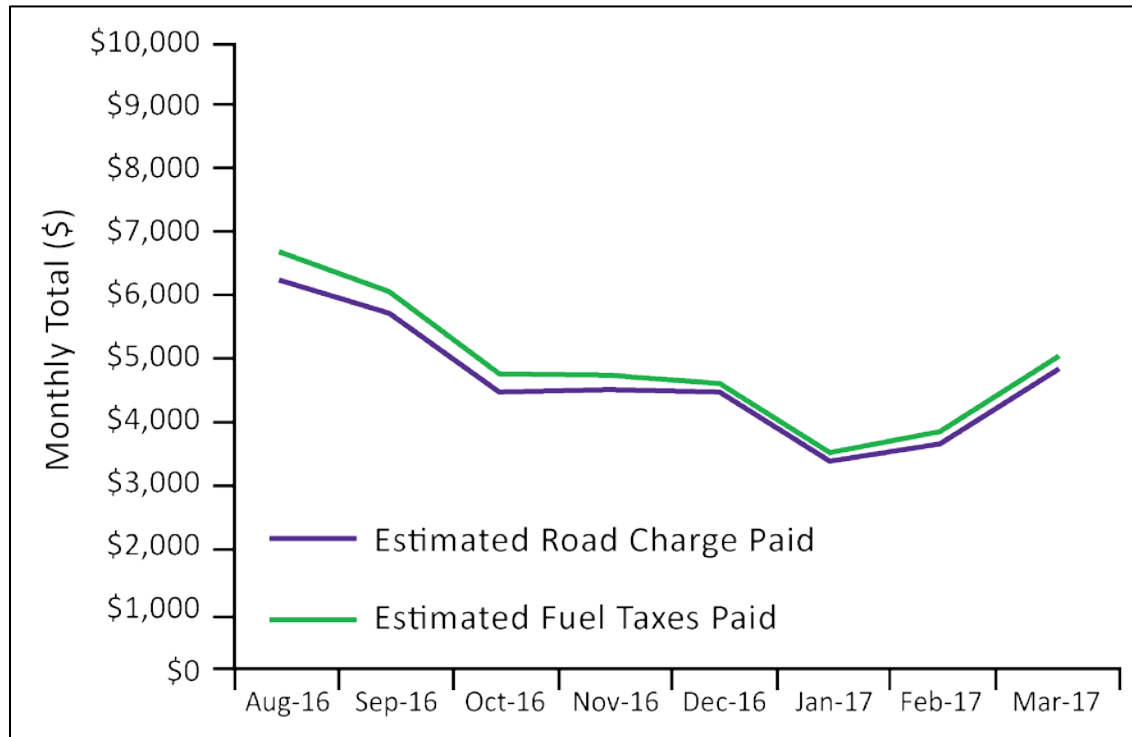
Figure 2-4. Monthly Net Revenues (Road Charge Less Gas Tax Credits)



As shown in Figure 2-5, the heavy vehicles—using EROAD as their account manager—generated approximately \$4,680 in monthly revenue (at \$0.010 per mile), but received \$4,930 in fuel tax credits.

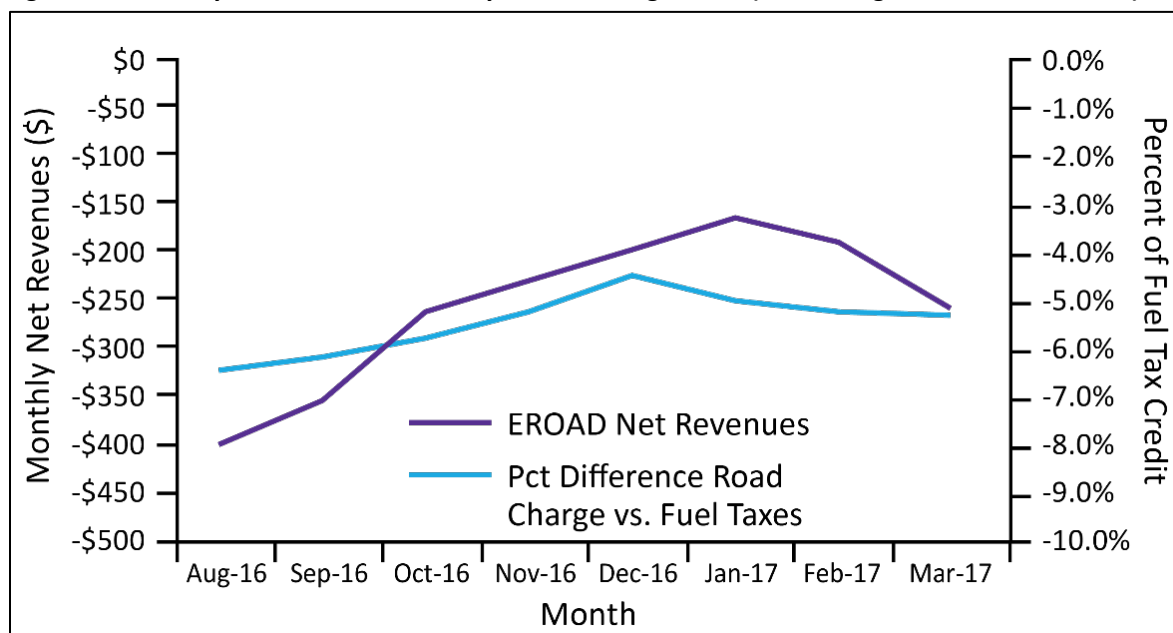
²⁸ This technology was the only one that directly measured fuel consumed as well as miles driven. Other approaches used EPA ratings to estimate the amount of fuel consumed for the purpose of fuel credits.

Figure 2-5. Overall Monthly Road Charge Revenues (Hypothetical) and Fuel Taxes Paid by Commercial Vehicles (EROAD)



As shown in Figure 2-6, heavy vehicles generated approximately 5% less in road charge revenues as compared to the fuel tax. Based on the information analyzed, the revenue neutral road charge rate for EROAD participants (heavy vehicles) would have been closer to 1.6 cents per mile.

Figure 2-6. Monthly Net Revenues for Heavy Vehicles using EROAD (Road Charge Less Fuel Tax Credits)



ID	Goal	Criteria	Measures	Analysis Method(s)
Rev02-01	Avoid double taxation of Road Charge and fuel tax	Ability to credit fuel taxes paid against Road Charges owed for pilot participants	Rate of participant satisfaction with accuracy of estimated fuel tax paid	Participant surveys
Rev02-02			Accuracy of estimated fuel tax paid for each applicable operational concept	Data analysis

Figure 2-7 indicates that over half (56%) of the participants were satisfied with the accuracy of the of the estimated gas tax on their invoices. This percentage increased slightly from the mid-pilot surveys to the final pilot surveys. Only 5% of the participants disagreed with the notion that the invoices accurately estimated gas tax, and about a third of participants did not know how they felt about the accuracy of the estimated gas tax.

Figure 2-7. Survey Results on Accuracy of Estimated Gas Tax

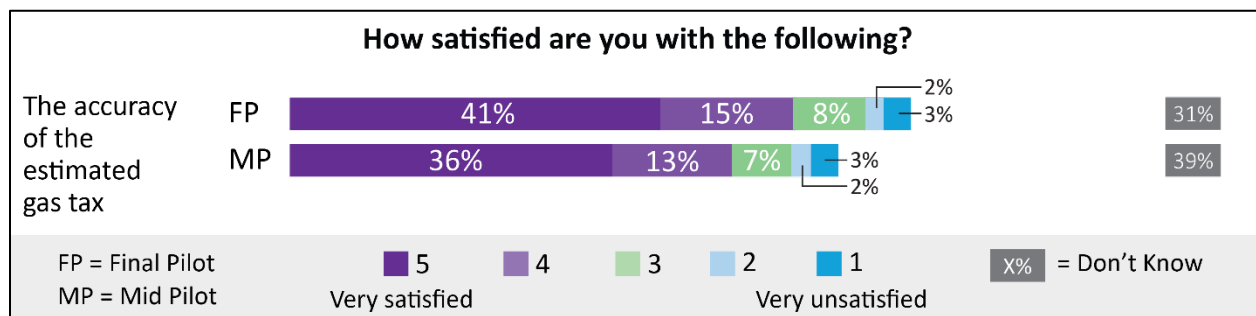
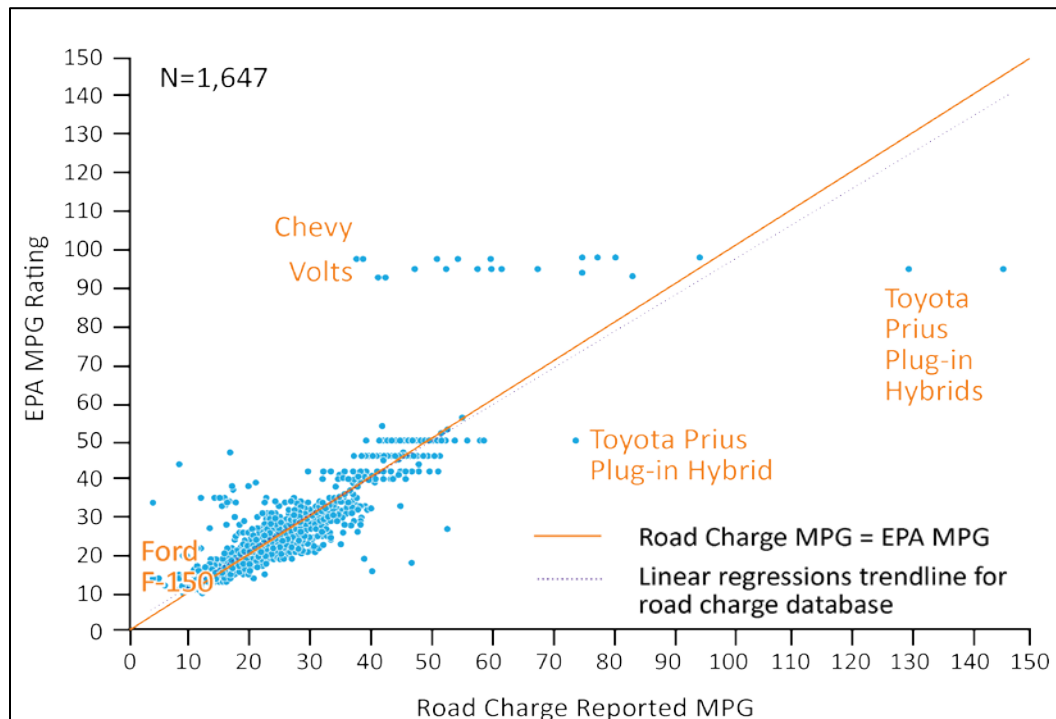


Figure 2-8 (from the data analysis) plots the average MPG (as calculated from gas credit information received from actively reporting vehicles with plug-in devices) relative to the Environmental Protection Agency (EPA) estimate for these same vehicles.

Figure 2-8. Comparison of Calculated MPG (based on gas tax credit data) Relative to EPA Estimated MPG



Most vehicles are very close to the red diagonal line, indicating that the calculated MPG (based on gas credit data) is equivalent to the EPA estimate.

There are a few outliers—mostly plug in hybrid vehicles, such as the Chevy Volt and the Toyota Prius, that operate using both gasoline (internal combustion engine) and electricity (battery). The EPA values for these “dual-fuel” vehicles—as well as for all electric vehicles—are shown in “miles per gallon equivalent,” which is a measure of the average distance traveled per unit of energy consumed. The calculation of miles per gallon equivalent is based on several assumptions, including electricity rates, fuel costs, and the amount of time the hybrid vehicle operates on conventional fuel versus electricity. If a plug-in hybrid electric vehicle operates on conventional fuel more than the assumed amount of time, its actual MPG will be less than the EPA value. Similarly, if this vehicle operates on electricity more than assumed amount of time, its actual MPG will be greater than the EPA value.

2.3.2 Costs

Costs are an important consideration in determining if and how to move forward with a road charge program, and also in developing long-term estimates of net revenues (as well as identifying the appropriate per mile rate). SB 1077 requires the TAC to take into consideration the cost of recording and reporting highway use, along with the cost of administering the collection of taxes and fees as an alternative to the current system of taxing highway use through motor vehicle fuel taxes. Detailed information on the costs associated with the RCPP were not made available to the evaluation team because of a reluctance on the part of account managers to share (and therefore publicize) their costing information.²⁹ As discussed below, some high-level estimates for a future large-scale and mandated program were provided (with several caveats given the uncertainties of how such a program would actually look), along with the current costs of the other services account managers already provide.

ID	Goal	Criteria	Measures	Analysis Method(s)
Cost01-01	Administer road charges efficiently	Estimated agency cost of administering a statewide road charge based on relevant cost data from the pilot	Cost of collecting road charge per vehicle in the pilot by operational concept	Interviews

Cost discussions with account managers covered a range of topics, including cost of delivering the RCPP, an example of an existing customer subscription-based fee structure, and projected cost ranges for a full statewide program as shown in Table 2-6. However, all account managers noted that **pilot cost values do not provide a viable financial model**. The level of resources required to develop, implement, and administer the initial pilot would not map to a statewide program.

Table 2-6. Cost Information from Account Manager Interviews

Cost Description	Data	Notes
Pilot program delivery: Plug-in GPS and non-GPS concepts	Monthly per-vehicle pilot program delivery costs: • Engineering, management, and subcontractor costs: \$26.45 • Devices and support: \$8.35 • Operations: \$6.05	Total cost of delivering the pilot program: • Engineering, management & subcontractor: \$714,000 • Devices and support: \$226,000 • Operations: \$164,000
Existing commercial services fee structure example for heavy vehicles	Monthly customer subscription fees: • \$25-\$49—with hardware rental • \$35-\$60—with hardware purchase	Example of a current fee structure offered for commercial services (rental availability is based on fleet size and other criteria).

²⁹ It should also be noted that the account managers were not directly contracted with the State, but through the State’s consultant.

Table 2-6. Cost Information from Account Manager Interviews

Cost Description	Data	Notes
Projected statewide program cost	Cost range for 1M+ user program: 4%-25% of road charge fees	Range due to uncertainty regarding cost mitigation opportunities (partnerships and business arrangements).
Existing commercial services fee for light-duty vehicles	\$5-\$10 per subscriber per month for items such as user based insurance, remote emissions monitoring, fleet management, driving scores, etc. Other services, such as on-demand roadside service and advanced vehicle diagnostics are based on a pay-when-needed model.	The actual subscription cost varies based on term commitment, volume, technology, and number of services combined.

In addition to the account manager costs to be reimbursed by the agency, there will also be direct agency costs. The PDT did not provide any cost estimates for a statewide program, noting (as did the account managers) that there are too many variables to make such a determination. Similarly, the IAWG did not provide cost estimates for administering a statewide program; although the DMV owns the vehicle registry in California and could potentially incorporate efficiencies through their current registration processes and business partner program. Other potential agency costs that were not addressed as part of the RCPP include compliance monitoring and enforcement activities.

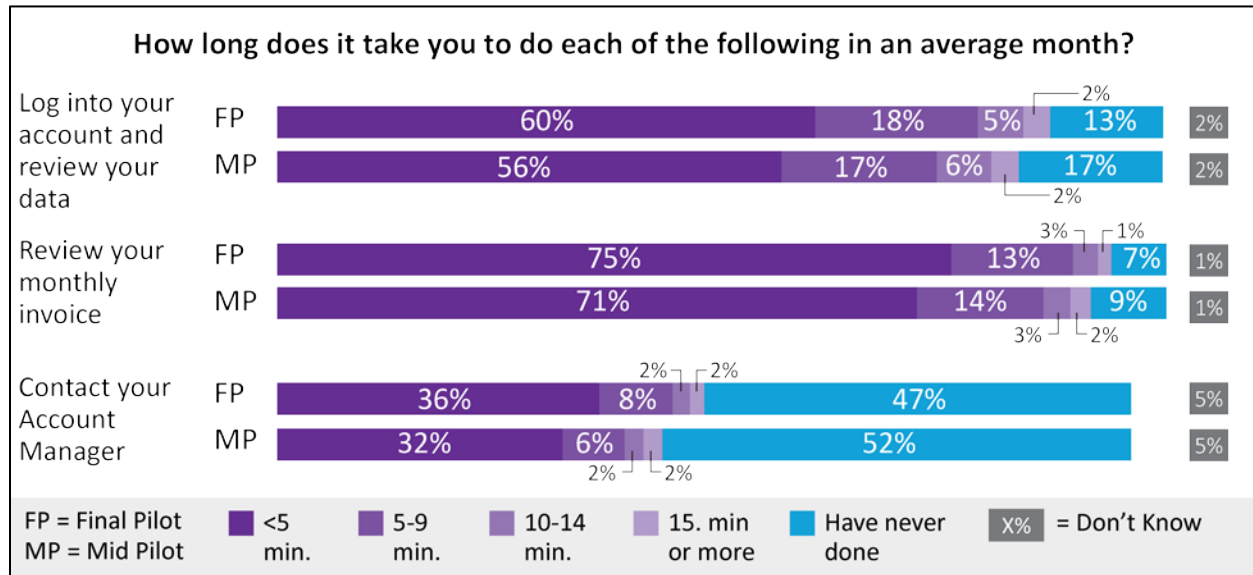
ID	Goal	Criteria	Measures	Analysis Method(s)
Cost02-01	Incorporate cost efficiencies where available	Estimated agency cost of administering a statewide Road Charge based on relevant costs from the pilot, relative to fuel taxes	Estimated average cost of collecting road charge per vehicle based on mix of operational concepts in pilot	Interviews
Cost02-02			Estimated per-vehicle cost of collecting road charge per operational concept at scale divided by per-vehicle cost to collect fuel tax	Interviews
Cost02-03			Estimated per-vehicle cost of collecting road charge based on mix of operational concepts in pilot at scale divided by per-vehicle cost to collect fuel tax	Interviews

Quantitative measures could not be developed for this criterion due to lack of useful data. On a more qualitative basis, all the account managers noted that economies of scale would be available in a statewide scenario. Moreover, in other general discussions with account managers regarding costs, their respective business models appear to be based on “millions of vehicles” included in a road charge system, with the road charge component becoming a “value added” to the other services they provide to customers (such as those discussed in Section 1.2.4.4). Existing subscription rates for several such services are listed in Table 2-6. The additional cost associated with the value-added feature of road charge is unknown.

ID	Goal	Criteria	Measures	Analysis Method(s)
Cost03-01	Provide users with low-cost compliance options	Costs incurred by motorists in recording and reporting highway use	Time spent by participants devoted to road charge pilot activities related to reporting miles and making payments	Participant surveys Fleet manager questionnaire
Cost03-02			Financial costs incurred by participants related to reporting miles and making payments	Participant surveys

Figure 2-9 from the participant surveys indicates that most participants required less than 10 minutes in an average month to log into their account (78% at the end of the pilot) or to review their invoice (88% at the end of the pilot). In terms of contacting their respective account managers, approximately half of the survey respondents never contacted their account manager.

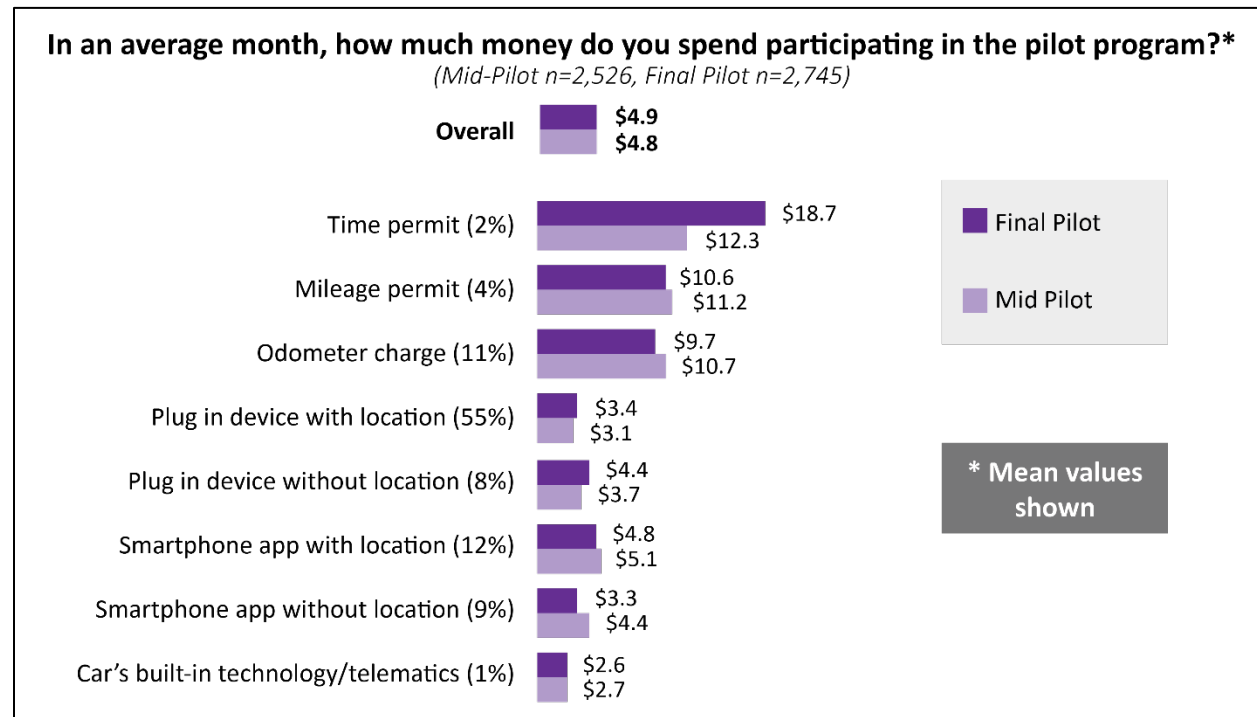
Figure 2-9. Survey Results on Time Spent on the Pilot Program



Most truck fleet managers indicated they spent less than 15 minutes each month on the pilot, with two managers indicating 15 to 30 minutes per month.³⁰ Their drivers spent less than 15 minutes per month, although most of the drivers did not have direct access to the account and their reporting device was professionally installed in the truck.

As shown in Figure 2-10, the estimated average monthly amount spent participating in the RCPP was just under \$5, with very little change between the mid- and the final pilot surveys. The estimated participant costs for the manual methods (time permit, mileage permit, and odometer charge) were about twice as much as the automated methods. It's important to note, that while participants were asked how much they spent participating in the RCPP, this was a value judgement as they were not charged for the mileage reporting devices or any other elements of the pilot. The independent evaluation team has no way of determining how participants came up with these estimates.

³⁰ One manager did not respond to this question.

Figure 2-10. Survey Results on Money Spent on the Pilot Program

ID	Goal	Criteria	Measures	Analysis Method(s)
Cost04-01	Implement projects on time and on budget	Completion of pilot project milestones relative to schedule required in SB 1077	Pilot delivery time divided by initial schedule estimate	Interviews
Cost04-02		Final pilot project expenditures relative to cost estimate following TAC final report at end of 2015	Pilot delivery costs divided by initial budget estimate at January 2016	Interviews

The pilot program milestones were accelerated by the PDT and delivered approximately a year earlier than the schedule required in SB 1077. The actual pilot delivery time (excluding final report delivery) was 27 months, or 11 months earlier than what is prescribed in SB 1077 (36 months). As such, the measure (actual time divided by initial schedule) is 0.75. In other words, the pilot was delivered ahead of schedule.

The PDT and IAWG interview participants all indicated that pilot delivery costs (relative to budget) and schedule parameters were met. The initial budget set for the RCPP was approximately \$10 million, which included a significant amount of planning and oversight administration as part of the research effort, including holding TAC meetings and preparing associated documents. The actual pilot delivery costs were approximately \$8,970,000, or \$1,030,000 under the initial budget estimate provided by the Legislature. As such, the measure (actual costs divided by initial budget estimate) equals 0.897. In other words, the pilot was delivered 10 percent under budget.

2.3.3 Operations

SB 1077 requires the TAC to take into consideration the ease of recording and reporting highway use, along with the ease of administering the collection of road charge fees. This category addresses these operational aspects of road charging from both the customer and agency perspectives.

ID	Goal	Criteria	Measures	Analysis Method(s)
Oper01-01	Be easy to administer	Ease of administering collection of road charges	Number of vendor staff (full-time equivalents [FTEs]) devoted to pilot effort	Interviews

While account manager staffing levels varied, all noted that the level of effort was generally in line with expectations. Examples of the staffing levels are provided in Table 2-7. Account managers also emphasized that the level of effort for the pilot does not have a linear relationship with the level of effort for a full program, where economies of scale will be available in some areas (program management, IT and engineering).

Table 2-7. Staffing Level of Effort Estimates from Account Manager Interviews

Account Manager	Account Management Activity	Pre Launch	Operations		
			Startup (Pilot Month 1)	Steady State (Pilot Months 2-8)	Closeout (Pilot Month 9)
1	Program Manager	<1			1 - 1.15
	Engineering, Development, and IT	>0.5	0.5		1
	Operations Support (including customer service)		<1		
2	Program Manager		3-6 staff supporting all functions (not dedicated / FTE)	3-6 staff (same level) Plus additional support for unanticipated work	
	Engineering, Development, and IT				
	Operations Support (including customer service)				
3	Program Manager	0.3 FTE			
	Engineering, Development, and IT	Not provided			
	Operations Support (including customer service)		0.6 FTE		
4	Program Manager		10 staff supporting all functions (not dedicated / FTE)	10 staff (same level) Plus 2 part-time staff	
	Engineering, Development, and IT				
	Operations Support (including customer service)				

ID	Goal	Criteria	Measures	Analysis Method(s)
Oper02-01	Clearly identify responsibilities	Ease of administering collection of road charges	Number of agency staff (full-time equivalents) devoted to pilot effort	Interviews

The PDT included Caltrans which had 5.5 full-time equivalents (FTEs) working on the project and the supporting PDT consultant had 3 FTEs. The IAWG agencies had staff assigned to monitor the RCPP, and the CTC had one staff member working full time on the RCPP.

ID	Goal	Criteria	Measures	Analysis Method(s)
Oper03-01	Clearly identify responsibilities	Adherence of pilot vendors and administrators to operations responsibility matrix	Number of deviations from responsibility matrix and description of each deviation	Interviews Participant surveys Documentation Review

The operations responsibility matrix was developed at the start of pilot program operation to summarize the roles and responsibilities of the four operational entities as summarized below:

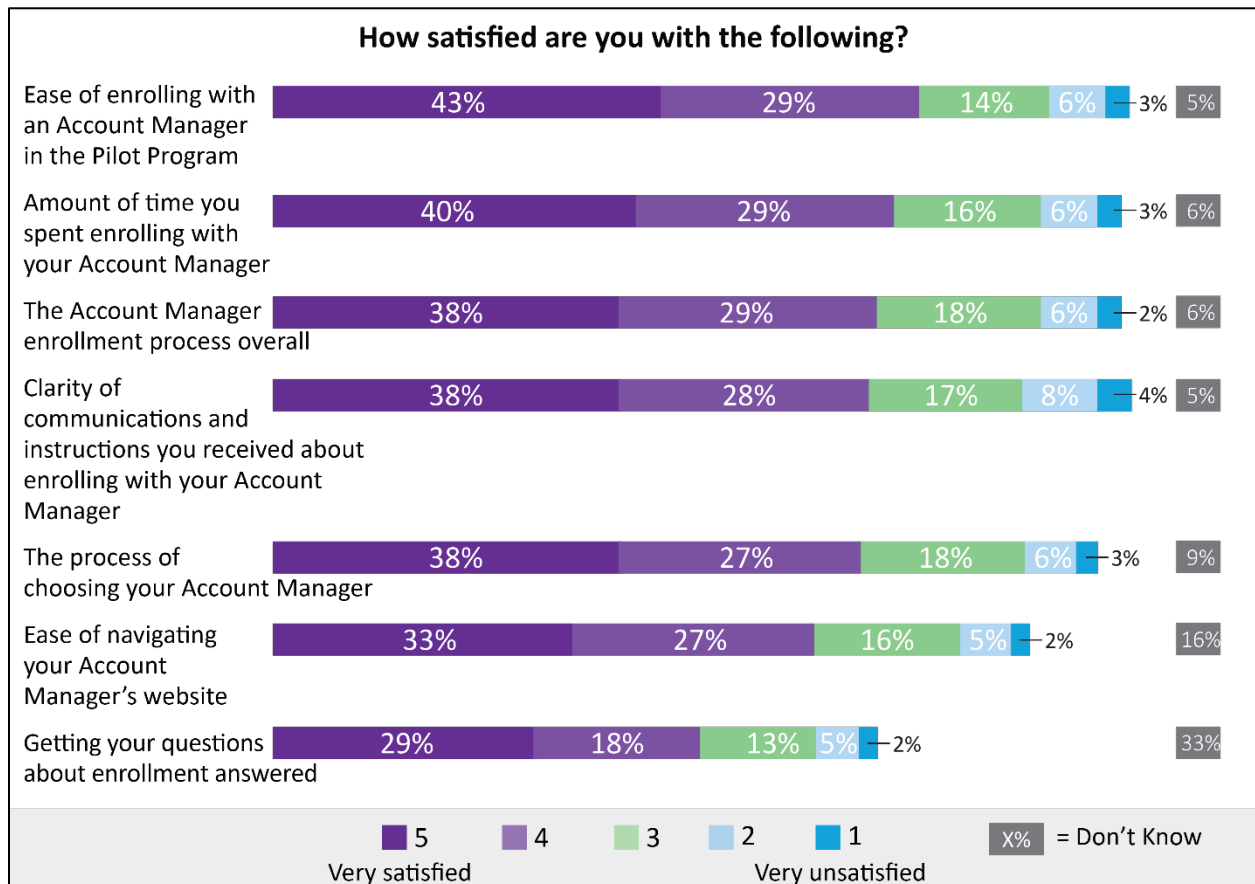
- Project team (i.e., Caltrans and its prime contractor D’Artagnan Consulting)
 - Interface with Other Governmental Entities
 - Execute Organizational Design Effort
 - Public Communications
 - Provide Incentives for pilot volunteer efforts
 - Provide a Vehicle Activation Code system so that that only invited volunteers can sign up with the account managers.
 - Operate the Road Charge Pilot Project Enrollment Website
 - Provide a Volunteer Information Line
 - Interface with Independent Evaluator
- Account managers
 - Provide mileage reporting methods
 - Provide mileage meter and account management services to participants
 - Provide value added services to participants
 - Provide customer service to participants enrolled with their services, via phone and/or web.
 - Provide regular reports to the Account Management Oversight on mileage, road charge, and fuel consumption of enrolled volunteers.
- Account Management Oversight (provided by D’Artagnan Consulting)
 - Receiving the weekly reports from the account managers
 - Generating summary reports based on account manager reports
 - Analyzing data to verify that the system is working correctly.
 - Auditing participants and account managers as needed.
- Bureau of Automotive Repair (via its Referee program hosted at sites on community college campuses)
 - On two Saturdays in July and two Saturdays in March 2017, about 15 Foundation for California Community Colleges (FCCC) locations will perform manual odometer reads.
 - Transmit odometer and vehicle information to the CalSAM via a secure web form.

Based on the interviews with Caltrans, the PDT and the account managers, these responsibilities were met. That said, there were a few minor anomalies. The organizational design effort identified critical functions for a potential statewide program, but further development is needed. The off-boarding

process for certified manual odometer readings ran into some issues; although due to a change in the format and coding of the forms by the account manager. Corrective action was taken immediately by the project delivery team and account manager.

Several of the goals and criteria addressed herein directly address many of these responsibilities. The participant surveys also provided some additional insight of how well these responsibilities were met. For example, both the project team and the account managers had responsibilities with respect to enrollment. The pre-pilot survey results indicated most participants (68%) were satisfied with the overall enrollment process and enrolling with an account manager (see Figure 2-11). The clarity of communications and instructions received about enrolling with the account manager received the highest unsatisfied rating, but only 12% report dissatisfaction.

Figure 2-11. Survey Results on Satisfaction with Account Managers during Enrollment

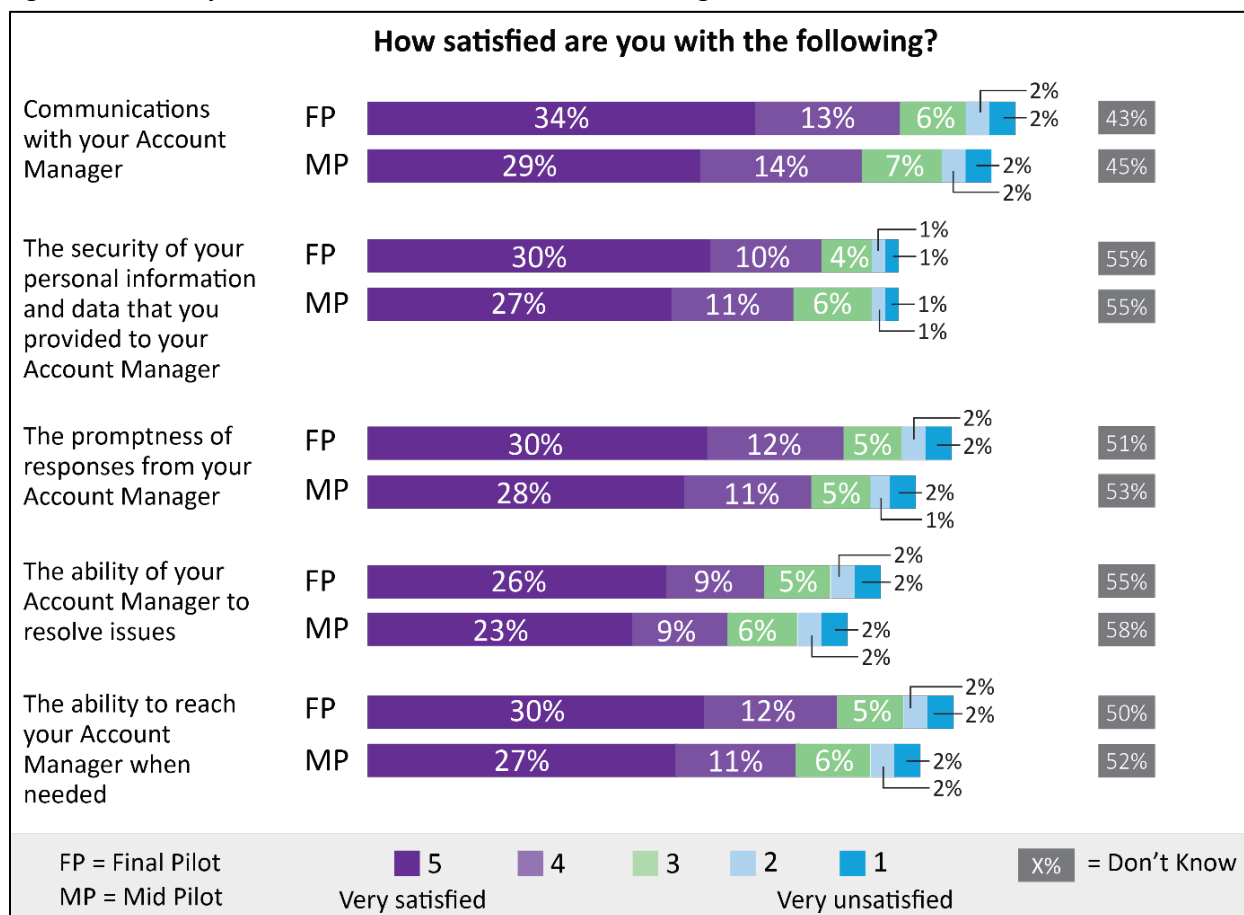


The account managers also had responsibilities for providing services to the participants during pilot operations. Figure 2-12 shows that of those that had an opinion, the ratings were largely positive and increased slightly between the mid-pilot and final pilot surveys, indicating that the account managers were adhering to their responsibilities. The figure does show that nearly half of participants were unable to rate their satisfaction with their account manager in many areas including communications, security of personal information, promptness of responses, ability to resolve issues, and reaching their account manager when needed. This could be because they did not have any issues or did not have a reason to contact or communicate with their account manager.

Of the six commercial trucking managers that responded to the questionnaire regarding satisfaction with their account manager (i.e., EROAD), five gave the highest rating of 5 (Very Satisfied), with one

providing a 4 rating. Similar results (i.e., five providing a 5 rating with one 4 rating) were provided for the question regarding “getting your questions answered.”

Figure 2-12. Survey Results on Satisfaction with Account Managers

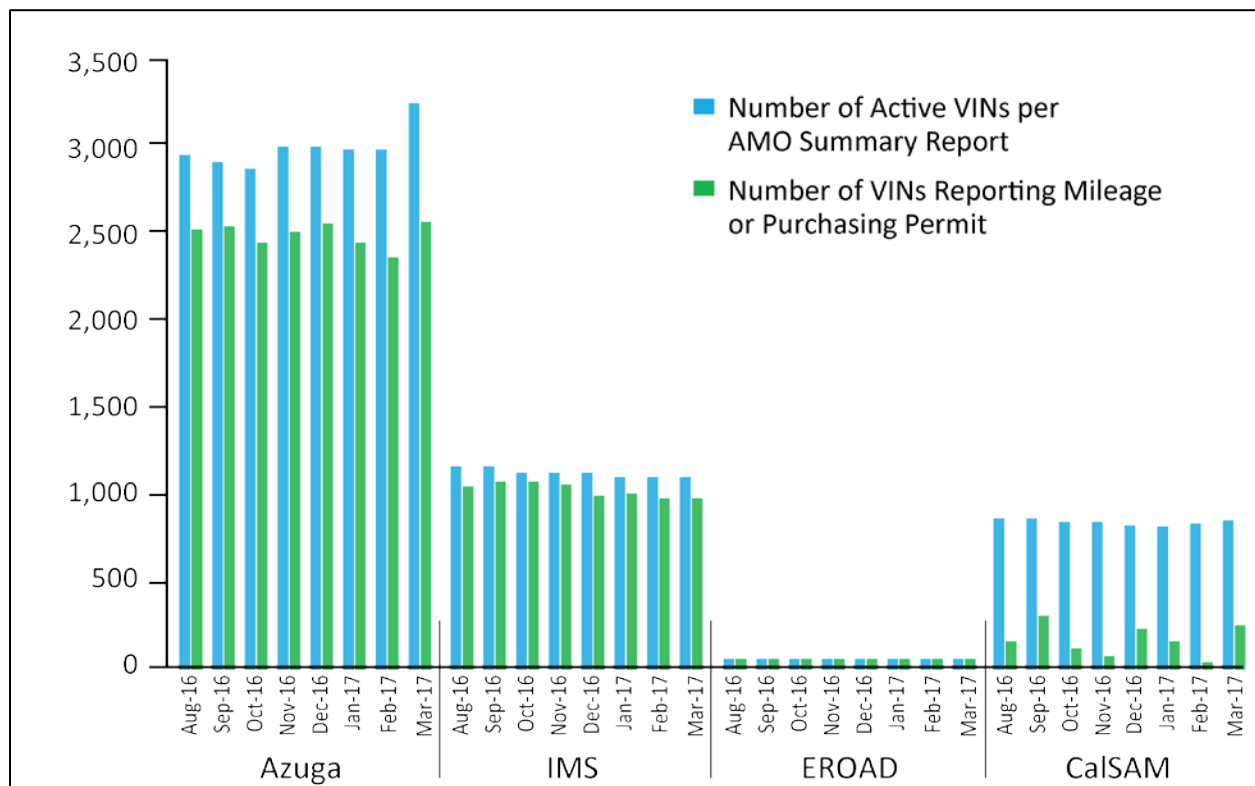


ID	Goal	Criteria	Measures	Analysis Method(s)
Oper04-01	Maintain compliance	Effectiveness of methods for encouraging voluntary compliance	Rate of voluntary compliance by participants, per operational concept	Data analysis Participant surveys Interviews

“Voluntary compliance” began with the participants volunteering for the RCPP. Many were motivated to participate in the RCPP because they were concerned about road maintenance in California and wanted to have a say in the workings of the program, coupled with some curiosity (e.g., wanted to try it, and see if it succeeded or failed) as shown in Figure 2-13.

As shown in Figure 2-14, the greatest difference between the number of vehicles in the RCPP and the number of vehicles actually providing mileage information on a monthly basis—a “compliance” issue as defined by the evaluation team—occurred with the manual methods (as provided by the CalSAM).

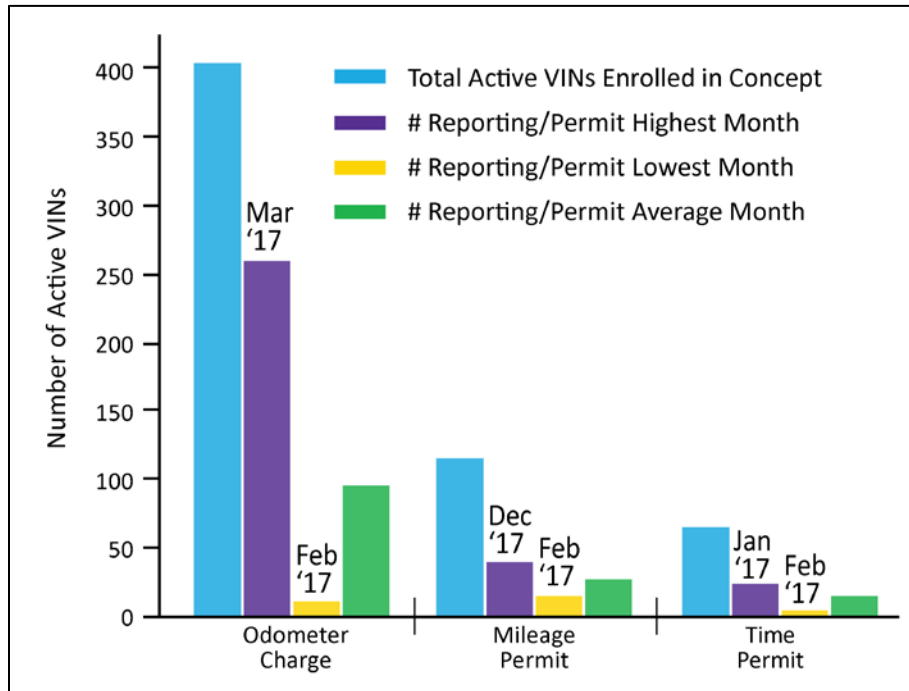
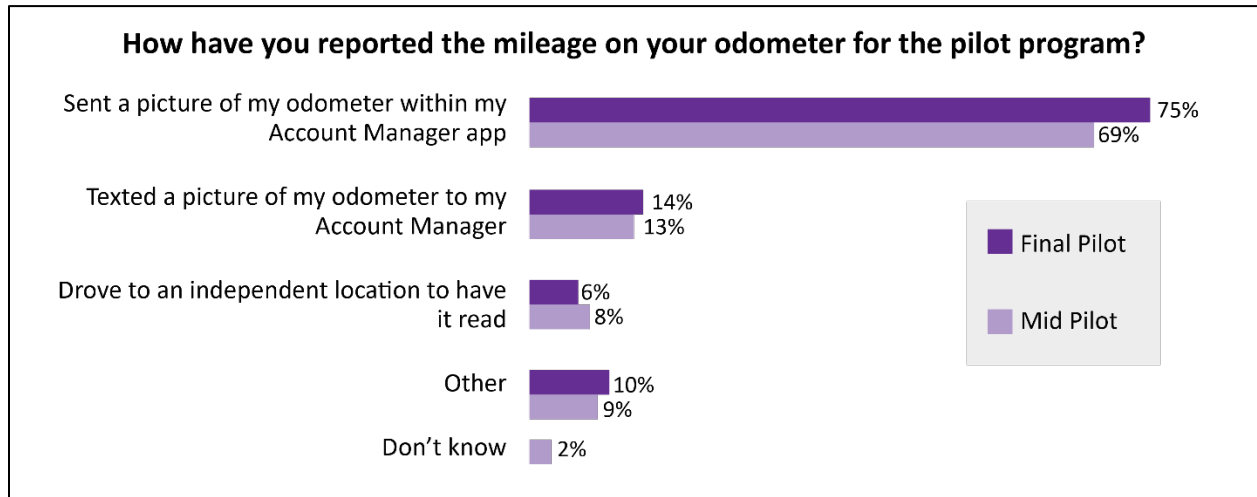
Figure 2-14. Monthly Comparison of Actively Reporting Vehicles Relative to Total Vehicles (Compliant) in the Road Charge Pilot Program



Moreover, as shown in Figure 2-15, of the manual methods, the odometer charge approach appeared to have the greatest percentage of non-reporting vehicles. The most likely reason for this anomaly in regular mileage reporting is that participants were not required to submit monthly odometer readings but could report every few months.

Figure 2-16 provides a summary, based on the surveys, of how these participants reported their odometer mileage. The month with the greatest number of odometer reports was the final month (March 2017) of the pilot since participants were encouraged to close out their pilot accounts with an opportunity to be entered into a lottery for a cash reward.

The number of non-reporting vehicles using automated methods—particularly for Azuga as shown in Figure 2-14 above—is another potential concern. Most of this anomaly is attributable to the smartphone mileage reporting method included in the Azuga offerings (whereas IMS had no such smartphone approaches). The end-of-pilot numbers of actively reporting vehicles relative to the total number of compliant vehicles (as defined by the PDT) for Azuga (as shown in Table 2-8) indicate this to be the case, with the location-based smartphone mileage reporting method having the lowest percentage of actively reporting vehicles, followed by the non-location based smartphone approach. These smartphone approaches still required manual verification using an app for taking pictures of the odometer.

Figure 2-15. Comparison of Actively Reporting Vehicles Relative to Total Vehicles Using Manual Methods**Figure 2-16. Survey Results on Mileage Reporting for the Odometer Charge****Table 2-8. Percent of Actively Reporting Vehicles at End of RCPP (Azuga)**

Reporting Method	Total Compliant Vehicles (per PDT)	Actively Reporting Vehicles	Percent Actively Reporting
Non-location OBD-II Plug-In	326	298	91%
Location OBD-II Plug-In	1,693	1,552	92%
Location based Smartphone	516	351	68%
Non-location based Smartphone	390	335	86%
Telematics	37	32	86%

While the OBD-II plug-in devices and the vehicle telematics demonstrated the highest percentages (in terms of regular reporting of mileage), they were not 100%. Potential reasons for this, as noted in the account manager interviews, include:

- Non-connecting device data events were found to be due to devices not being plugged in after vehicle maintenance, vehicle crash or vehicle sale. These unplugged events typically occurred just once or twice a month for most vehicles; although there were a few instances of the plug-in device being unplugged three or more times in a month.
- Other non-fraud anomalies included VIN code inconsistencies that were worked out with the subcontractor; a smog check referee error; and a logistical issue with participant name change during the pilot.

ID	Goal	Criteria	Measures	Analysis Method(s)
Oper05-01	Be enforceable	Effectiveness of methods for encouraging voluntary compliance	None	None

The TAC decided not to address enforcement in the RCPP, so this aspect of the “enforceability” goal was not addressed during the pilot evaluation. Account managers did note during interviews that enforcement is an important aspect of a full-scale program; and the issues with non-reporting of mileage for some of the road charge methods (i.e., relatively low “voluntary compliance” per the evaluation team’s interpretation of that criterion) demonstrates this. Some account managers noted that an expanded pilot might include research on the compliance and enforcement aspects of a road charge program.

ID	Goal	Criteria	Measures	Analysis Method(s)
Oper06-01	Be enforceable	Resistance of methods to tampering and fraud	Number and description of detected instances of attempted tampering or fraud, per operational concept	Data analysis Interviews

Account managers detected zero instances of attempted tampering or fraud across all operational concepts, and no evidence of data tampering or fraud was reported by the PDT or IAWG. It is important to note, one account manager commented that a comprehensive fraud detection and follow up program was not included in the scope of their contract and that this would be important for a full program. In an operational program, the development of algorithms to detect tampering or fraud and corresponding resolutions, take significant resources to ensure accuracy.

Additionally, the data analysis did not identify any specific instances of tampering or attempted fraud. Given that the road charge was not actually paid by participants, there was little or no reason to commit any sort of fraud. Nevertheless, as previously discussed for OPER04-01 (Maintain Compliance), a number of vehicles did not provide data from month to month. However, this is most likely because some mileage reporting methods did not require monthly odometer reporting (but report every few months).

ID	Goal	Criteria	Measures	Analysis Method(s)
Oper07-01	Have neutral or efficient behavior impacts	Changes in individual road use behavior	Proportion of participants expressing change in behavior as a result of road charge, per operational concept	Participant surveys Focus groups
Oper07-02			Description of individual behavior changes noted as a result of road charge, per operational concept	Participant surveys Focus groups
Oper08-01	Have neutral or efficient behavior impacts	Changes in collective road use behavior	Aggregate change in behavior of all participants, per operational concept	Participant surveys Focus groups

As shown in Figure 2-17, the road charge had minimal impact on the driving behavior of the participants, with approximately 75% of the survey responders indicating that it did not change their behavior. Moreover, an even larger percentage (86%) indicated that they were not driving any less (although no real money was exchanged in the pilot which could have impacted this result).

Figure 2-17. Survey Results on Impact of Pilot Program on Driving Behavior

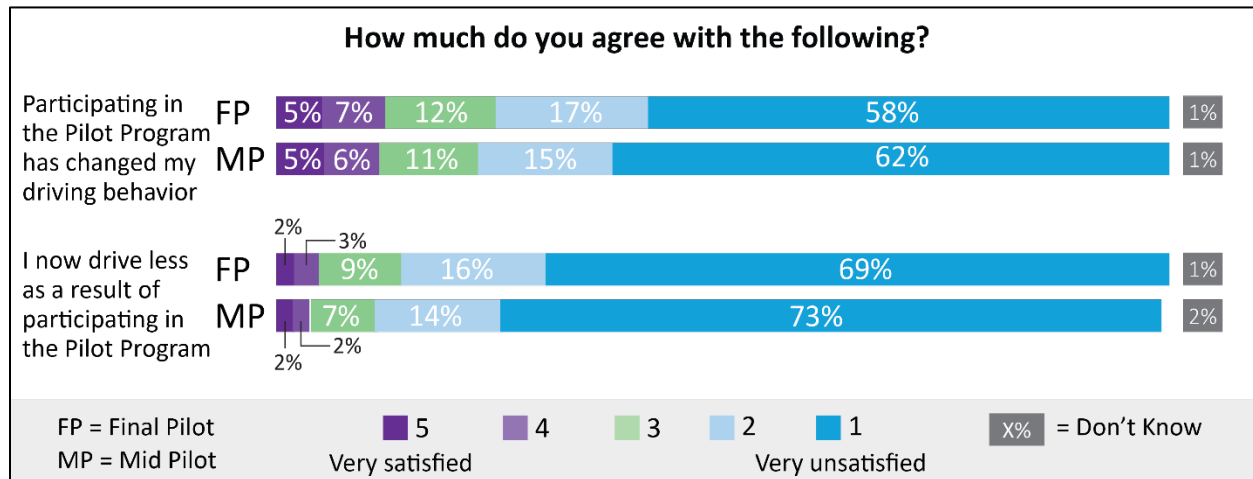
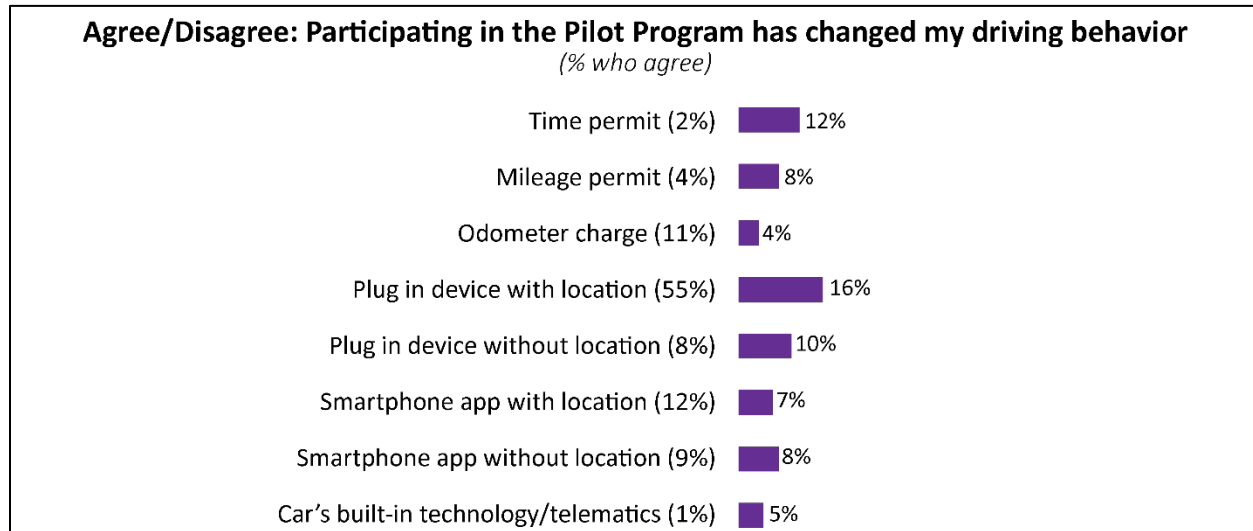


Figure 2-18 shows that respondents of the mid and final pilot surveys who use the “plug-in device with location” are the most likely to agree that participating in the RCPP has changed their driving behavior (and it should be noted that this approach provided other services such as driving scores).

Any changes in driving behavior, however slight, may have been due to the participants’ ability to see their “driving scores” as part of the additional services provided by CAMs offering automated reporting methods. The results of the focus groups indicated that most participants who had access to this information, via an app or dashboard, utilized it. They would look at their scores and think about their own driving styles, and how they could improve their scores. Nevertheless, while focus group participants noted they cared about their scores and wanted to get “the best score,” very few expressed that they actively changed their driving styles.

ID	Goal	Criteria	Measures	Analysis Method(s)
Oper09-01	Integrate with other charges	Ease of administering interoperability with other jurisdictions	Number of FTEs devoted to interoperability during the course of the pilot	Interviews Documentation Review

Figure 2-18. Survey Results on Impact of Pilot Program on Driving Behavior by Reporting Method

Interstate interoperability was simulated in accordance with a TAC recommendation to test interstate interoperability. This simulation involved location-based mileage reporting by IMS starting on January 1, 2017 and running through the end of the pilot, and included the following attributes:

- Simulated charges of 1.5 cents per mile as a separate charge and invoice line item for miles driven in Oregon. Oregon gas tax credits were issued at 30 cents per gallon for miles driven in Oregon.
- Additional information on the invoices sent to RCPP participants (with OBD-II plug-in devices with GPS capability) that drove in Oregon, indicating the charge, the gas tax credit, and that these are simulated charges only.

The results of this simulated test were reported in the AMO monthly reports. For example, the March report indicated that IMS participants drove a total of 2,189 out-of-state chargeable miles, and 9 out-of-state non-chargeable miles in Oregon, incurring a total of \$32.86 in simulated Oregon road usage charges. These participants also consumed an estimated 102 total gallons of Oregon taxable gas, resulting in \$2.33 in net revenues. This simulation does indicate that interstate interoperability is feasible, provided participants have a location-based mileage reporting approach, and that the mapping used by the account managers are accurate with respect to state boundaries. However, since interoperability was not a major focus for the RCPP, and it only included participants using an automated mileage reporting method (OBD-II plug-in devices with location), there were no quantifiable FTEs devoted to this process by the PDT and/or account manager (IMS).

The pilot also included something of a manual approach for achieving interstate interoperability. Manual refund forms were available for participants using the odometer charge, OBD-II MRD without location, and the telematics approaches (i.e., refunds were not available to time permit or mileage permit participants). Thirteen manual refund forms were received during the pilot, all for out-of-state mileage. Ten of these refund forms were from odometer charge participants, and the remaining 3 from OBD-II MRD (without location) participants. (Of course, as with all RCPP transactions, no actual funds were involved with the refund processes)

It is noteworthy that segments of the commercial trucking industry already report miles traveled and gallons of fuel purchased, by state jurisdiction, through IFTA. When asked about the accuracy of mileage reported in the pilot (as either in-state or out-of-state), of the six commercial trucking managers who responded, four responded with “very satisfied” (the highest possible rating), and the other two managers noted that this was “not applicable” to them.

ID	Goal	Criteria	Measures	Analysis Method(s)
Oper10-01	Optimize collection of charges in accordance with enforcement features recommended by the TAC	Difference between expected and realized revenue per mile	Theoretical gross road charge revenue from pilot participants during pilot project	None
Oper10-02			Theoretical adjusted gross revenue expected from pilot participants during pilot project	None
Oper11-01	Optimize collection of charges in accordance with enforcement features recommended by the TAC	Implementation of and adherence to enforcement features recommended by the TAC	Number of enforcement features tested	None
Oper11-02			Description of anomalies detected and action taken	None

The TAC decided not to address enforcement in the RCPP, so these enforcement features aspects of the “operations” goal was not addressed during the pilot evaluation. The members of the PDT and IAWG noted that the inability to enforce a road charge or collect money was a limitation of the RCPP. It is noted that the standard mileage message³¹ from the vehicle to the account manager (for the automated methods) included a number of error codes, such as anomalies in vehicle functions and parameters that could compromise the collection and reporting of road charge data (e.g., check engine light on), disconnected from the vehicle, connected to a new vehicle, location data degraded, inconsistent mileage data between multiple data sources, missed mileage, and the associated date and time. The AMO also included a monthly summary of some of these data – for example, between July 2016 and the end of the pilot on March 31, 2017, a total of 13,001 MRD disconnects were recorded, of which there were 102 instances where the same vehicle had more than 10 disconnects in a single week. This type of information will likely prove useful as part of a compliance effort, helping to identify reasons that some vehicles may not be regularly reporting mileage, and also helping to distinguish between vehicle / device malfunctions and actual fraudulent behavior. (More information on these reported issues and their frequencies during the pilot is provided in the next section on User Experience.)

ID	Goal	Criteria	Measures	Analysis Method(s)
Oper12-01	Be compliant with financial guidelines	Auditability of accounts	Number of account managers audited	Documentation Review
Oper12-02			Number of audits resulting in identification of missing mileage and corresponding amount of mileage	Documentation Review
Oper13-01	Be compliant with financial guidelines	Auditability of account managers	Number of account managers audited	Documentation Review
Oper13-02			Number and description of account manager audits resulting in changes	Documentation Review Interviews
Oper13-03			Description of changes, if any	Documentation Review Interviews

³¹ As documented in the Interface Control Document (ICD). The California RCPP ICD was based on the previous Oregon ICD (OReGO), expanded to include additional error codes.

The PDT conducted audits of all the account managers during the RCPP. The goals of this audit were as follows:

- **Individual account auditing:** Based on one month of data, compare the analysis (or trace) raw data provided by each account manager with data provided in the VIN Summary message, and observed any anomalies that have occurred. December 2016 data were used for this analysis. This audit process was designed to provide additional assurances that account managers are sending data to the AMO that corresponds to their own raw data.
- **Account manager documentation analysis and interviews:** The audit team requested and received a range of system documentation from the account managers. They then developed a questionnaire that addressed a range of pilot development issues and circulated it to the account managers in advance. During the interview, the audit team asked account managers to provide input into how they created their system; explain successes and challenges (if any); and offer suggestions to improve the program.

A total of 82 accounts were audited representing 87 vehicles. The audit confirmed that the data for all test VINs in the VIN Summary Report were identical to raw data used by account managers to prepare their monthly reports, subject to rounding errors; and in the case of EROAD, conversion from kilometers (unit in which EROAD raw data is stored) to miles (unit in which the VIN Summary Method is reported).

This audit exercise did not result in any modifications to the data collection or administration systems. A number of lessons learned for future pilots and potential road charge system implementation were identified, including:

- Integration with the live DMV registry would bring major benefits for quality control and in particular could eliminate participants having to enter their own VIN.
- Systems should be designed with participant compliance in mind to measure both initial compliance and ongoing compliance automatically, and to automatically send reminder emails to participants who are not compliant.
- Mileage reporting vendors (like Driveway, Vehcon, and SmartCar) should have test systems as well as production systems so that they can test new features and modifications with their technology partners without impacts to the live, production system.
- There should be tighter integration between the account managers and mileage reporting vendors (to provide a single “face” to the system for participants).
- Financial record requirements should be added. Because real money payments were not part of the RCPP, account managers did not need to keep financial-grade records of monetary transactions. Real money payments will be part of any potential future mandatory system, so maintaining financial grade records will be vital.

2.3.4 User Experience

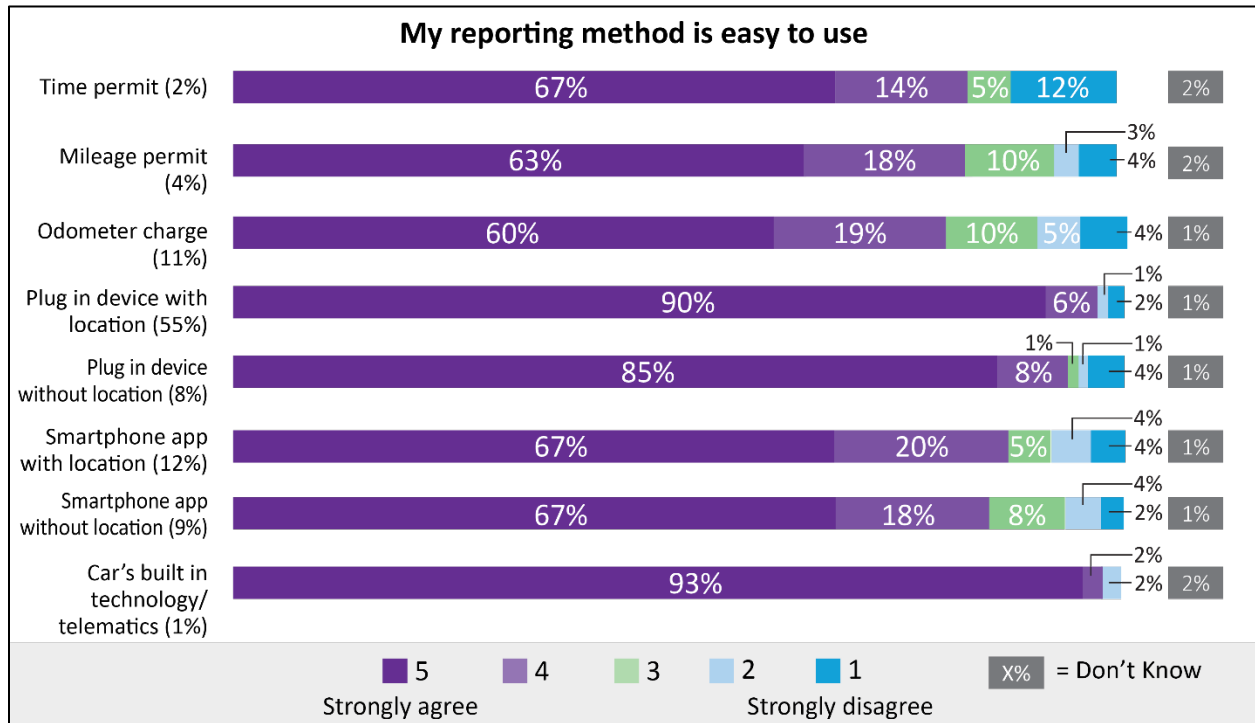
SB 1077 notes that “bundling fees for roads and highways into the gas tax makes it difficult for users to understand the amount they are paying for roads and highways” This category addresses how users interface with the road charge system and their experiences in that regard.

ID	Goal	Criteria	Measures	Analysis Method(s)
UX01-01	Administer Road Charges effectively	Users' ease of recording and reporting highway use	Number of complaints about ease of recording and reporting, per operational concept	Data analysis Participant surveys Focus groups

Participants who chose an automated approach were more likely to agree that their reporting method was easy to use as compared to those using manual methods. While the majority of participants believed that their reporting method was easy to use, attitudes varied depending on which mileage reporting method the participant chose. As shown in Figure 2-19, the final pilot survey results revealed the vast majority of plug-in device users and those using their vehicle’s built-in technology agreed that their reporting method is easy to use.

“The plug in thing is super easy”
San Luis Obispo, Plug in device with location user

Figure 2-19. Survey Results on “My Reporting Method is Easy to Use”



Participants in the focus groups that used the plug-in device (with or without location) frequently expressed how easy it was to report their miles.

Some focus group participants expressed that they chose their reporting method depending on how easy it seemed to report mileage, and ruled out some if they looked too difficult to use.

Participants who did use a manual reporting method usually did not express that they were inconvenienced by reporting their mileage.

“I thought (my reporting method) would be more work. I had to get the odometer read by a mechanic or something. Turns out, they just wanted to text me, they [wanted me] to take a picture of the odometer reading and text it back. It was super simple. It was easier than I thought.”

San Jose, Mileage Permit user

When asked about the overall ease of participating in the RCPP, five of the six commercial trucking managers who responded gave this the highest rating (i.e., 5 – very satisfied), with the other responding manager providing a 4 rating. One manager noted that “after installation, all we had to do was drive the trucks: it was very simple.”

When asked about their drivers’ reactions to the technology installed in the vehicle, four of the six who responded noted “neutral” reactions, with the other two responding with “positive” reactions. With

respect to their drivers' reactions to the reporting requirements, all six managers who responded indicated neutral reactions.

ID	Goal	Criteria	Measures	Analysis Method(s)
UX02-01	Administer Road Charges effectively	Users' ease of recording and reporting highway use	Number of calls to helpline on which references to inadequacies of user instructions were mentioned, per operational concept	Documentation Review Focus groups
UX02-02			Description of issues related to inadequacies of user instructions mentioned on calls to helpline	Documentation Review Focus groups

Two participant support mechanisms were provided during the RCPP:

- California RCPP Customer Service Center**, comprising both a call center staffed by trained agents for 24/7 response and an email response team staffed by trained agents for responses within 24 hours. The objectives of the Customer Service Center were to provide the following:
 - Timely, professional, and accurate customer support to volunteers selected to participate in the California RCPP
 - Actionable information to the project team to identify, diagnose, and correct emergent or recurrent issues that could affect pilot performance or participant satisfaction
 - Forwarding of account manager related questions to each respective account manager for resolution and policy-related questions to Caltrans to be addressed by the department
- Separate and independent **account manager Customer Care Centers** were operated by each of the four account managers. Each of the account manager Customer Care Centers included both call center and email response operations. The objectives of the various account manager Customer Care Centers varied, but in general aimed to resolve customer issues such as installation help, account troubleshooting, and billing issues. Account manager Customer Care Centers did not answer policy questions or general pilot questions outside of their scope; such questions were forwarded for handling by either the Customer Service Center or Caltrans.

The number of participant calls and emails to participant support mechanisms are shown in Figure 2-20. As shown, calls and emails declined over the course of the program, with a slight increase during the last month, likely reflecting some uncertainty with the close out process.

Figure 2-20. Number of Customer Service Center and Customer Care Center Inquiries

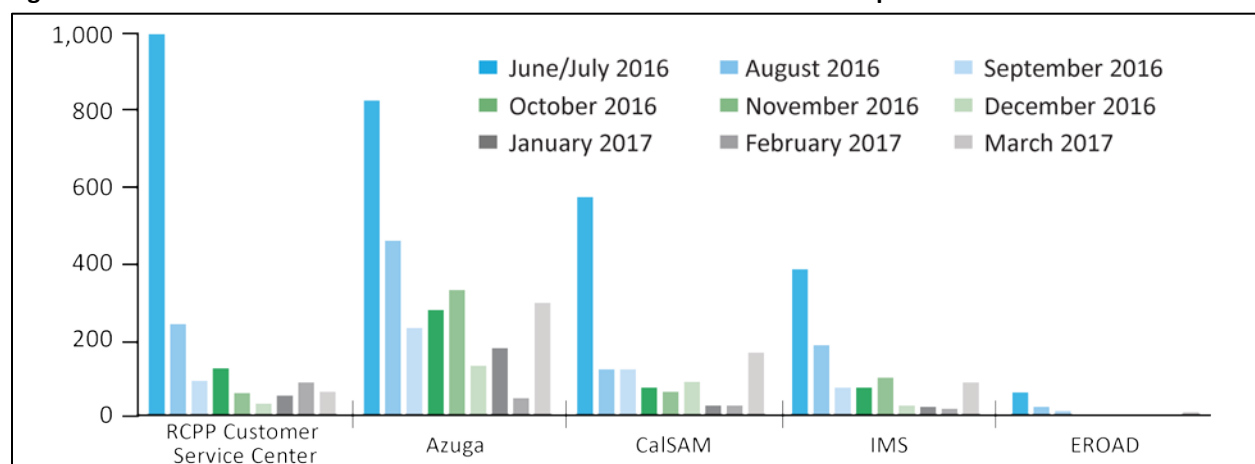


Figure 2-21 summarizes the call inquiries to the RCPP Customer Service Center during the course of the RCPP. Figure 2-22 summarizes the email inquiries to the RCPP Customer Service Center.

Figure 2-21. Call Inquiries to RCPP Customer Service Center (June 2016 - March 2017)

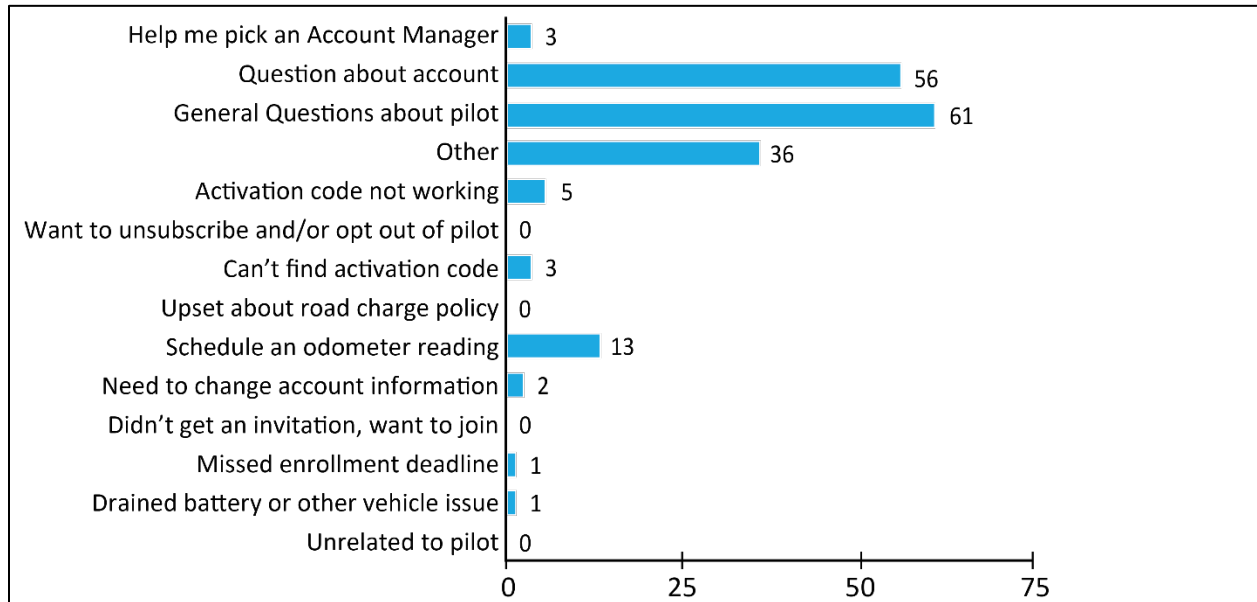
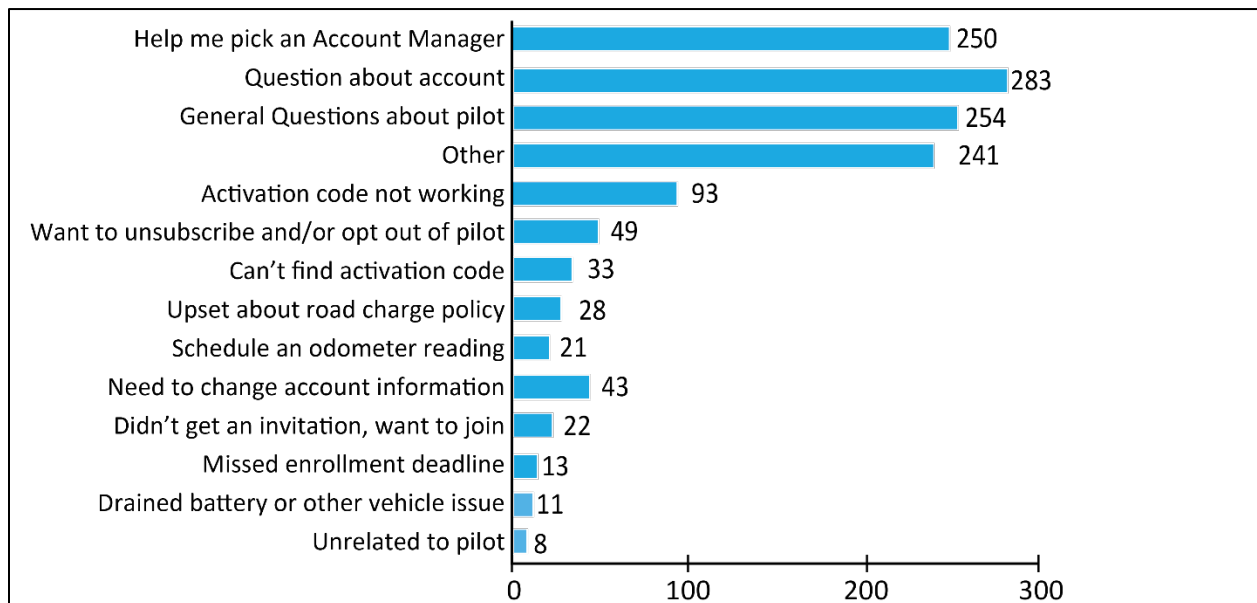


Figure 2-22. Email Inquiries to RCPP Customer Service Center (June 2016 - March 2017)



The majority of inquiries to the account manager Customer Care Centers involved some sort of technical support. The focus groups included participants who reported contacting an account manager help line for assistance. Experiences with the help line were mixed. Some participants who contacted the help line were provided the assistance that they needed. For example:

- *“I called CalSAM. I couldn’t create my account, and I think I sent them an email, and someone called me within minutes and sent me the email and got it fixed.”—San Luis Obispo, smartphone app without location user*

- *“I spent maybe 15 minutes writing an email and they got back within a day, sent a little box, I put my little device in the box, sent it back, and that was it.”—Sacramento, smartphone app without location user*

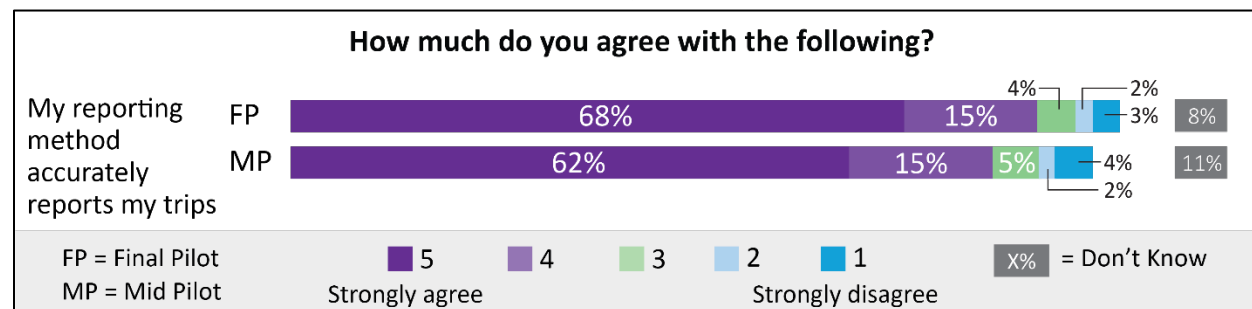
Others felt that their issues were not resolved. For example:

- *“I (used the) remote technology thing, and there were a couple times I got emails from them that I was disconnected from the system. And I called them, and I said, ‘Well, I didn’t do anything.’ And they said, ‘Well, sign in again.’ It was never clear to me, and it didn’t instill a lot of confidence in me when I would call the (help line).” —San Jose, Car’s built-in technology/In-Vehicle Telematics user*

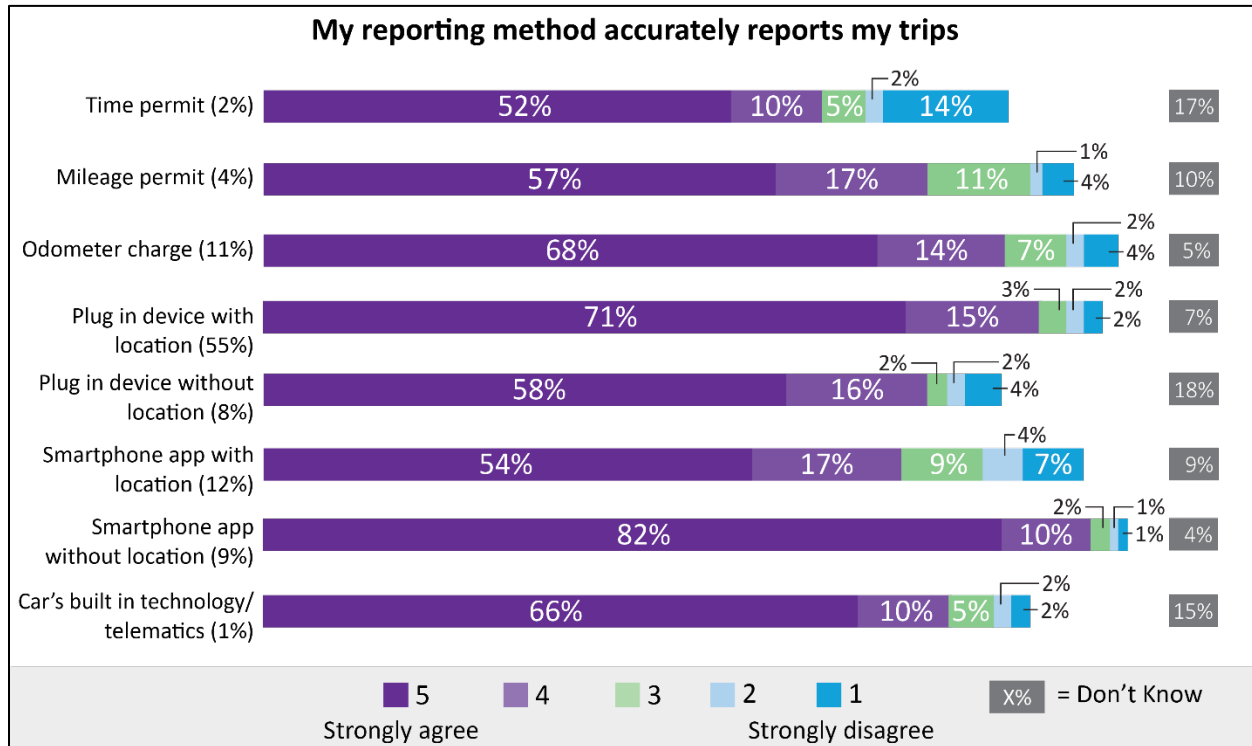
ID	Goal	Criteria	Measures	Analysis Method(s)
UX03-01	Administer Road Charges effectively	Quality/accuracy of highway use data reported	Percentage of participants satisfied with accuracy of road use data reported on road charge invoices	Participant surveys Interviews
UX03-02			Estimated percentage deviation of road use data reported from “true distance”	Data analysis

Figure 2-23 indicates that a very large percentage (83%) of the participants were satisfied with the accuracy of the of the road use data reported on their invoices. This percentage increased slightly from the mid-pilot surveys to the final pilot surveys. Only 5% of the participants disagreed with the notion that the invoices accurately reported their trips.

Figure 2-23. Survey Results on Satisfaction with Accuracy of Data on Invoices



Looking at the final pilot survey results by the approach used (Figure 2-24) indicate the plug-in device with location has the highest level of agreement in regard to accurate reporting of mileage, while the time permit had the greatest level of disagreement in this regard (16%), followed by the smartphone app with location (11%). It is important to remember the time permit participants did not record or report mileage, so such disagreement with the notion of “accurately reporting one’s trips” for the time permit is not completely unexpected.

Figure 2-24. Survey Results on Satisfaction with Invoice Data Accuracy by Reporting Method

Prior to the start of the pilot, the PDT conducted accuracy testing of the automated mileage reporting technologies. The testing involved comparing the mileage reported by each automated technology with the “true distance” as measured by a GPS-based system certified for accuracy. The results of this pre-pilot testing are summarized in Table 2-9, indicating a significant degree of accuracy. These are certainly within the range of odometer accuracy which is typically + / - 3%.

Table 2-9. Mileage Reporting Accuracy Test Results

Reporting Method	Vendor	Average Error	Minimum Error	Maximum Error
OBD-II (GPS)	IMS	2.34%	0.11%	4.44%
OBD-II (No GPS)	IMS	0.98%	0.18%	1.76%
OBD-II (GPS)	Azuga	1.50%	0.79%	3.23%
OBD-II (No GPS)	Azuga	1.69%	0.04%	3.33%
Smartphone (GPS)	Vehcon	0.43%	0.00%	1.29%
Smartphone (No GPS)	Driveway	0.29%	0.00%	0.84%

From the perspective of the commercial trucking managers, the average responses – on a scale of 1 to 5 with 5 being very satisfied and 1 being very unsatisfied – were as follows:

- Data provided was accurate—4.67 (with one no response)
- Correctly identified fuel tax credits—4.75 (with three not applicable)

ID	Goal	Criteria	Measures	Analysis Method(s)
UX04-01	Allow user choice	User acceptance of methods available	Proportion of each operational concept available chosen by participants	Data analysis
UX04-02			Percentage of participants satisfied by choices available	Participant surveys Focus groups

As discussed in Section 1, several operational concepts were available from which participants could choose. The number of compliant vehicles (as defined by the PDT) and the number of actively reporting vehicles within each concept (as of the end of the pilot) is shown in Table 2-10. Of the 3,937 actively reporting vehicles at the end of the program, 72% chose automated mileage reporting methods with location-based technology, another 19% chose an automated method with no location information, and 9% reported mileage via manual methods.

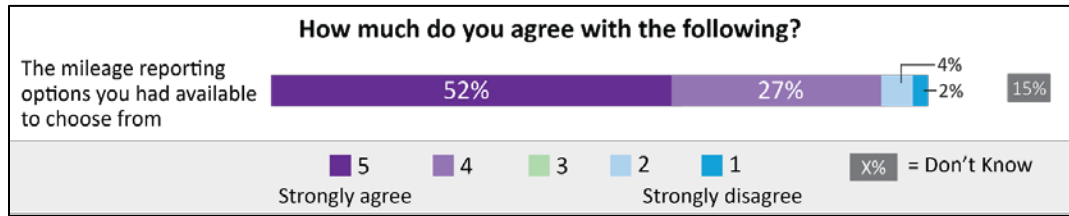
Table 2-10. Operational Concepts and Technologies Used in the RCPP - March 2017

Operational Concept	Account Manager	Reporting Method	Number of “Compliant Vehicles” During March ¹	Number of “Actively Reporting Vehicles” During March ²
Automated Methods	Azuga	Non-location-based OBD-II	326	298
		Location-based OBD-II	1,693	1,552
		Location-based smartphone app (Driveway)	516	351
		Non-location-based smartphone app (Vehcon)	390	335
		Telematics (SmartCar)	37	32
	Total Azuga		2,962	2,568
	IMS	Non-location-based OBD-II	139	124
		Location-based OBD-II	915	816
		Telematics (SmartCar)	23	23
	Total IMS		1077	963
	EROAD (Heavy Vehicles)		55	53
Total Automated Methods			4,039	3,584
Manual Method	Arvato (CalSAM)	Odometer	757	258
		Mileage Permit	190	58
		Time Permit	88	37
Total Manual Methods			1,035	353
TOTAL PILOT PROGRAM			5,129	3,937

¹ Compliant – Enrolled vehicle that took the initial steps to report mileage (e.g., plugged in device, downloaded app, purchased permit)

² Actively Reporting – Enrolled vehicles that provided mileage information during the RCPP. The number of "actively reporting vehicles" varied from month to month. The number of actively reporting vehicles for March (i.e., vehicles that reported mileage in March) was 3,937.

The pre-pilot participant survey results indicated most participants (79%) were satisfied with the mileage reporting options they had to choose from, and over half were very satisfied (Figure 2-25).

Figure 2-25. Survey Results on Choices Available

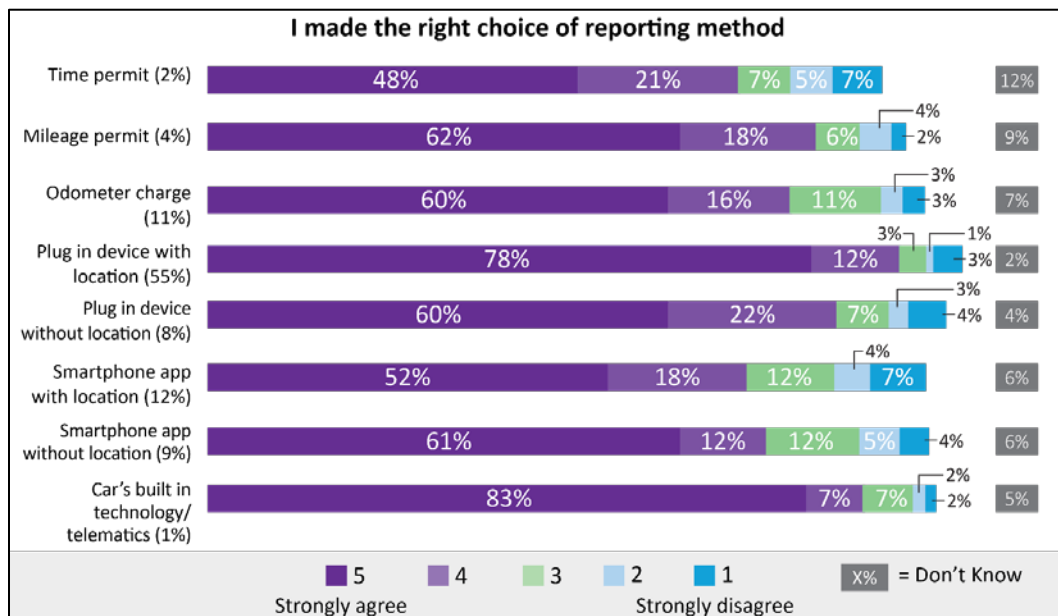
While most participants were satisfied with the choices available, the focus group results indicated they may not have had a complete understanding of all the methods available. Participants felt the tools for evaluating methods and account managers at the point of enrollment did not lead them to feel they had made a fully informed choice.

ID	Goal	Criteria	Measures	Analysis Method(s)
UX05-01	Allow user choice	User acceptance of methods available	Percentage of participants satisfied by their original choice of operational concept	Participant surveys Focus groups
UX05-02			Percentage of participants that changed operational concepts during pilot	Participant surveys Focus groups

Few participants believed that a different reporting method would have been better than the one they chose, and most (83%) agreed that they made the right choice of reporting method. Attitudes did vary depending on which method the person chose. The final pilot survey results by the approach used (Figure 2-26) indicate that the level of dissatisfaction in the selected reporting method was greater for the time permit (12%) and the smartphone app with location (11%).

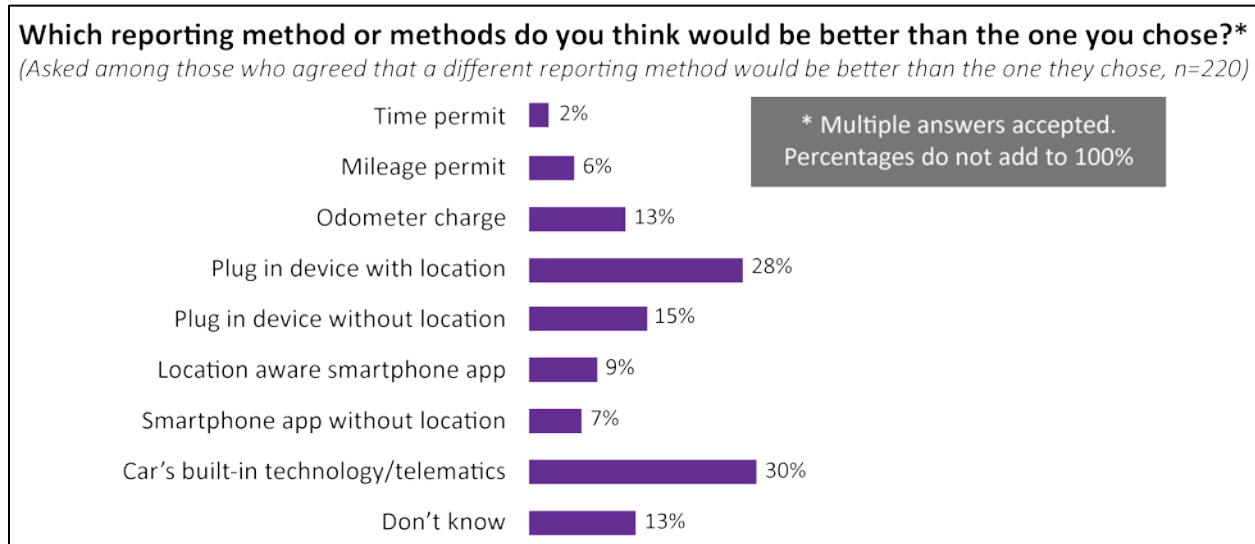
"I've learned more listening to the way you guys have been doing things tonight than what I knew at the beginning...Now I can see the good and the bad from (different reporting methods)... give me more information! (The reporting methods) were not clear when I started. I saw odometer and I thought that was easy."

Orange County, Odometer charge user

Figure 2-26. Survey Results on Selection of the Right Reporting Method

Among those participants that believed a different reporting method would be better than the one they chose, nearly half (43%) thought that the plug-in device (with or without location) or the vehicle's built-in technology (30%) would be better choices (see Figure 2-27).

Figure 2-27. Survey Results on Preferred Mileage Reporting Method*



During open enrollment (November 1 to November 15, 2016), participants were offered the option to change their reporting method and/or account manager. Only 90 participants changed their reporting method and/or account manager during this period, confirming the data shown in Figure 2-26 above (indicating that most participants believed they made the right choice of reporting method.) Of these 90 participants, 51% changed their reporting method, 29% changed their account manager, and 19% changed both.

Most of the focus group participants did not switch reporting methods or account managers during open enrollment, as most were comfortable with the method they were using and did not see the need to change. Those who did switch expressed different reasons for switching. Some were motivated by an issue with the method they had chosen the first time, while others were curious what other reporting methods would be like. There were also some focus group participants who chose to stick with a “failed” method so they could provide their experience as feedback by raising their challenges when they responded to surveys and other feedback opportunities.

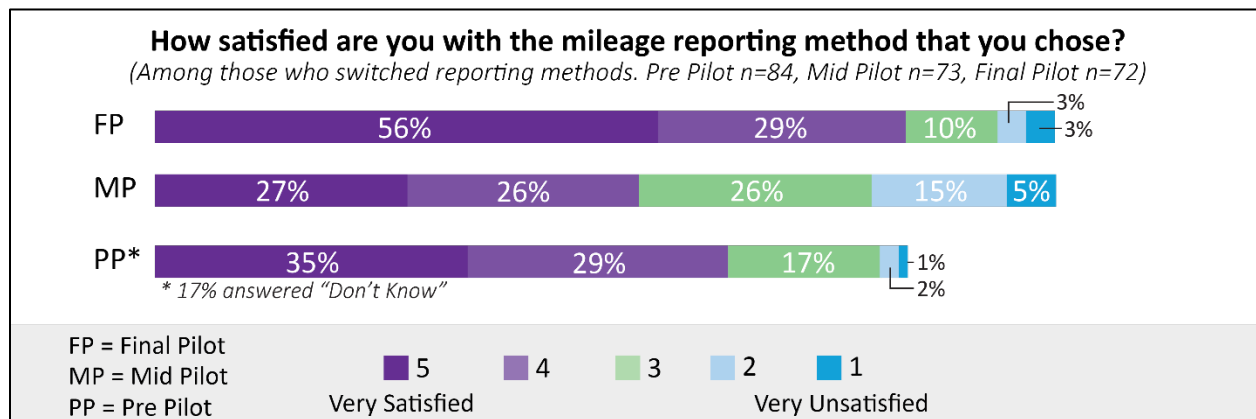
ID	Goal	Criteria	Measures	Analysis Method(s)
UX06-01	Allow user choice	User acceptance of methods available	Among participants who changed operational concepts, percentage that are satisfied with the change process	Participant surveys Focus groups

Those who changed reporting methods and/or account managers during the mid-pilot open enrollment period in November were generally satisfied with the process overall. Among those who changed reporting method, 75% were satisfied with the overall process. Among those who changed account manager, 70% were satisfied.

ID	Goal	Criteria	Measures	Analysis Method(s)
UX07-01	Allow user choice	User acceptance of methods available	Among participants who changed operational concepts, percentage that are satisfied with their new choice	Participant surveys Focus groups

In the pre-pilot survey, participants who later changed their reporting method and/or account manager were largely satisfied or could not give a rating of their reporting method. In the mid-pilot survey, 20% of participants that later made changes were unsatisfied with their reporting method. In the final pilot survey, after the changes were implemented, satisfaction increased to 85% and very few were unsatisfied—suggesting that most participants were satisfied with their new reporting method (see Figure 2-28).

Figure 2-28. Survey Results on Chosen Reporting Method for Participants who Switched



The focus groups included participants who switched their reporting method and/or account manager, and when asked why they chose to switch:

- Some participants simply wanted to try a different method to see what it was like.
"(By) switching, I just I felt that (I was doing) my due diligence to the program, I should try something else." San Luis Obispo – Plug-in device to smartphone app user
- Some thought that a new reporting method would be easier.
"(I) mainly (switched because) I didn't like the reporting method I had chosen ...I found I liked the plug-in device better." Irvine – Time Permit to Plug-in device user"
- While others chose to switch because they experienced a technical issue.
I was not about to plug anything into that jack (in my car), I eventually switched to Azuga smart phone with location." Orange County – Plug-in device to smartphone app user

Most participants who switched expressed satisfaction with their new reporting method or felt that they resolved the technical issue they experienced.

ID	Goal	Criteria	Measures	Analysis Method(s)
UX08-01	Allow user choice	Market availability of methods	Number of operational concepts recommended by TAC made available to pilot participants	Documentation Review
UX08-02			Number of operational concepts available during the entire pilot project	Documentation Review
UX09-01	Keep pace with change over the long term	Openness of system architecture for future providers	Number of vendors participating in pilot, per operational concept	Documentation Review

As discussed in Section 1 (shown in Figure 1-13), five operational concepts were made available to the RCPP participants. The account managers and technology providers are shown in Figure 2-29.

Figure 2-29. Account Managers and Technology Providers

CAM	CAM	SAM	CVAM
Azuga	IMS	Arvato	EROAD
1. Azuga OBDII MM (no loc) 2. Azuga OBDII MM (location) 3. Vehcon Smartphone MM 4. Driveway Smartphone MM 5. Smartcar Vehicle Telematics	1. IMS OBDII MM (no loc) 2. IMS OBDII MM (location) 3. Smartcar Vehicle Telematics	1. Time Permit 2. Mileage Permit 3. Odometer Charge with verification by official inspection station 4. Odometer Charge supported by smartphone app (powered by Arvato w/ Vehcon support)	• EROAD Commercial Vehicle Mileage Meters

ID	Goal	Criteria	Measures	Analysis Method(s)
UX10-01	Keep pace with change over the long term	Long-term ability of methods to incorporate other services	Number and description of other services made available during pilot	Documentation Review Interviews
UX10-02			Number and description of other services that could be made available to road charge payers	Documentation Review Interviews

In the RCPP, participants who chose an automated recording and reporting method were offered several vehicle-related services at no additional cost during the pilot. Azuga’s additional services included the following:

- Visual trip logs
- Driving scores
- Safe zones
- Vehicle health notifications
- Battery voltage notifications
- 2MyCar
- Achievements or “Badges”

IMS offered several additional services as part of their DriveSync® personal telematics, including the following:

- “Trip IQ”

- “Find My Vehicle”
- Vehicle health
- Incident assistance
- On-demand roadside assistance

It is noted that IMS is already offering these services to the general public, and Azuga plans on providing these offerings (outside of a road charge pilot) sometime in the future. Other vehicle-related services will likely include insurance and emissions monitoring and reporting.

EROAD provides additional services of interest to fleet managers of trucks and other heavy vehicles, including the following:

- Automated and electronic IFTA and IRP reporting
- Safety reports and alerts
- Fleet management
- Fuel management
- Fleet optimization reports
- Federal Motor Carrier Safety Administration-compliant hours of service, driver account management, and hours-of-service violations reports

It is noteworthy that two commercial trucking managers used manual logging and reporting methods for IFTA and are continuing with the EROAD solution following the completion of the pilot program. More detailed information on all of these services is provided in Section 1.2.4.4.

ID	Goal	Criteria	Measures	Analysis Method(s)
UX11-01	Provide methods that are available, adaptable, reliable, and secure	IT availability of methods	Percentage up-time of mileage reporting subsystem, per operational concept	Interviews
UX11-02			Percentage up-time of web-based account management features	Interviews

Account manager interviews found reported up-time³² percentages greater than 99% for web-based account management services. Account managers experienced no system outage events.

ID	Goal	Criteria	Measures	Analysis Method(s)
UX12-01	Provide methods that are available, adaptable, reliable, and secure	Long-term adaptability of methods to changing technologies	Observed ability of operational concepts to be updated (hardware or software)	Interviews Documentation Review

The adaptability of mileage methods to changing technologies was not observed during the 9-month pilot period; although the audit of account managers did note some initial challenges in getting the telematics interface right. One account manager experienced issues with one of their other service offerings that had to be updated during the pilot.

³² In computer terminology, “uptime” is the time during which a machine, especially a computer, is in operation.

ID	Goal	Criteria	Measures	Analysis Method(s)
UX13-01	Provide methods that are available, adaptable, reliable, and secure	Reliability of methods	Number of instances of technical support, per operational concept	Data analysis
UX13-02			Average time to resolve technical issues, per operational concept	Participant surveys
UX13-03			Description of technical support instances	Focus groups Interviews

Figure 2-30 identifies the number of vehicles experiencing device errors by month and device type (for plug-in devices).

Figure 2-30. Vehicles Experiencing Device Errors

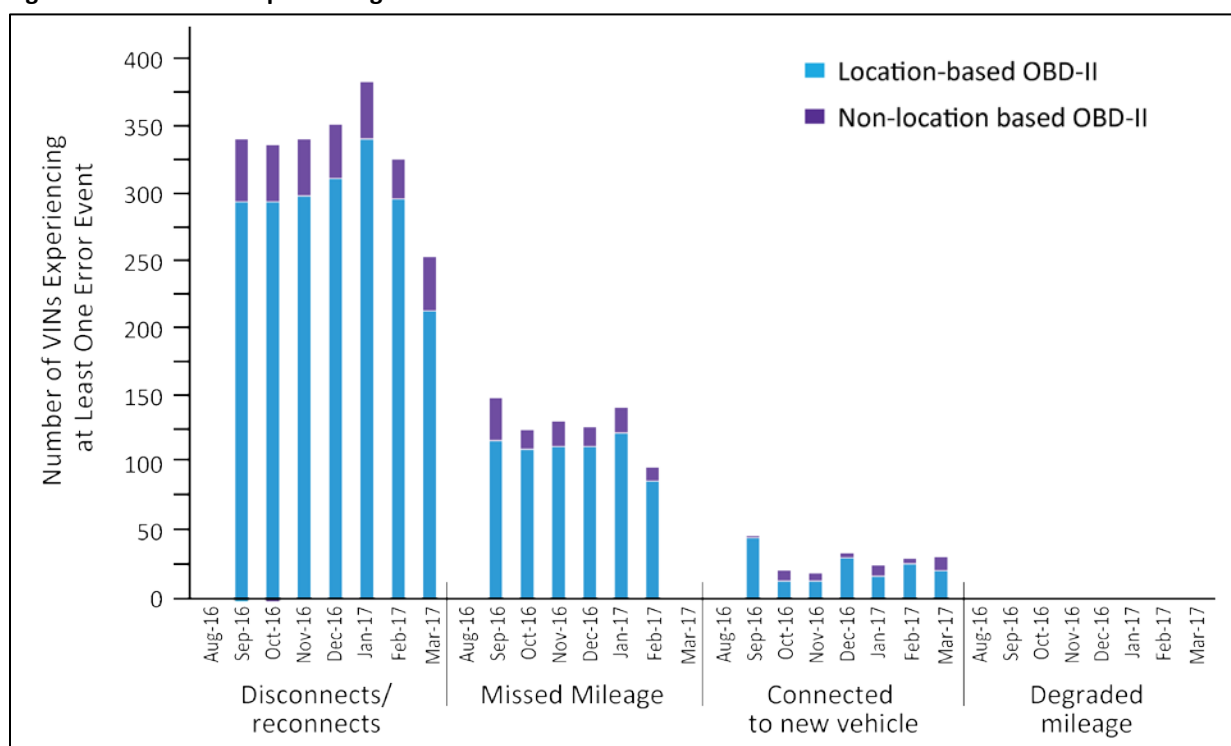
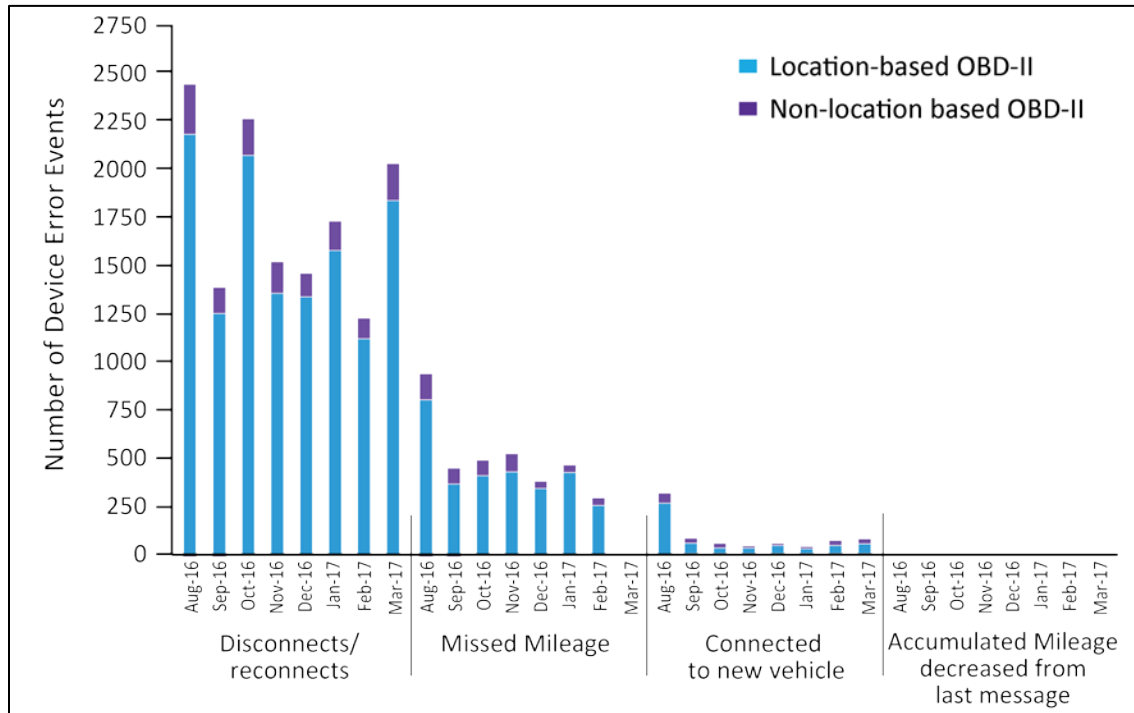


Figure 2-31 provides more specific information on the number of device error events and types during the RCPP. As previously discussed, such information will likely be useful as part of future compliance and enforcement activities for a road charge.

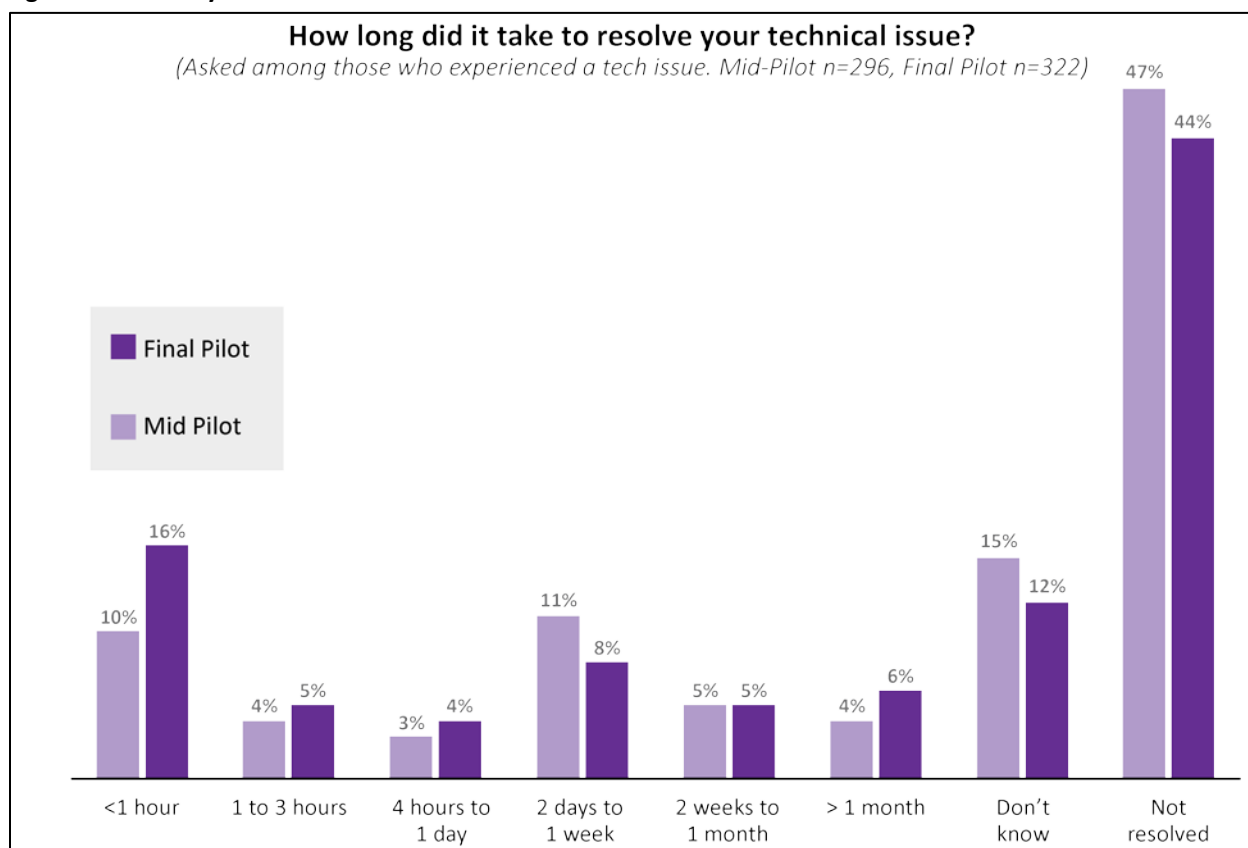
Figure 2-31. Device Error Events

Technical support inquiries received by the RCPP Customer Service Center were redirected to the specific account managers. In total, there were 2,069 technical support inquiries that were handled among the four account managers shown in Table 2-11.

Table 2-11. Technical Support Inquiries by Account Manager

Account Manager	Total Accounts	Technical Support Inquiries
Azuga	2,963	1,555
CalSAM	1,013	268
EROAD	55	2
IMS	1,094	244

In the mid- and final pilot surveys, 15% of technology users reported experiencing a technical issue with their reporting method, with nearly half reporting the issue was not solved to their satisfaction. Figure 2-32 indicates nearly 50% of technical issues in both the mid- and final pilot surveys were not resolved. However, it's important to note the number of people experiencing a technical issue was 296 for the mid-pilot survey and 322 in the final pilot survey; and nearly 50% of these numbers represent very small fraction of all RCPP participants. Furthermore, it is unknown if everyone who experienced a technical issue actively attempted to resolve it, which would contribute to the "Not Resolved" percentages shown. About 16% of technical issues were resolved in less than 1 hour, which increased slightly from the mid-pilot surveys, and nearly 10% of technical issues took between 2 days and 1 week to resolve.

Figure 2-32. Survey Results on Technical Issue Resolution Time

The focus groups included participants who reported experiencing a technical issue. Descriptions of technical issues varied depending on the participant's experience.

- *"My module with GPS location did not work, wasn't compatible with my car. So about a month into the pilot, when it read I had driven zero miles, I just contacted Azuga or whoever the manufacturer of the device was through email, and they stated that the device wasn't capable of recording mileage through GPS with my electric car. So they said 'We'll send you a box, send it back, and please pick a different method.' And that's what I did." – Sacramento, smartphone app without location user*
- *"Yeah, I was the one who did the remote technology thing, and there were a couple times I got emails from them that I was disconnected from the system. And I called them, and I said, 'Well, I didn't do anything.' And they said, 'Well, sign in again.' It was never clear to me, and it didn't instill a lot of confidence in me when I would call the 1-800-we'll-help-you line." – San Jose, In-Vehicle Telematics user*
- *"I had the issue—when they unbeknownst send me this plugin device, I tried for two weeks to find out... I needed a statement from them to identify me against my automobile manufacturer invalidating my software warranty, because my car was still under warranty. And no one could give me that. I went back and forth at least for two weeks to get someone to say, yes, you will not incur any damages if your automobile manufacturer voids your warranty. And so at that point, that's when I just sent the thing back and changed my (reporting method). So I did have frustration trying to understand whether or not they had actually thought that through." – Orange County, smartphone app user*

The PDT noted during the interviews that the call center did respond to a complaint about the Driveway application, but they were not able to resolve the problem during the course of the pilot. Interviews with the account managers revealed the following issues related to the technical support inquiries:

- Mobile app performance issues (not compatible with new versions of iPhone or Android operating system)
- VIN recording issues—fixing issues with participants accidentally keying in the incorrect VIN
- Enrolling a new vehicle due to a crash
- Initial setup issues for onboard telematics—participants not understanding they needed a subscription to the telematics service prior to activation
- Participants reporting mileage for incorrect vehicle
- Smog check referee mixing up report for two vehicles
- Battery drain on mobile device when GPS turned on to support the smartphone app
- Some questions regarding timing and data transmission cutoff for including trips in an invoice
- Participant charged for travel on a new private road

When asked if they had experienced any technical issues with the equipment, all but one of the six commercial trucking managers that responded indicated “none.” The one who responded in the affirmative to this question noted that the units went offline, but that EROAD quickly addressed this problem.

ID	Goal	Criteria	Measures	Analysis Method(s)
UX14-01	Provide methods that are available, adaptable, reliable, and secure	Security of methods	Number of instances of participant data being compromised, per operational concept	Documentation Review Interviews
UX14-02			Description of data compromising events, if any	Interviews
UX14-03			Percentage of participants satisfied with data security, per operational concept	Focus groups Interviews

Pilot participants who responded to the surveys were given the opportunity to describe any data compromising events by using an open-ended question that was asked if the respondent reported that they experienced a privacy concern. In the open-ended response, there are no actual instances of participants being directly affected by a data compromising event. Rather, participants expressed there is a possibility that the data they are providing could be compromised, but may not have fully understood the privacy protections and data security provisions in place and required by SB 1077. For example:

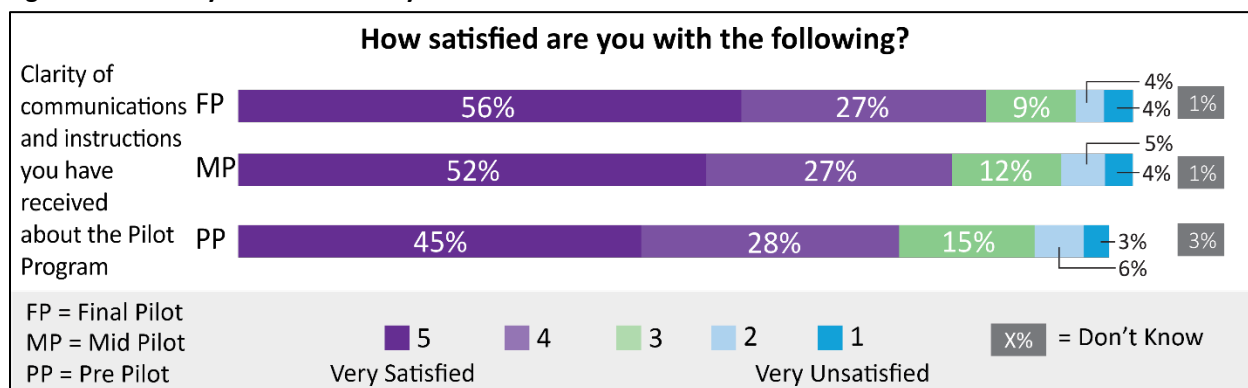
- *“The password I used was compromised on another site, this means that my location could have been acquired without my knowledge and used against me.”*
- *“I remain worried that a program which tracks my location and provides that data to the State could be abused by law enforcement, particularly Federal Authorities, who now can request data without probable cause and without my knowledge.”*

The commercial trucking managers were also asked about the security of their information. Of the six companies that responded, four provided the highest rating of 5 (very satisfied), with the other two providing a 4.

ID	Goal	Criteria	Measures	Analysis Method(s)
UX15-01	Be transparent about how charge works	User understanding of system, including choices, operations, and invoices	Percentage of participants expressing understanding of choices available	Participant surveys
UX15-02			Percentage of participants expressing understanding of how their choice works	Participant surveys Focus groups

The participant surveys indicated (Figure 2-33) most participants (83%) were largely satisfied with the clarity of communications they received during the RCPP, and satisfaction ratings steadily increased since the start of the pilot.

Figure 2-33. Survey Results on Clarity of Communications



Most focus group participants were satisfied with the choices they had made, but did not feel they knew much about the methods they did not choose and appreciated the opportunity in the focus group to hear what they were missing. Focus group participants were less clear on how to select an account manager, or even what an account manager was. The term appeared to be confusing to many. They did not feel they had a good understanding of the differences between the various account managers when they were faced with the selection upon enrollment, and they did not feel they understood what they were not getting compared to what others were getting from other account managers.

"We were supposed to choose between account managers but we had no real metric for evaluating which one to choose."

Sacramento, Smartphone app with location user

Based on the surveys and the focus groups, it seems while the communications regarding the reporting methods were clear and participants were generally satisfied with the choices they made, the concept and role of the account manager perhaps was not as clear as it could have been. As previously discussed, focus group results are not quantitative nor have any statistical significance. Nevertheless, this sort of information may be useful in setting future road charge pilots.

ID	Goal	Criteria	Measures	Analysis Method(s)
UX16-01	Be transparent about how road charge works	User understanding of system, including choices, operations, and invoices	Percentage of participants expressing understanding of road charge invoices	Participant surveys Focus groups
UX16-02			Percentage of participants expressing satisfaction with user instructions	Participant surveys Focus groups

Positive attitudes towards the clarity of invoices and transparency of charges increased since the mid-pilot survey. As shown in Figure 2-34, 78% of participants were satisfied with both the clarity of their invoice and the transparency of the

charges on their invoice, respectively. The results from the focus groups revealed that participants had mixed feelings towards their invoices. Some did not pay much attention because they knew it wasn't real money, while others took a closer look and actively tried to assess the information given. Some expressed that the charges on their invoice were less than what they were expecting, and others felt that some of the information on the invoice may be inaccurate, such as the calculated MPG.

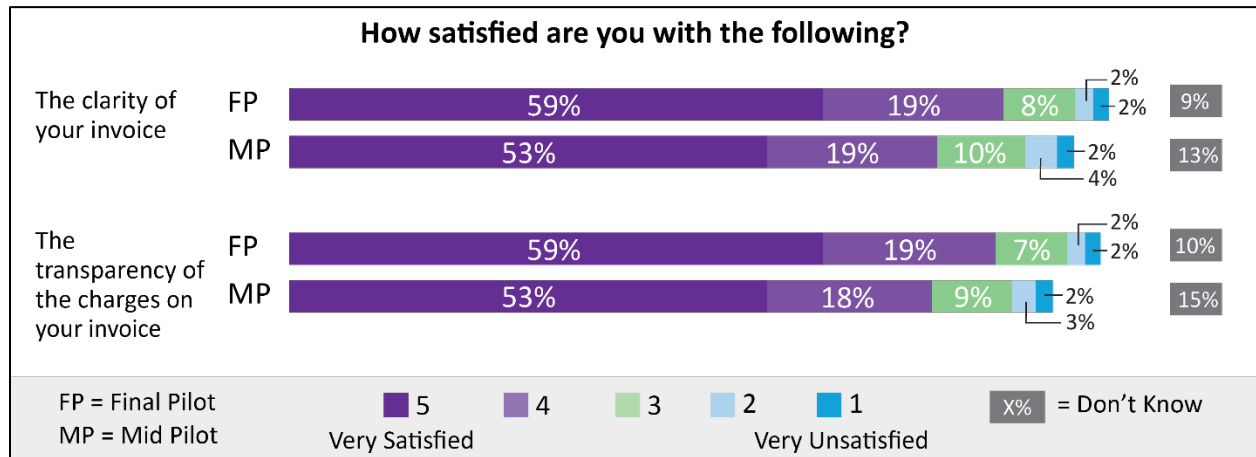
"I liked seeing (my invoice), mine had the total number of miles I drove, and the total gallons of fuel I used, which I thought that was interesting to figure out my monthly miles per gallon."

San Jose, Plug in device with location user

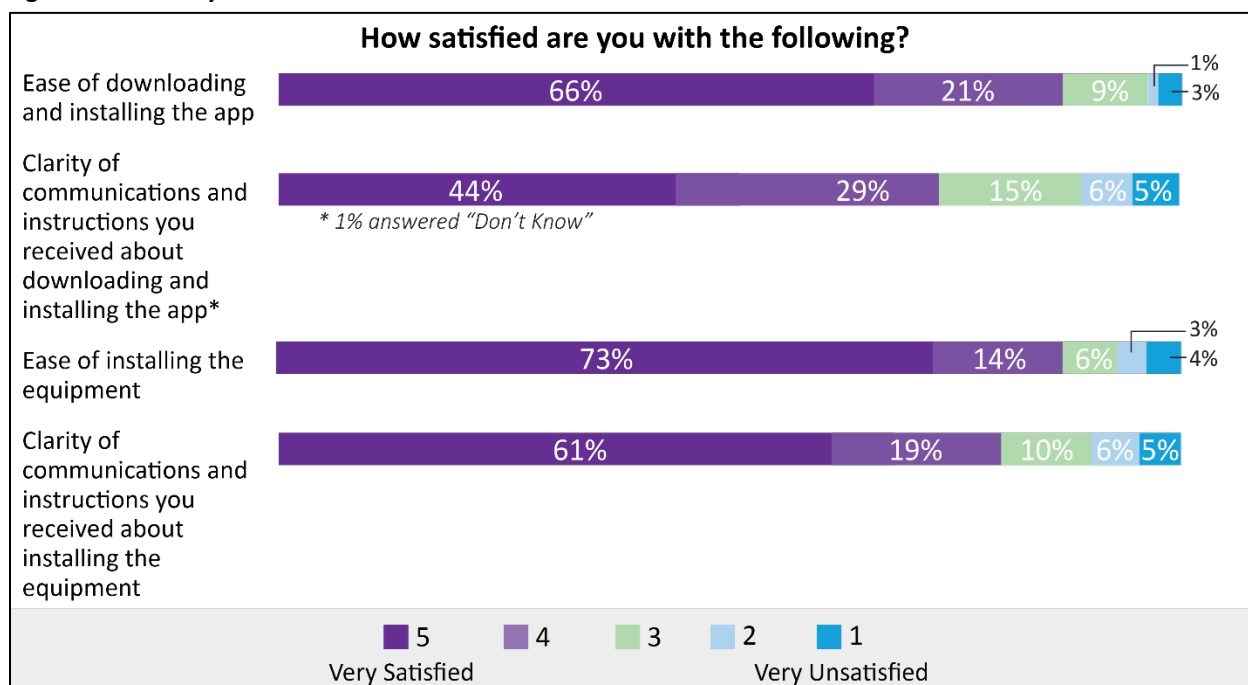
"I looked at the first (invoice), it was like a cell phone bill, with multiple pages of information. It was good to see it, but I don't think I understood it."

Sacramento, Plug in device with location user

Figure 2-34. Survey Results on Invoices



During enrollment for the RCPP, participants who selected reporting methods that required downloading a smartphone app and/or installing equipment were sent a short follow-up survey about their experience with these additional steps. Figure 2-35 indicates that 73% of participants downloading and installing the smartphone app and 80% installing equipment were satisfied with the clarity of communications and instructions they received. About 87% of participants were satisfied with the ease of downloading and installing the app and 87% of participants installing equipment were satisfied.

Figure 2-35. Survey Results on User Instructions

From the perspective of the commercial trucking managers, the responses – on a scale of 1 to 5 with 5 being very satisfied and 1 being very unsatisfied – three responded with a 5, and three responded with a 4 when asked how clear and understandable the monthly statements were.

ID	Goal	Criteria	Measures	Analysis Method(s)
UX17-01	Do not negatively impact safety	Incidence of safety issues related to Road Charge	Number of instances reported by participants of negative safety impacts directly related to road charge	Participant surveys Focus groups
UX17-02			Description of safety incidents reported by participants	Participant surveys Focus groups
UX17-03			Number of instances detected by system of negative safety impacts directly related to road charge	Interviews
UX17-04			Description of safety incidents detected by system	Interviews

The RCPP system did not have the capability to directly detect negative safety impacts – the technology is designed primarily to measure mileage and fuel use. As previously discussed, other driver services were offered by account managers using the information collected from the OBD-II port – such as driving scores – and while these might indicate potential safety impacts (e.g., instances of hard braking), none of these can be attributed one way or another to the road charge system, and this data was not shared with the agency.

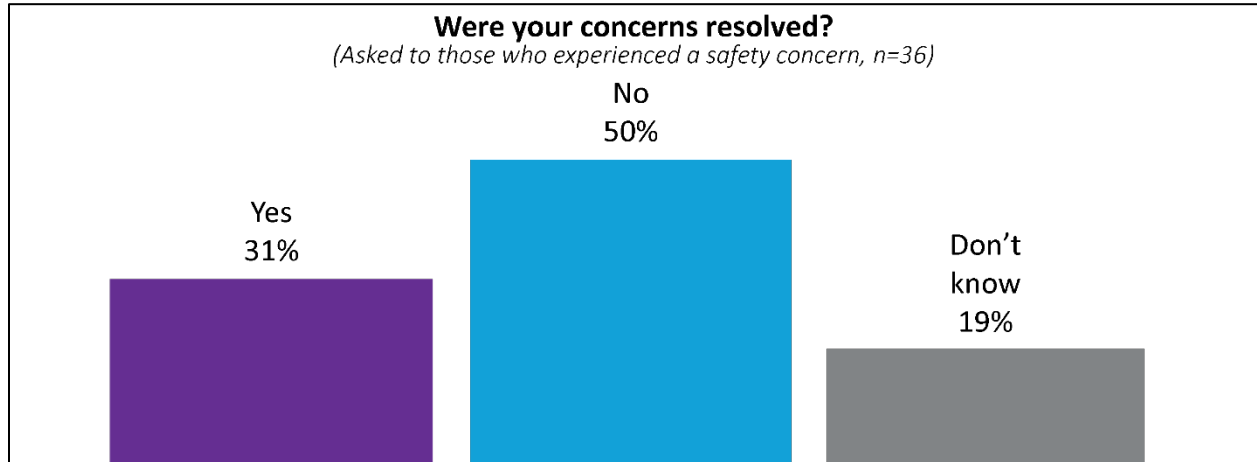
During the interviews, account managers reported zero safety incidents related to the RCPP. Only 1% of both mid- and final pilot survey respondents said that they experienced any safety issues that occurred as a result of participating in the RCPP. Descriptions of safety concerns that occurred varied:

- “Plug-in device requires the hatch/cover to remain open, which can obstruct driver's left foot.”

- *“In my opinion, the inclusion of certain badges for things such as low idle time or no braking events may condition some individuals to unintentionally make poor driving decisions.”*
- *“OnStar was unable to notify me of low tire pressure because the device interfered with telematics.”*

Among those that did experience a safety concern, about half were unable to resolve their concern as shown in Figure 2-36; although the resulting number (18) is very small compared to the total number of RCPP participants.

Figure 2-36. Survey Results on Safety Concerns



In all five focus groups, after participants were asked if they experienced any safety issues as a result of participating in the program, the participants were generally silent, and shaking their heads suggesting that they did not experience a safety issue. Some participants attempted to elaborate on the question, and think of potential safety issues that may have occurred.

- *“My port, where it plugs in, you can't see it when you're driving but I had seen other vehicles I can start spotting now where their port is, and it is in a specific area where... I think I just spotted one where, if it plugged in, you wouldn't be able to close that latch. It would be open, not to mention the lights are on. Just a little... Not a distraction, but it's something else in front of you on your dashboard. Maybe that would be a safety issue for somebody else.” – Sacramento, Plug-In Device with location user*
- *“Maybe getting the text message while you're driving to submit your mileage. Maybe they can send it out when you're not driving?” – Sacramento, Location aware smartphone app user*

2.3.5 Privacy

Privacy concerns are among the most commonly cited concerns with a road charge program. For example, 2016 National Cooperative Highway Research Program Synthesis Report 487 *Public Perception of Mileage-Based User Fees* analyzed multiple sources of information on public opinion about mileage fees, and identified privacy concerns as one of the key objections to road charge. SB 1077 addresses privacy, with the initial section (legislative findings and intent section) stating that: *“Privacy implications must be taken into account, especially with regard to location data. Travel locations or patterns shall not be reported, and legal and technical safeguards shall protect personal information.”* SB 1077 also requires CalSTA to implement an RCPP that accomplishes the following privacy-related objectives:

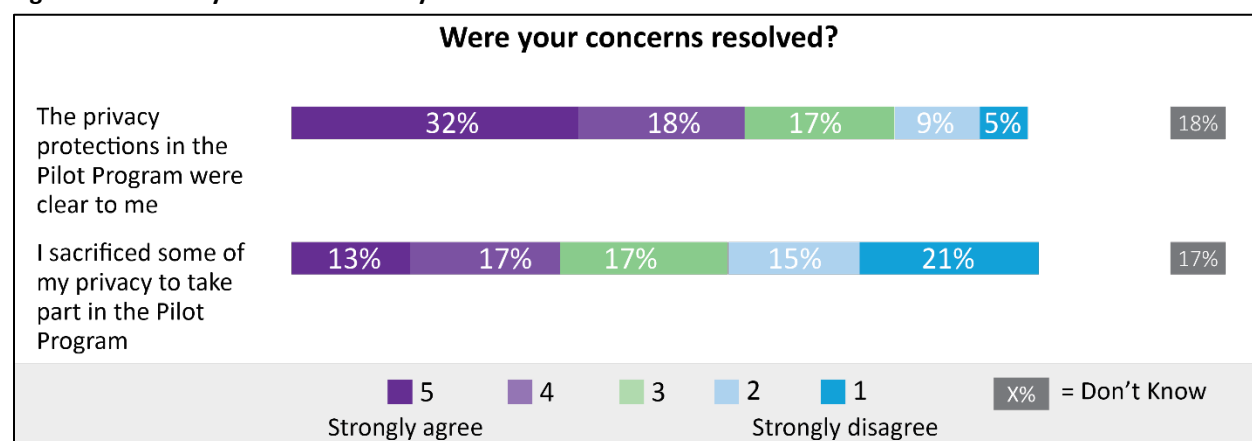
- Collect a minimum amount of personal information including location tracking information, necessary to implement the RCPP;
- Ensure that processes for collecting, managing, storing, transmitting, and destroying data are in place to protect the integrity of the data and safeguard the privacy of drivers; and

- Ensure public or private agencies do not disclose, distribute, make available, sell, access, or otherwise provide for another purpose, personal information or data collected through the road charge program to any private entity or individual unless authorized by a court order, as part of a civil case, by subpoena issued on behalf of a defendant in a criminal case, by a search warrant, or in aggregate form with all personal information removed for the purposes of academic research.

ID	Goal	Criteria	Measures	Analysis Method(s)
Priv01-01	Honor personal privacy through privacy policies	User perception of privacy protections	Percentage of participants who claim to understand privacy protections in road charge pilot	Participant surveys Focus groups
Priv01-02			Percentage of participants who are satisfied with privacy protections in the road charge pilot	Participant surveys Focus groups

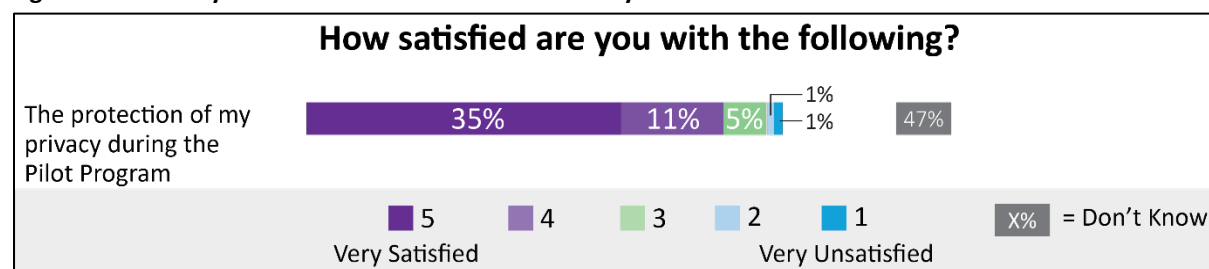
About half of the participants (per the final pilot surveys as shown in Figure 2-37) thought that the privacy protections in the RCPP were clear to them. While most participants did not feel like they sacrificed their privacy to take part in the program, about 30% expressed they did.

Figure 2-37. Survey Results on Privacy Protection



The final pilot survey results indicated many participants (46%) were satisfied with the protection of their privacy related to the RCPP. However, about half of participants were unable to rate their satisfaction (see Figure 2-38) potentially indicating the privacy protections could have been clearer, or that participants simply accepted the participant agreement and account manager terms and conditions without review, similar to how people accept the privacy terms and conditions today when downloading apps or signing up for other online retail accounts.

Figure 2-38. Survey Results on Attitudes towards Privacy



The results of the focus groups revealed privacy and data security were not significant concerns for most respondents. When asked about it, many would suggest that their information is already “out there” so they are not really worried about it. Even among those who said it was a concern, when pressed, most had not taken any steps to look into the privacy or data security procedures in place for the pilot. Some purposely chose location-specific mileage reporting methods for their participation in the pilot because they wondered how that reporting might work if the program was implemented statewide.

When asked how important privacy was in the RCPP – with 5 representing “very important” and 1 representing “not important at all” – the answers from six commercial trucking managers who responded were as follows: four 5 ratings; one 4 rating, and one 3 rating.

ID	Goal	Criteria	Measures	Analysis Method(s)
Priv02-01	Honor personal privacy through privacy policies	User perception of privacy protections	Description of privacy concerns expressed by participants that the pilot did not resolve	Participant surveys Focus groups

Very few (4%) of final pilot survey respondents said they experienced a privacy concern while participating in the RCPP (Figure 2-39).

Figure 2-39. Survey Results on Privacy Concerns

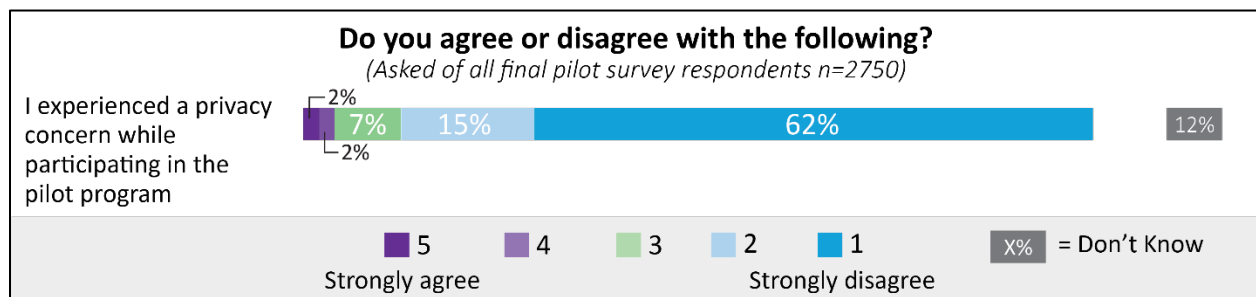
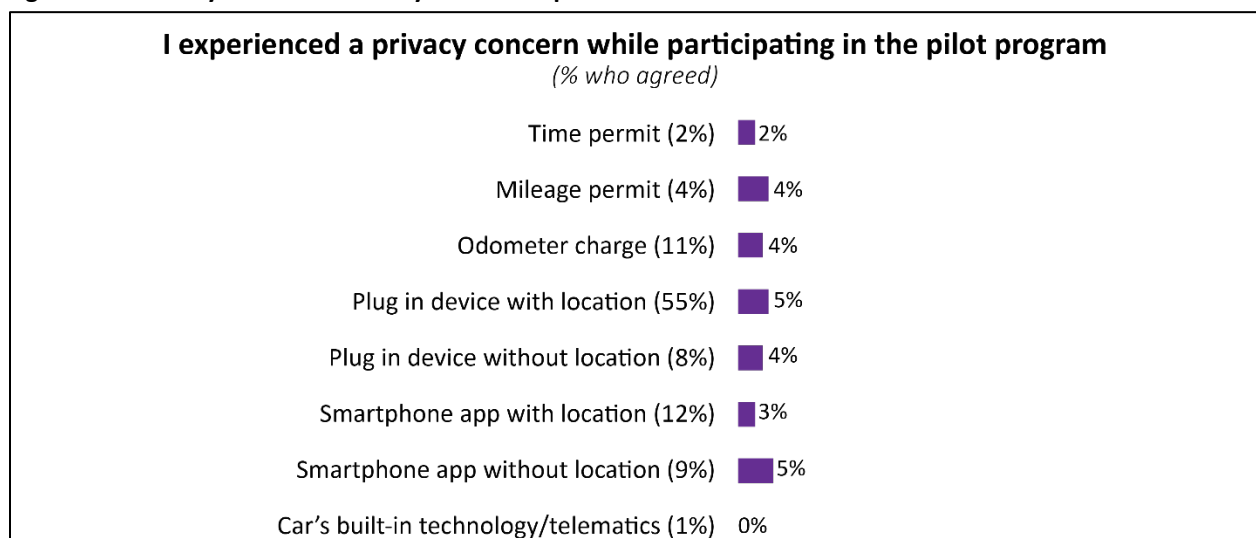


Figure 2-40 shows the percentages of survey participants that experienced a privacy concern by approach/technology.

Figure 2-40. Survey Results on Privacy Concern Experiences



Most of these participants reported they experienced a privacy concern because they were allowing their location to be reported and were unsure how secure the data are. Many focus group participants thought about how the future implementation of a road charge program might collect data about individual driving habits, and how such information might be used by the state. For example, they wondered if the information they saw in their app dashboard could be used by insurance companies to raise rates, or if incident information could be used in a lawsuit or to issue a ticket. These and related concerns made some people feel privacy and data security issues would be a larger concern if a road charge program were to move forward and be implemented. In other words, they were not concerned about it during the pilot, but could have more concerns if it was a real program.

ID	Goal	Criteria	Measures	Analysis Method(s)
Priv03-01	Protect personally-identifiable information (PII)	Protection of PII in accordance with principles adopted by the TAC	Number and characterizations of violations of Section 1 of Article I of the California Constitution	Interviews
Priv03-02			Availability of a time-based option for participants	Documentation Review Data analysis

SB 1077 tasks the TAC to take several privacy-related items into consideration including public and private agency access, law enforcement, and data collected and stored for purposes of the RUC to ensure individual privacy rights are protected pursuant to Section 1 of Article I of the California Constitution, which reads as follows: *“All people are by nature free and independent and have inalienable rights. Among these are enjoying and defending life and liberty, acquiring, possessing, and protecting property, and pursuing and obtaining safety, happiness, and privacy.”*

SB 1077 also requires the TAC to consider the “necessity of protecting all personally identifying information (PII) used in reporting highway use”, where PII is defined in TAC briefing materials as “information that can be used on its own or with other information to identify, contact, or locate a single person, or to identify an individual in context.” The TAC RCPP Design Recommendations uses the term “personal information”, noting that this is broader than the term “personally-identifiable information.” Personal information means any information about an individual which, on its own or when combined with other information, is reasonably capable of revealing the identity or activities of a specific person. Personal information includes, but is not limited to: trip making details, address, telephone number, email address, license plate number, driver's license number, California identification card number, account number, social security number, photograph, bank account information, or credit card number.

The Privacy Policy contained in the Participant Agreement also addresses personal information, stating (in words very similar to the RCPP Design Recommendations): “Personal information is any information about a person which, on its own or when combined with other information, is reasonably capable of revealing the identity or activities of that person. Personal information includes items such as address, telephone number, email address, driver's license number, account numbers, bank account information, photograph, travel or trip details, and similar information associated with a specific person.”

Results from the account manager interviews found no instances of PII-compromising or other events in violation of the privacy provisions of the State Constitution. As discussed in Chapter 1, a time-based option (requiring no mileage reporting or location information, and only minimal PII information such as name, address, telephone, email and payment information) was offered to participants during the RCPP, although only 88 of the 5,129 compliant vehicles were covered under this option (37 of the 3,937 actively reporting vehicles).

ID	Goal	Criteria	Measures	Analysis Method(s)
Priv04-01	Ensure identity protection using location data even after removal of PII	Protection of PII in accordance with principles adopted by the TAC	Availability of more than one choice for distance based options for participants	Documentation Review Interviews
Priv04-02			Number and characterization of violations of federal and state laws governing privacy and information security	Interviews

As discussed earlier, multiple distance-based options were made available to participants, with some including the option of incorporating location data. No violations of laws governing privacy and information were identified during the surveys or interviews. The PDT did note a concern is making sure the data collected by the account managers are not sold for other purposes because there were clear protections against this in SB 1077 and the participant agreement.

ID	Goal	Criteria	Measures	Analysis Method(s)
Priv05-01	Ensure privacy protection when using location data with other technologies	Protection of PII in accordance with principles adopted by the TAC	Number and extent of information disclosures without motorist consent, specific statutory authority, appropriate legal process, or emergency circumstances as defined in law	Interviews

SB 1077 states: *“The agency shall not disclose, distribute, make available, sell, access, or otherwise provide for another purpose, personal information or data collected through the RUC program to any private entity or individual unless authorized by a court order, as part of a civil case, by a subpoena issued on behalf of a defendant in a criminal case, by a search warrant, or in aggregate form with all personal information removed for the purposes of academic research.”*

The Terms and Conditions of the participant agreements also addresses disclosure of information stating the following: *“In order to carry out the Road Charge Pilot Program and achieve its objectives, we may make certain personal information available to public agencies or private companies that are authorized to provide services in support of the Pilot Program. These agencies and companies are responsible for setting up your road charge account and processing your mileage reports, delivering mileage meters to persons who choose to test those devices, providing customer services, and conducting surveys for research and evaluation purposes. All of these third-party agencies and companies are legally required to adhere to this privacy policy and protect your personal information.”*

The account managers reported zero instances of PII disclosure nor any statutory events allowing the disclosure of PII. It is noted that the participant agreement did indicate that aggregated road charge data, with all PII removed, might be collected, used, transferred and disclosed to third parties, but only for research purposes. Examples of this non-personal data include: total miles driven from persons living in a certain region of California, so that policymakers can better understand how a road charge might impact drivers differently, depending upon where they live, or a road charge paid by drivers of different makes and models of vehicles, to gain insight into how a road charge system compares against the gas tax system.

ID	Goal	Criteria	Measures	Analysis Method(s)
Priv06-01	Protect privacy pursuant to Article I Section 1 of the California Constitution with respect to data access by public agencies (including law enforcement) and private firms	Protection of privacy, including implementation and operation of procedures, in accordance with principles adopted by the TAC	Number and characterization of instances of information collection beyond that needed to properly calculate, report and collect the road charge, unless the motorist provides his or her consent.	Documentation Review Interviews
Priv06-02			Number and characterization of instances of PII retention beyond the period of time necessary to ensure proper mileage account payment	Documentation Review Interviews
Priv06-03			Percentage of motorists who were aware of whether they provided consent for their personal data to be used	Interviews

Account managers reported no instances of information collection and data retention beyond what was consented to by the participants and required for the RCPP. The surveys and focus groups did not address participant awareness of the data use provisions in the participant agreements. However, any volunteer that was invited to participate in the pilot was required to accept the participant agreement and account manager terms and conditions in order to be accepted into program.

Data retention is addressed in the Participant Agreement (see Appendix G) as follows:

Personal information that is collected to set up and manage your mileage account, including mileage and other data collected during the 9-month pilot, will be destroyed 30 days after the conclusion of the California Road Charge Pilot Program. Non-personal information may be retained indefinitely.

ID	Goal	Criteria	Measures	Analysis Method(s)
Priv07-01	Protect privacy pursuant to Article I Section 1 of the California Constitution with respect to data access by public agencies (including law enforcement) and private firms	Protection of privacy, including implementation and operation of procedures, in accordance with principles adopted by the TAC	Number and characterization of any instances of the system using specific locational information, including specific origins or destinations, travel patterns or times of travel beyond that needed for routine operations.	Interviews

The RCPP was designed so travel locations or patterns were not reported to the State. Thus, account managers were the only entities that received general location information if a participant opted for this type of mileage reporting method. The account managers reported no instances of any locational information usage beyond that which was required for normal operations of the RCPP, in accordance with the appropriate operational concept.

ID	Goal	Criteria	Measures	Analysis Method(s)
Priv08-01	Protect privacy pursuant to Article I Section 1 of the California Constitution with respect to data access by public agencies (including law enforcement) and private firms	Protection of privacy, including implementation and operation of procedures, in accordance with principles adopted by the TAC	Number and percentage of motorists who had the opportunity to view all personal data being collected and stored to ensure proper usage	Interviews Documentation Review

ID	Goal	Criteria	Measures	Analysis Method(s)
Priv09-01	Protect privacy pursuant to Article I Section 1 of the California Constitution with respect to data access by public agencies (including law enforcement) and private firms	Protection of privacy, including implementation and operation of procedures, in accordance with principles adopted by the TAC	Number and characterization of investigations into potential errors identified by motorists, and number of corresponding corrections made to ensure accuracy.	Interviews Documentation Review

Based on interviews with account managers, there did not appear to be any errors identified by motorists that required investigation. Account managers did not limit the ability of participants to request the opportunity to view their data. This ability was provided to all participants.

The right of participants to inspect their information and records was addressed through the Participant Agreement as follows:

Your account manager will provide you the opportunity to view all of your personal information and data collected and stored as part of the Road Charge Pilot Program to ensure only information and data you have authorized is being collected. To view your information, please contact your account manager. If you notice anything in your account that seems to be a mistake, you may request a review by your account manager, and a prompt correction of any errors discovered will be made.

ID	Goal	Criteria	Measures	Analysis Method(s)
Priv10-01	Respect user privacy trade-offs	Ability of the system to accommodate user privacy preferences and choices relative to opt-in services	Percentage of participants who selected location-based operational concepts	Data analysis
Priv10-02			Percentage of participants who were satisfied with privacy choices	Participant surveys
Priv10-03			Description of privacy trade-offs that participants faced in choosing an operational concept	Participant surveys Focus groups

Of the 3,937 actively reporting vehicles at the end of the program, 72% chose automated mileage reporting methods with location-based technology (see Table 2-10 previously presented).

Measures of participant satisfaction with privacy protection, as measured by the surveys, are provided in Figures 2-37 and 2-38 (previously presented).

Participants often expressed their perceptions regarding the tracking of their location and the impact that had on which reporting method they chose. Most focus group participants did not feel that by participating in the RCPP, for the limited amount of time, that their privacy and data would be compromised. And some participants were willing to have privacy trade-offs so that they could experience and test out a certain reporting method. Some focus group participants selected automated reporting methods for convenience and to test some of the additional features these methods offered:

"I was interested in the program because I was a little concerned about the Big Brother esque aspects of the monitoring where you're at, and I felt the best way to be part of looking into it is to participate in the program."

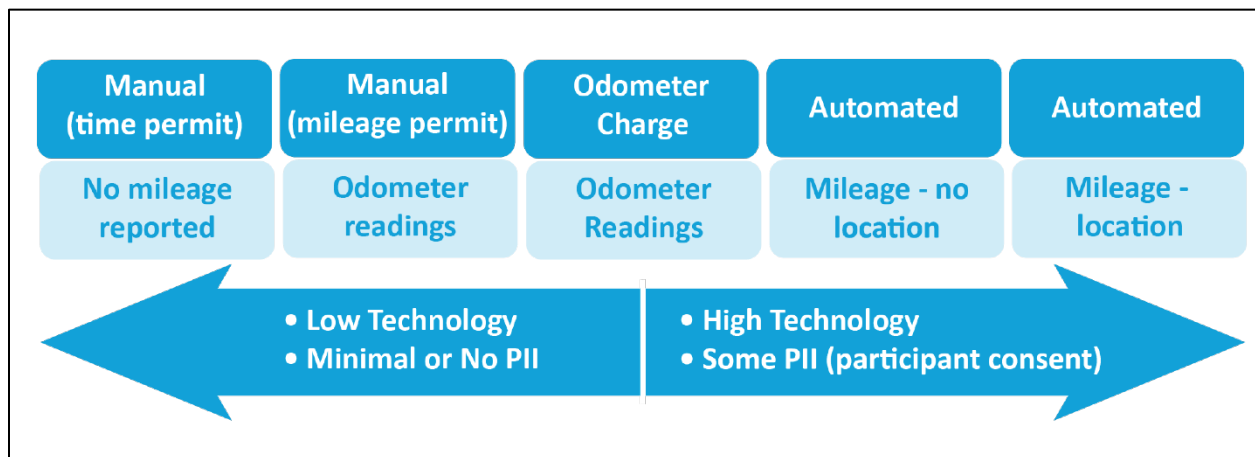
Orange County, Smartphone app with location user

- *"I wanted something that I did not have to worry about again." – Sacramento, Plug-in device without location user*

- *“(The plug-in device is) easier and you get feedback. So there was kind of this constant reward for participating in the program.” – Fresno, Smartphone app with location user*
- *“(Simplicity is) actually the reason I went with the plug-in device, since neither of my cars can do the telematics. It was just, you know, having something I plugged in once, then kind of ignored for the rest of the time, other than when I got the little emails and just curious looking at the emails.” – San Jose, Plug-in device with location user*

There is nothing in the participant agreement regarding privacy trade-offs that participants faced in choosing an operational concept. That said, from the perspective of privacy trade-offs, Figure 2-41 shows the relative privacy of each approach. The primary trade off involved location vs. non-location information. The greater flexibility and convenience offered by location-based methods included automated differentiation of mileage (by state and public /private roads), and additional driver services such as driving scores or vehicle engine monitoring as previously discussed in the first chapter of this report. Other potential trade-offs included choosing between mileage reporting by day (automated with no location), total mileage (odometer readings), or no mileage reporting (time permit).

Figure 2-41. Relative Privacy by Mileage Reporting Method



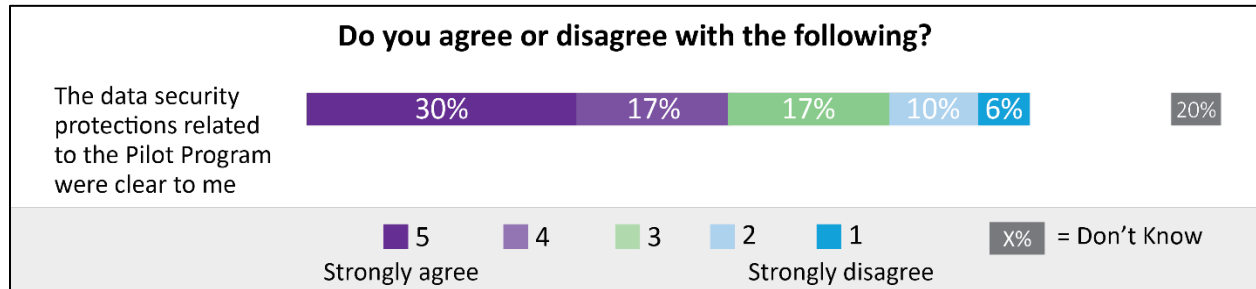
2.3.6 Data Security

SB 1077 requires the TAC to take the “security of methods that might be used in recording and reporting highway use” into consideration. This category addresses the security of participant data collected, transmitted, stored, and used in the RCPP.

ID	Goal	Criteria	Measures	Analysis Method(s)
DatSec01-01	Honor personal privacy through data security	User perception of data security	Percentage of participants who claim to understand data security protections in road charge pilot	Participant surveys Focus groups
DatSec01-02			Percentage of participants who are satisfied with data security protections in the road charge pilot	Participant surveys Focus groups
DatSec01-03			Description of data security concerns expressed by participants that the pilot did not resolve	Participant surveys Focus groups

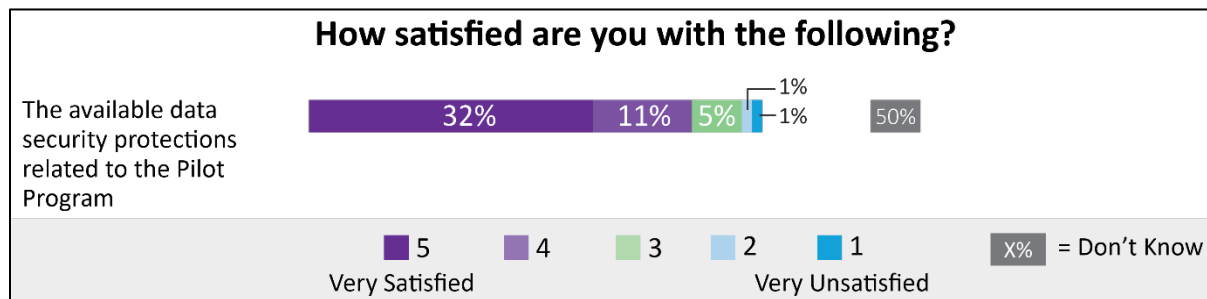
As shown in Figures 2-42, a little less than half of participants agreed that the data security protections were clear to them, while 20% said they didn't know and 16% disagreed that the protections were clear.

Figure 2-42. Survey Results on Clarity of Data Security Protections



That said, Figure 2-43 shows many participants were satisfied with available data security protections related to the RCPP. However, half of participants were unable to rate their satisfaction in this regard.

Figure 2-43. Survey Results on Data Security Satisfaction



Knowing what data were being collected, many thought the state could use that data for other purposes, like writing traffic tickets or turning data over to insurance companies to raise rates.

However, Caltrans adhered to strict provisions in SB 1077, "The agency shall not disclose, distribute, make available, sell, access, or otherwise provide for another purpose, personal information or data collected through the RUC program to any private entity or individual unless authorized by a court order, as part of a civil case, by a subpoena issued

on behalf of a defendant in a criminal case, by a search warrant, or in aggregate form with all personal information removed for the purposes of academic research." Although those concerns did not deter them from participating in the pilot, many suggested that these concerns would need to be addressed if a road charge program were to be implemented in California. In other words, they were not concerned about it during the pilot, but could have more concerns if it was a real program.

"It's actually my top concern, the data privacy, (I was comfortable) because of the limited time that I signed up for it. They say it is private, but I do not know to what extent they are bound to stick to those terms. It is not clear to me how safe my data is in the hands of these service providers."

San Jose, Plug in device with location user

ID	Goal	Criteria	Measures	Analysis Method(s)
DatSec02-01	Ensure data are secure from external breaches	Ability of system to withstand breaches or attacks	Number of instances and characterization of instances of deviations from TAC data security recommendations	Documentation Review

Prior to the start of the RCPP, a third-party security survey was completed by all entities involved in pilot operations, including account managers, technology providers, and consultants to the PDT. The pilot incorporated all of the TAC recommended data security provisions, which met the following ISO/IEC 27002³³ information security standards:

- SYS.SSD.3 Develop an Information Classification Scheme
- SYS.SSD.4 Identify and Respond to Information Security Incidents
- SYS.SSD.5 Information Security Policies
- SYS.SSD.6 Address Your Technical Vulnerabilities
- SYS.SSD.7 Respect Business Requirements
- SYS.SSD.8 Control Access to Systems
- SYS.SSD.9 Manage All User Access Rights
- SYS.SSD.10 Protect Your Organization from Malware
- SYS.SSD.11 Control How Physical Media are Handled
- SYS.SSD.12 Protect Information Transfers
- SYS.SSD.14 Protect Networks and Facilities
- SYS.SSD.15 Use Logs to Record Security Events
- SYS.SSD.16 Control the Use of Cryptographic Controls and Keys
- SYS.SSD.18 Establish a Teleworking Security Management Policy
- SYS.SSD.19 Establish a Mobile Device Security Risk Management Policy
- SYS.SSD.21 Protect Information and Facilities from External Threats
- SYS.SSD.22 Establish Information Security Continuity Controls

The vendors surveyed were compliant with the majority of the 17 security standards:

- Azuga, Arvato, Driveway, IMS, and Vehcon were compliant with all 17 security standards.
- EROAD, SmartCar and PRR (consultant to PDT) only had minor deficiencies that were not considered critical as they would not affect the performance in a pilot environment or jeopardize data security:
 - EROAD was compliant with all security standards but one, they did not have a schema to classify security incidents and events.
 - PRR was compliant with all 17 security standards but three: (1) no security classification system, (2) had all security policies, but not published for easy employee reference, and (3) no disaster recovery plan.
 - SmartCar was compliant with all 17 security standards but four: (1) no established and documented information security incident procedures, (2) no documented security policies, (3) no policies to control access to information, and (4) has no physical media policies.

Account manager interviews identified zero instances of deviations from TAC data security recommendations and requirements.

³³ This is part of the ISO 27000 family of standards addressing organizational security

ID	Goal	Criteria	Measures	Analysis Method(s)
DatSec03-01	Ensure data are secure from internal breaches	Protection of data in accordance with TAC direction on data security	Number of instances and characterization of instances of deviations from TAC data security recommendations	Interviews
DatSec03-02		Availability of data for appropriate and necessary uses	Number of instances and characterization of instances of deviations from TAC data security recommendations	Interviews

Account manager interviews identified zero instances of deviations from TAC data security recommendations and requirements. All data were used appropriately and for necessary purposes. Moreover, all mileage and other PII collected during the 9-month pilot was destroyed within 30 days after the conclusion of the California RCPP.

ID	Goal	Criteria	Measures	Analysis Method(s)
DatSec04-01	Ensure data are secure from abuse based on internal process exposure	Conformity with relevant ISO 9000 data security standards	Number of instances and characterization of instances of deviations from TAC data security recommendations	Interviews
DatSec04-02		Conformity with relevant ISO 27001 data security standards	Number of instances and characterization of instances of deviations from TAC data security recommendations	Interviews

As previously discussed, data security was addressed as part of the security survey of the participating account managers and vendor conducted prior to the start of the RCPP. Upon analysis, there are no security standards in the ISO 9000 data security standards, and because of that, this evaluation criteria is superfluous. However, several of the areas of the ISO/IEC 27002 information security standard³⁴ address securing data from internal process exposure, such as addressing internal technical vulnerabilities, controlling access to systems, controlling how physical media are handled, controlling access, and controlling the use of cryptographic controls and keys. All the account managers and technology providers complied with these relevant standards. Additionally, account manager interviews identified zero instances of deviations from TAC data security recommendations and requirements.

2.3.7 Equity

This category addresses the equity of a road charge – both perceived and real – along several dimensions.

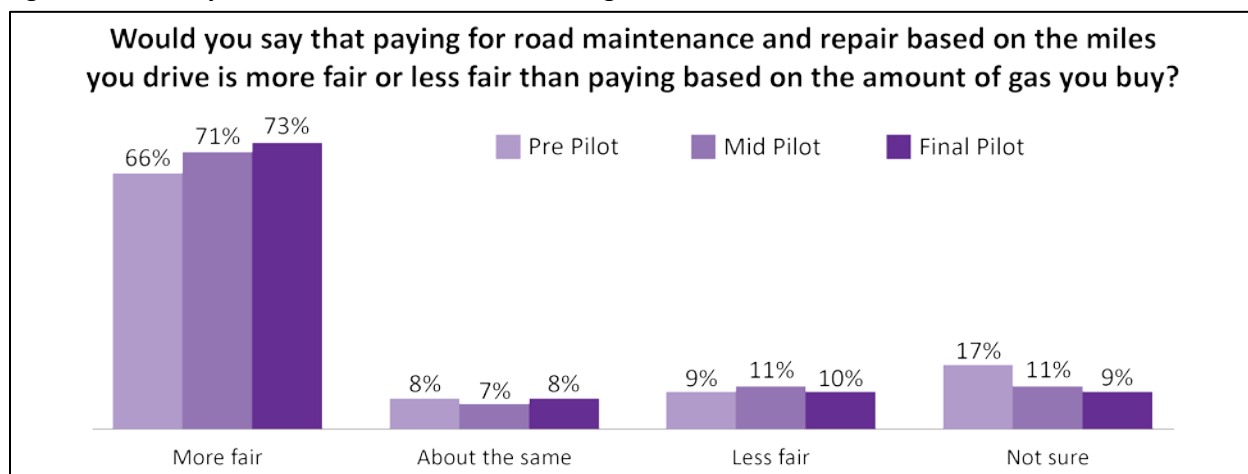
ID	Goal	Criteria	Measures	Analysis Method(s)
Equi01-01	Be fair and equitable	User perception of equity, relative to fuel taxes	Percentage of participants who view road charge as more fair, less fair, or as fair as fuel taxes	Participant surveys Focus groups Fleet questionnaire

Most participants (73%) believed that paying for a road charge is “more fair” than paying based on the amount of gas you buy, and 8% believe it is about the same. Figure 2-44 shows that over the course of

³⁴ The criteria may be in error. ISO 9000 is a quality management standard and not a security standard, and was not addressed during the RCPP. The security assessment was based on ISO 27002 standards, which address information security management practices – the practical steps taken by organizations to protect IT security (e.g., encryption, firewalls, authentication, authorization). ISO 27001 is focused on security from an organizational perspective.

the program, the number of participants agreeing that a road charge is “more fair” than a gas tax has increased by 7%, coming mostly from those who were unsure at the beginning of the RCPP.

Figure 2-44. Survey Results on Fairness of a Road Charge



In general, focus group participants thought the concept of a road charge in lieu of a gas tax was a good idea. They were very aware that transportation funding in California is inadequate, and most liked the concept of charging people based on their road usage as a way to ensure everyone was paying their fair share. They did not believe that participating in the pilot changed their view of the concept, though they did appreciate the complexities of the program more after participating in the pilot. While most agreed that the concept of a road charge seemed like a fair way to pay for transportation in California, many

“I think (a road charge) is a good idea, I think there are a lot of unknowns and it still has to be flushed out, but in general I think it is a fair opportunity for a majority of people to pay equitable shares.”

San Luis Obispo, Plug in device with location

“I think (a road charge) is a good idea, but I don’t know if they have addressed the issue of how people are going to pay. Cause people don’t pay registration or car insurance...”

Sacramento, Plug in device with location user

focus group participants harbored some skepticism about the implementation itself. Some were concerned that people would not pay what they were supposed to, and wondered if there was some way to require payment. Some were concerned about “mileage cheats” who would try to misreport their mileage. Some felt that that even if the money was collected, it would not go where it was supposed to, or that it would be wasted on bureaucracy and government inefficiency.

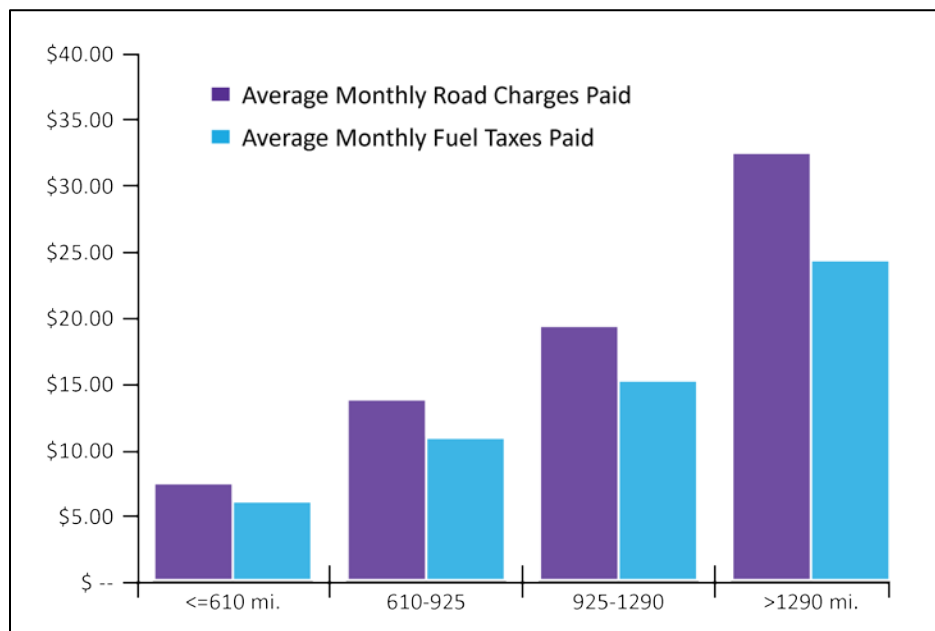
The managers of the heavy truck fleets generally felt paying by the number of miles driven is about the same as paying by the amount of fuel purchased. One indicated that paying by the mile was more fair, another responded that it was less fair, and four stated it was about the same as the fuel tax.

ID	Goal	Criteria	Measures	Analysis Method(s)
Equi02-01	Preserve or improve horizontal equity (relative to fuel taxes), which provides that people of	Road Charges and compliance costs incurred, by distance	Average hypothetical road charge paid by pilot participants, by distance traveled	Participant surveys Data analysis

ID	Goal	Criteria	Measures	Analysis Method(s)
Equi02-02	similar abilities to pay would pay at the same (effective) rates	traveled, relative to fuel taxes	Average fuel tax paid by pilot participants, by distance traveled	Data analysis

Figure 2-45 shows the hypothetical road charge and gas tax paid by participants by the amount they drove. As would be expected, both the road charges and gas taxes paid increase with distance traveled, with drivers traveling longer distances experiencing a higher increase in costs. This indicates that drivers traveling longer distances are buying more fuel-efficient vehicles. However, individual road charges and gas taxes paid vary widely by vehicle manufacturer and model, and how the vehicle is driven (i.e., the combination of highway versus city miles).

Figure 2-45. Average Monthly Hypothetical Road Charges and Gas Tax Paid by Pilot Participants by Distance Traveled Quartile



As shown in Figure 2-46, when the self-reported number of miles that a person drives per month increases, so too does the estimated hypothetical road charge cost.

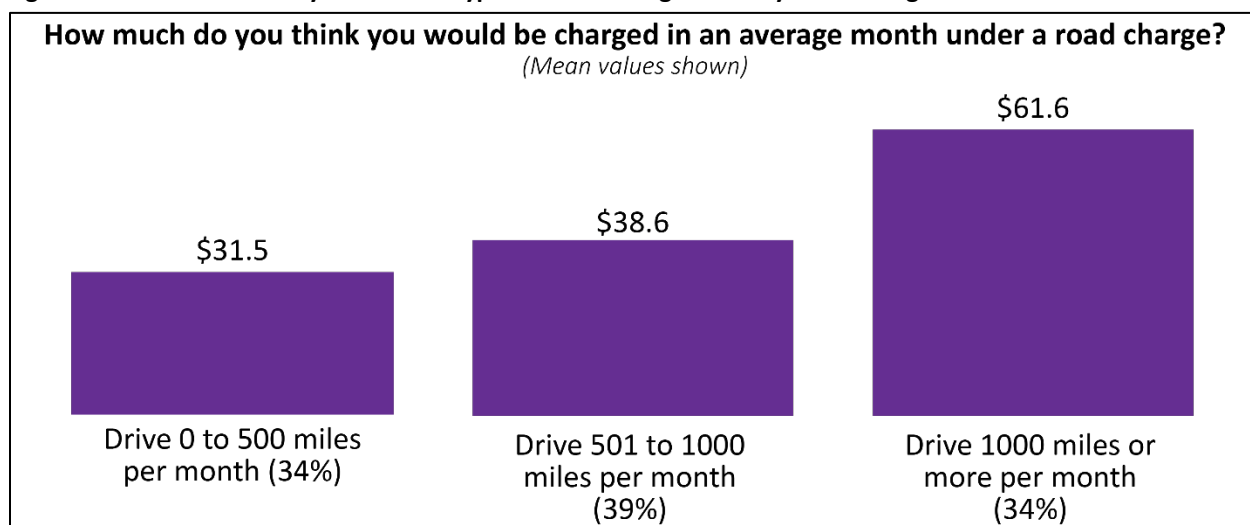
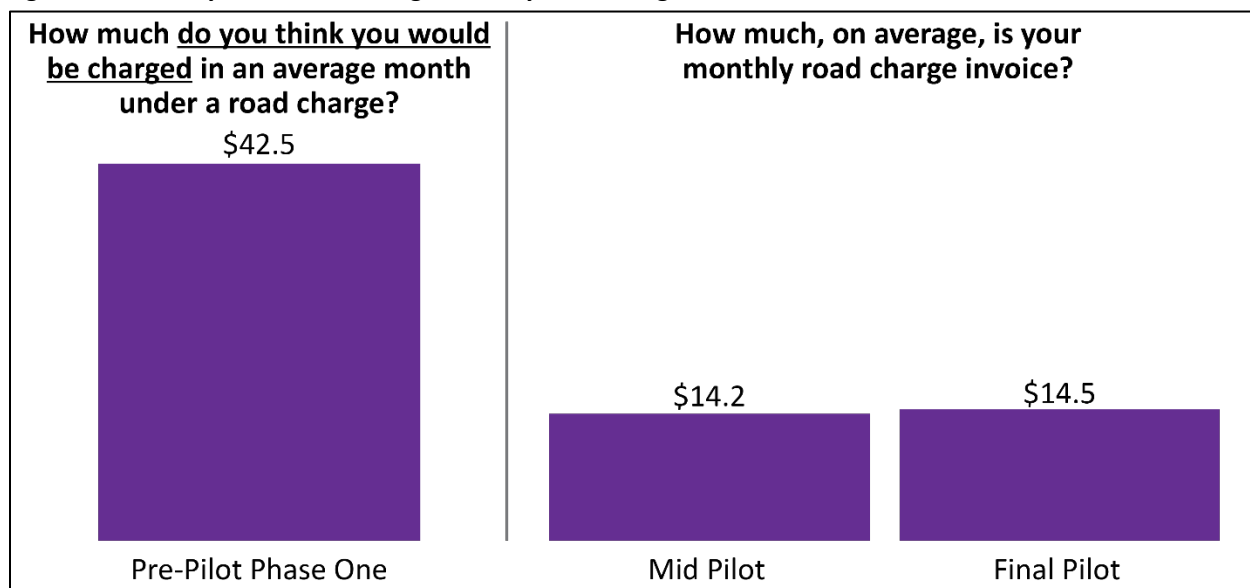
Figure 2-46. Pre-Pilot Survey Results on Hypothetical Average Monthly Road Charge

Figure 2-47 indicates that average monthly road charge invoice was around \$14. This is less than what people expected on their invoices as the beginning of the RCPP.

Figure 2-47. Survey Results on Average Monthly Road Charge

The actual average monthly invoice (for mileage based approaches) by vehicle type is shown in Table 2-12.

Figure 2-48 shows the road charges paid per month for low, middle, and high-income participants. The sample sizes of participants with socioeconomic data (and that also reported mileage for all months examined) are also identified.

Table 2-12. Average Monthly Road Charge Invoice by Vehicle Type

Vehicle Type	Number per Month	Average Monthly Road Charges per Vehicle	Average Monthly Fuel Taxes Paid per Vehicle	Average Monthly Road Charge Invoice per Vehicle (Road Charges - Fuel Tax Credits)
Heavy-Duty Trucks	46	\$89.17	\$94.54	-\$5.37
Agency/Commercial Vehicles	175	\$27.91	\$28.41	-\$0.50
Person Vehicles	2,216	\$16.86	\$13.08	\$3.78
Overall Pilot	2,456	\$19.02	\$15.70	\$3.32

ID	Goal	Criteria	Measures	Analysis Method(s)
Equi03-01	Preserve or improve vertical equity (relative to fuel taxes), which provides that people of differing abilities to pay would pay at different (effective) rates	Road Charges and compliance costs incurred, by household income, relative to fuel taxes	Average hypothetical road charge paid by pilot participants, by household income	Data analysis
Equi03-02			Average fuel tax paid by pilot participants, by household income	Data analysis

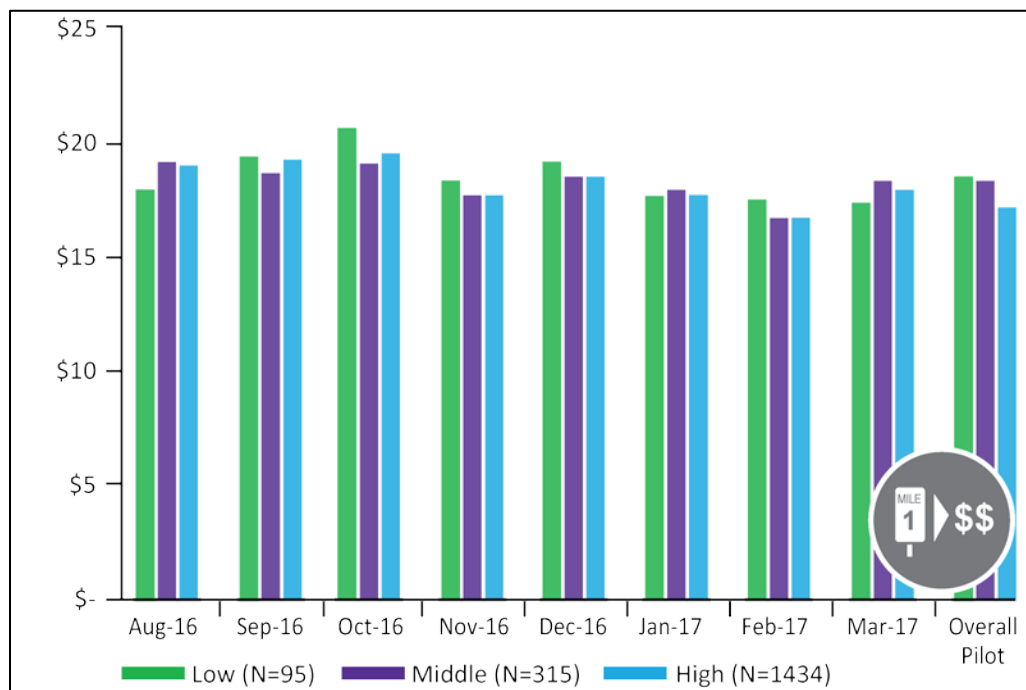
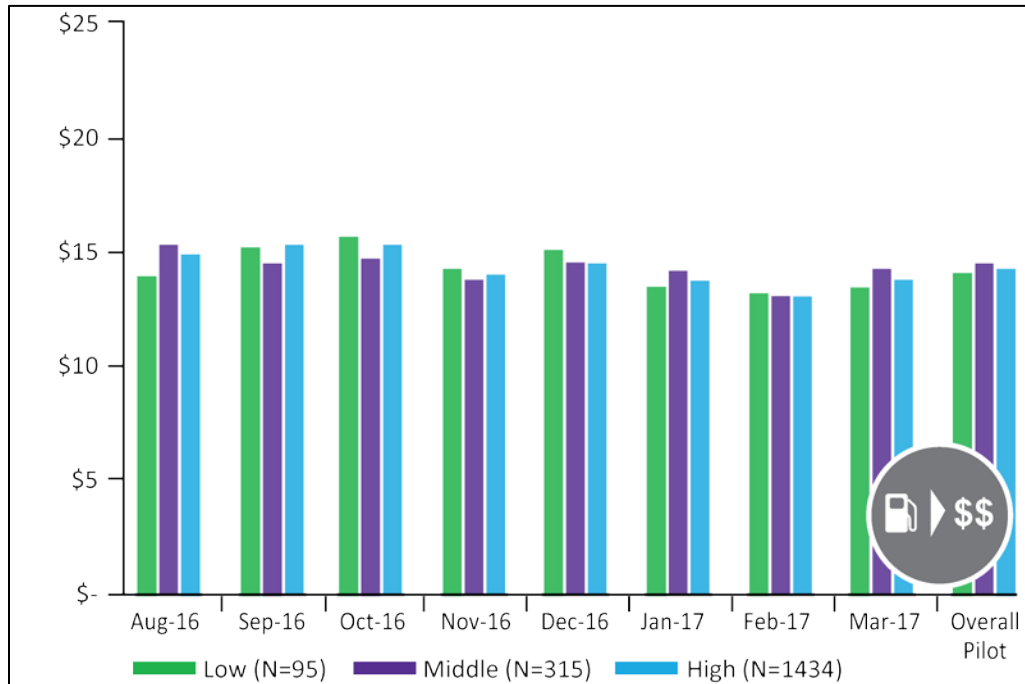
Figure 2-48. Average Hypothetical Road Charge Paid by Pilot Participants, by Household Income

Figure 2-49 shows the gas taxes paid per month for low, middle, and high-income participants, and includes the sample sizes of participants with socioeconomic data (and that also reported mileage for all months examined).

Figure 2-49. Average Gas Taxes Paid by Pilot Participants, by Household Income

Some key observations from these figures include the following:

- Low income participants drove slightly more miles (1%) than the average participant.
- Low income participants drive slightly more fuel-efficient vehicles (25.7 MPG compared to 25.3 MPG for the average respondent to question).
- In terms of road charge implications, very little disparity existed between low income, medium, and high-income participants. All three groups would have paid approximately 30% more in road charge than they paid in gas taxes.

ID	Goal	Criteria	Measures	Analysis Method(s)
Equi04-01	Preserve or improve spatial equity (relative to fuel taxes)	Road Charges and compliance costs incurred, by location, relative to fuel taxes: North, Central, South; urban/suburban, rural/agricultural; in-state, out-of-state	Average hypothetical road charge paid by pilot participants, by region, location, and in-state/out-of-state	Data analysis
Equi04-02			Average fuel tax paid by pilot participants, by region, location, and in-state/out-of-state	Data analysis

Figure 2-50 shows the road charges paid per month by geographic region within the State.

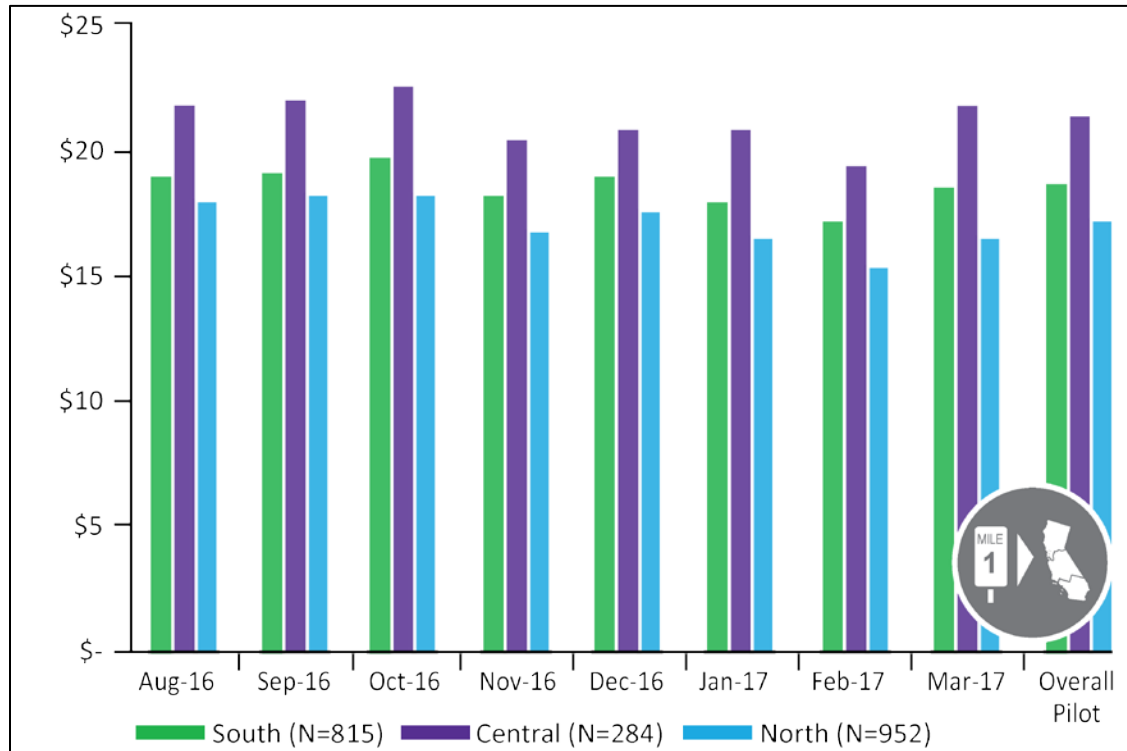
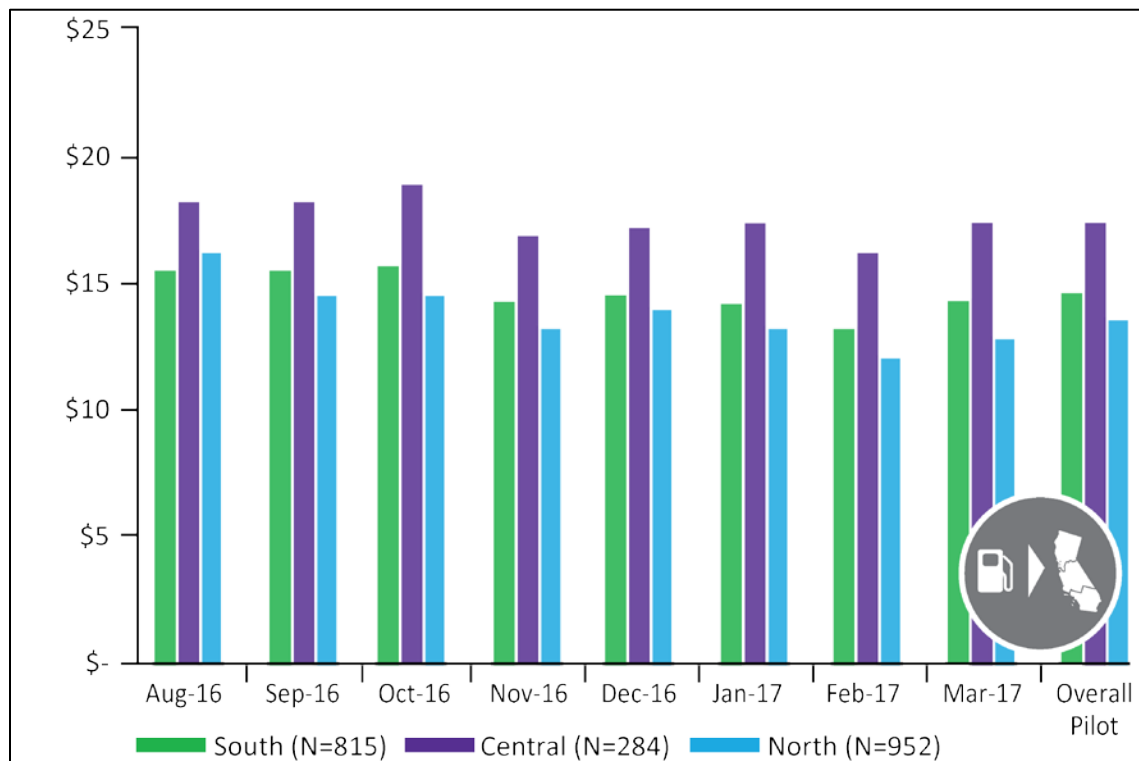
Figure 2-50. Average Hypothetical Road Charge Paid by Pilot Participants, by Geographic Region

Figure 2-51 shows the gas taxes paid per month by geographic region within the State.

Figure 2-51. Average Gas Tax Paid by Pilot Participants, by Geographic Region

Some key observations from these figures include the following:

- Central California participants drove significantly more per month than either North or South participants—16% more than the average participant.
- Central California participants drove less fuel-efficient vehicles—4% lower MPG compared to the average participant (24.2 MPG vs. 25.3 MPG for average non-commercial/agency respondent).
- Central California participants paid significantly more in both estimated road charges and fuel taxes.
- Central California participants experienced a lower increase in costs, 23%, compared to around 30% for Northern California and Southern California participants.

Figure 2-52 shows the road charges paid per month by urban and rural participants.

Figure 2-52. Average Hypothetical Road Charge Paid by Pilot Participants, by Urban and Rural

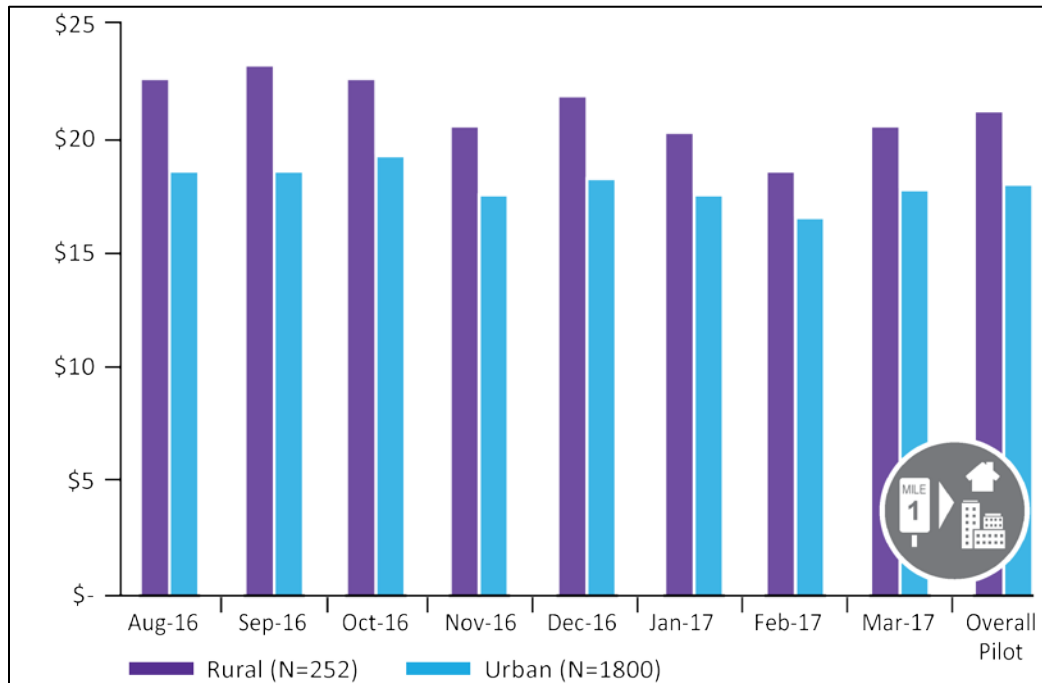
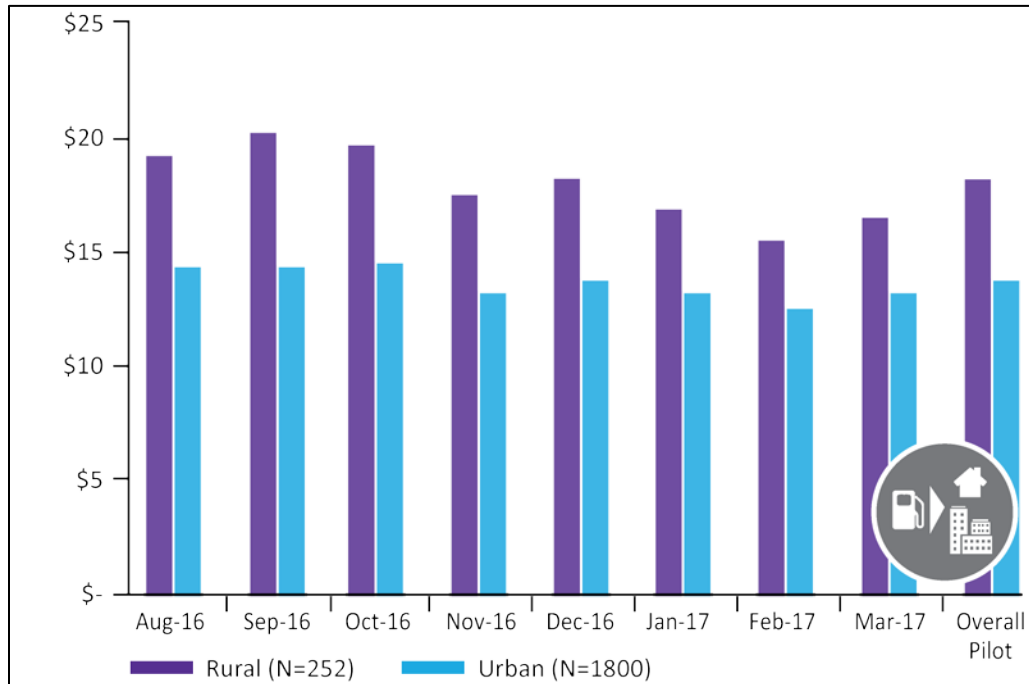


Figure 2-53 shows the gas taxes paid per month by urban and rural participants.

Figure 2-53. Average Hypothetical Gas Taxes Paid by Pilot Participants, by Urban and Rural

Some key observations from these figures include the following:

- Rural participants drove 19% more miles per month than urban participants.
- Rural participants also drove less fuel-efficient vehicles on average—10% worse than urban participants (23.1 vs. 25.7 MPG).
- Rural participants paid more in both estimated road charges and gas taxes, but this increase represents an 18% increase in the amount paid as compared to 31% increase paid by their urban counterparts.

ID	Goal	Criteria	Measures	Analysis Method(s)
Equi05-01	Preserve or improve procedural equity (relative to fuel taxes)	Road Charges and compliance costs incurred, by method chosen, relative to fuel taxes	Average hypothetical road charge paid by pilot participants, by operational concept	Data analysis
Equi05-02			Average fuel tax paid by pilot participants, by operational concept	Data analysis

Table 2-13 shows the average monthly road charges and gas taxes paid per month by reporting method.

Some key observations include the following:

- Participants who chose the automated in-vehicle telematics method experienced the largest difference (374% difference) between average monthly road charges paid compared to gas taxes paid because this group is primarily electric and hybrid vehicles that are currently paying little to no gas tax.
- Heavy-duty trucks using the heavy commercial-vehicle mileage meter experienced the smallest difference (-6% difference) and actually paid less average monthly road charges than gas taxes.

Table 2-13. Average Monthly Hypothetical Road Charges and Gas Taxes Paid by Reporting Method

Reporting Method	Average Monthly Road Charges	Average Monthly Fuel Taxes Paid	Difference	% Difference
Time permit	\$7.30	1	1	1
Mileage permit	\$4.25	1	1	1
Odometer charge	\$10.20	\$7.70	\$2.50	33%
Automated (plug-in device with no location)	\$16.71	\$13.47	\$3.23	24%
Automated (plug-in device with location)	\$18.21	\$14.16	\$4.05	29%
Automated (smartphone app with no location)	\$17.28	\$12.45	\$4.82	39%
Automated (smartphone app with location)	\$19.45	\$15.88	\$3.57	22%
Automated (vehicle telematics)	\$14.84	\$3.13	\$11.71	374%
Heavy commercial-vehicle mileage meter (EROAD)	\$89.17	\$94.54	-\$5.37	-6%

¹ Gas taxes paid could not be determined for permit purchases since total mileage was unknown.

2.3.8 Communications

This category addresses communications with the RCPP participants and the public.

ID	Goal	Criteria	Measures	Analysis Method(s)
Comm01-01	Engage the public meaningfully	Opportunities for participant feedback	Number of opportunities for participants to provide feedback, including evaluation surveys	Surveys Focus groups Documentation Review
Comm01-02	Engage the public meaningfully	Opportunities for participant feedback	Number and percentage of participants providing feedback	Surveys Focus groups Documentation Review

Participants had a number of opportunities to provide feedback during the RCPP including:

- Pilot program website and newsletter correspondence
- Pilot program Customer Service Center (call centers, email inquiries)
- Account manager Customer Care Centers (call centers, email inquiries)
- Account manager websites
- Account manager online accounts
- TAC meetings open to the public
- State and local partners
- Independent evaluation via surveys and focus groups

As discussed in Section 2.2.2, all participants were provided the opportunity to respond to the various surveys conducted during the RCPP. The number of responses and response rates are shown in Table 2-14.

Table 2-14. Survey Responses

Survey	# Distributed to	# Completed	Response Rate
Pre-Pilot Survey Part 1	4,237	3,529	83%
Pre-Pilot Survey Part 2	3,760	2,885	77%
Mid-Pilot Survey	4,198	2,533	60%
Open Enrollment Survey	90	68	76%
Final Pilot Survey	3,998	2,748	69%

As shown in Table 2-3 under Section 2.2.3, 55 people participated in the groups offered at five different locations across the state. In addition to the surveys and focus groups, other mechanisms were available for participants to provide feedback, most notably via the California RCPP Customer Service Center and account manager Customer Care Centers, comprising both a staffed call center and an email response team. The total number of inquiries to the Customer Service Center and the account manager Customer Care Centers was 6,778, which are summarized in Table 2-15.

Table 2-15. Customer Service Total Inquiries by Provider

Customer Service Provider	Total Inquiries
RCPP Customer Service Center	1,726
Azuga Customer Care Center	2,765
CalSAM Customer Care Center	1,311
EROAD Customer Care Center	18
IMS Customer Care Center	958
TOTAL	6,778

ID	Goal	Criteria	Measures	Analysis Method(s)
Comm02-01	Engage the public meaningfully	Opportunities for general public feedback	Number of opportunities for general public to provide feedback	Data analysis
Comm02-02			Number of members of the general public providing feedback	Interviews

A number of opportunities were available for the general public to provide feedback including:

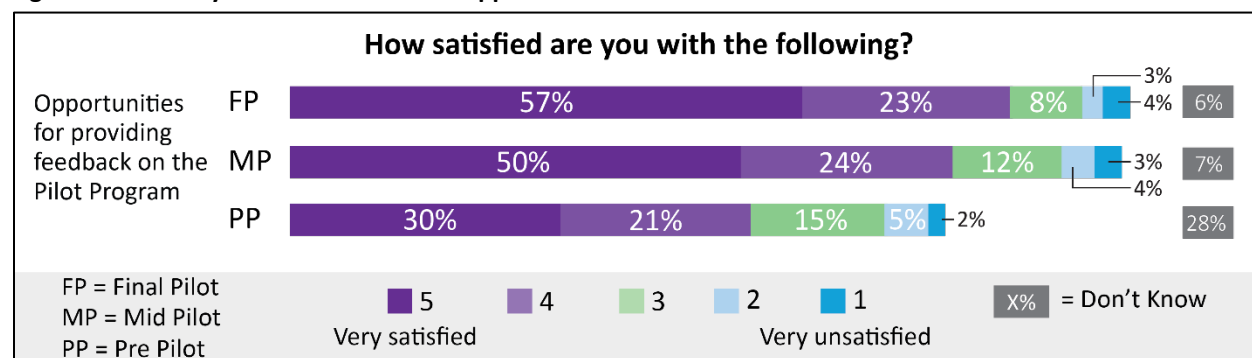
- The DOT website for road charge http://www.dot.ca.gov/road_charge/
- The program website <https://www.californiaroadchargepilot.com/>
- The program email (Road.Charge.Pilot.Program@dot.ca.gov)
- The RCPP Customer Service Center
- The program team via department wide and nationwide presentations
- Through Public Information Officer inquiries
- Facebook page (when active during recruitment)
- Public TAC meetings with time set aside for questions and statements from general public
- Through stakeholders and the Interagency Working Group
- Through CTC or CalSTA inquiries

Due to the complexity of project and the number of methods for the general public to provide feedback, the number of members of the general public that provided feedback via the opportunities provided could not be differentiated.

ID	Goal	Criteria	Measures	Analysis Method(s)
Comm03-01	Engage the public meaningfully	Participant satisfaction with interactions and feedback opportunities	Percentage of participants satisfied with quality of feedback opportunities	Participant surveys
Comm03-02			Reasons for satisfaction or dissatisfaction with feedback opportunities.	Focus groups

As shown in Figure 2-54, 80% of final survey participants reported they were very satisfied with the opportunities to provide feedback on the RCPP. This was a significant change from the 51% who were satisfied during the pre-pilot survey.

Figure 2-54. Survey Results on Feedback Opportunities



In all focus groups, participants were asked how they felt about the opportunities to provide feedback. In all groups, participants mentioned the participant surveys. Attitudes towards the surveys were very neutral; they wanted to complete the surveys so that they could provide their input. Many appreciated that opportunity, but a common feeling was they wanted to see more results of all the feedback they were giving. They felt that they were putting effort in by providing feedback and that they were not really getting anything in return. This feeling extended to all the information they are providing by participating in the pilot program. The results of the pilot, including participant feedback, will be available as part of the CalSTA final report.

- *“I would like to see (something that says) ‘Based on the study groups, we found these things are important to people, and so, therefore, we’re going to take that into account.’ I’d very much like to see that. I think that I have yet to experience that.” – San Luis Obispo, Plug-in device with location*
- *“It would be nice, at the end of this, being able to have a public report that you could look at, and it would give a little bit better feel for some of the security issues and this is how the data was protected, and this is the information we came up with. It would be really nice to eventually see something like that, and to know the feedback from things like (these focus groups).” – Orange County, smartphone app with location*

When asked about the clarity of the communications and instructions received about the pilot program – on a scale of 1 to 5, with 5 representing “very satisfied,” and 1 representing “very unsatisfied,” of the six commercial trucking managers who responded—four gave this a 5, one gave a 4, and one gave a 3. Additionally, all those responding (five of seven) noted that the training provided was adequate.

Conclusions

Overall, the California RCPP was a successful proof of concept for road charge. As discussed in detail in the previous chapter, the independent evaluation of the RCPP assessed the performance of the pilot against the eight categories of evaluation criteria that encompass 35 goals adopted by the TAC. The evaluation team developed comprehensive approaches for conducting the assessment based on the defined evaluation objectives, performance metrics, and additional methods and tools to further refine and successfully evaluate each goal and criterion.

Nearly all goals for the California RCPP were achieved, as summarized in Table 3-1. Nothing in the independent evaluation indicated any sort of fatal flaw in the feasibility of a road charge in California, such that all users of the roadway pay their fair share based on their use of the transportation network.

Table 3-1. Summary of California RCPP Evaluation Categories, Goals, and Levels of Achievement

Category	Goals	Achievement
● = Goal Achieved, ◐ = Goal Somewhat Achieved, ○ = Goal Not Achieved, N/A = Not evaluate		
Revenue	● Create a revenue stream that is able to match the fuel tax at time of implementation.	◐
	● Avoid double taxation of road charge and fuel tax.	●
Cost	● Administer road charges efficiently.	◐
	● Incorporate cost efficiencies where available.	◐
	● Provide users with low-cost compliance options.	◐
	● Implement projects on time and on budget.	●
Operations	● Be easy to administer.	◐
	● Clearly identify responsibilities.	●
	● Maintain compliance.	◐
	● Be enforceable.	N/A
	● Have neutral behavior impacts.	◐
	● Integrate with other charges	●
	● Optimize collection of charges in accordance with enforcement features recommended by the TAC.	N/A
	● Be compliant with financial guidelines.	●
User Experience	● Administer road charges effectively.	●
	● Allow user choice.	●
	● Keep pace with change over the long term.	●
	● Provide methods that are available, adaptable, reliable, and secure.	●
	● Be transparent about how charge works.	●
	● Do not negatively impact safety.	●

Table 3-1. Summary of California RCPP Evaluation Categories, Goals, and Levels of Achievement

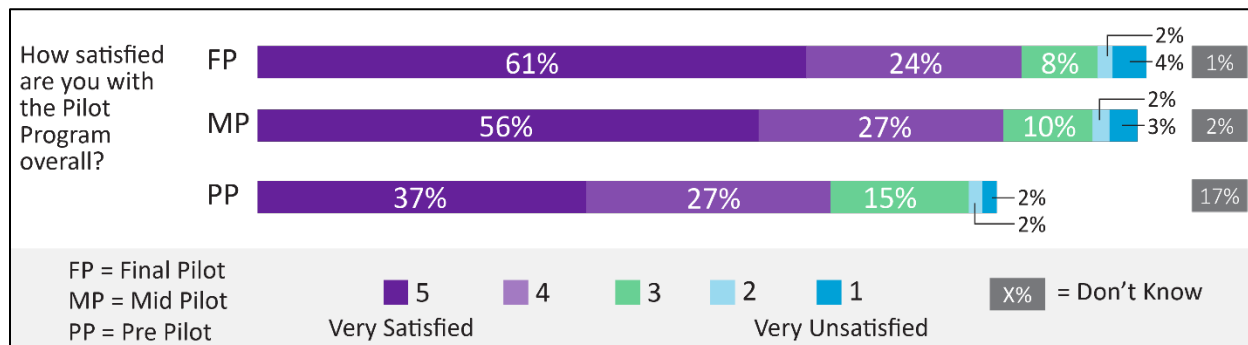
Category	Goals	Achievement
 = Goal Achieved,  = Goal Somewhat Achieved,  = Goal Not Achieved, N/A = Not evaluate		
Privacy	Honor personal privacy through privacy policies.	
	Protect personally-identifiable information.	
	Ensure identity protection using location data even after removal of personally-identifiable information.	
	Ensure privacy protection when using location data with other technologies.	
	Protect privacy pursuant to Article I Section 1 of the California Constitution with respect to data access by public agencies (including law enforcement) and private firms.	
	Respect user privacy trade-offs.	
Data Security	Honor personal privacy through data security.	
	Ensure data are secure from external breaches.	
	Ensure data are secure from abuse based on internal process exposure.	
Equity	Be fair and equitable.	
	Preserve or improve horizontal equity (relative to fuel taxes), which provides that people of similar abilities would pay at the same (effective) rates.	
	Preserve vertical equity (relative to fuel taxes), which provides that people of differing abilities would pay at different (effective) rates.	
	Preserve or improve spatial equity (relative to fuel taxes).	
	Preserve or improve procedural equity (relative to fuel taxes).	
Communications	Engage the public meaningfully.	

Another aspect of the RCPP is that it made significant contributions to the road charge knowledge base and moved the state-of-the-practice of an alternative transportation funding method forward. Several RCPP attributes and approaches were “firsts” in the area of road charge (at least in North America):

- The RCPP is the largest road charge pilot to date in the United States, encompassing 5,129 vehicles, of which nearly 4,000 provided mileage data. The RCPP is approximately four times greater than the next-largest road charge demonstration in this country.
- The RCPP provided more mileage reporting methods and account managers from which participants could choose than any previous mileage-based collection pilot to date. Several reporting methods—and the associated technologies for measuring mileage—had never been tested in previous road charge pilots, including the use of manual options such as the mileage permit and odometer charge, and highly automated options like reporting mileage via a cell phone photograph, smartphone apps, and the use of in-vehicle telematics.
- RCPP included fleets of heavy vehicles, along with additional services of interest to heavy truck fleet managers (for example, safety, IFTA reporting).

One broad conclusion that can be made is that – as shown in Figure 3-1, and based on the final pilot participant survey responses – the overall satisfaction with the RCPP was very high, with the level of satisfaction increasing (and with a corresponding reduction in “don’t know” responses) over the course of the pilot. Moreover, any differences between different demographics (e.g., age group, ethnicity, California region, income levels, urban/rural) were relatively minor.

Figure 3-1. Levels of Satisfaction with the Pilot Program Overall



Participant satisfaction levels with various aspects of the RCPP from the final pilot survey are summarized in Table 3-2. The levels of participant dissatisfaction were very low for most pilot activities and attributes; however, there were a number of instances when survey participants provided a “don’t know” response. This “unknown” response may be the result of an attribute that was not applicable to the participant or they did not have enough information to make an informed decision.

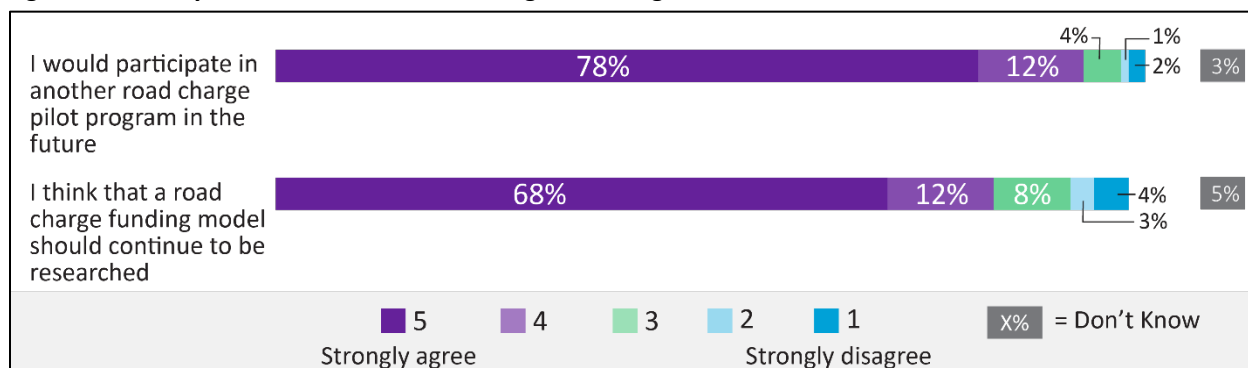
Table 3-2. Summary of Satisfaction Levels for Various Pilot Program Attributes

Pilot Program Attribute	Percent “Satisfied” or “Agree”	Percent “Unsatisfied” or “Disagree”	Percent “Neutral” or “Don’t Know”
The mileage reporting options you had to choose from	79%	6%	15%
Satisfaction with the mileage reporting method that you chose	86%	7%	6%
Reporting method accurately reports my trips	82%	5%	12%
Accuracy of the estimated gas tax	56%	5%	39%
Communications with your account manager	47%	4%	49%
Ability of your account manager to resolve issues	35%	4%	60%
Protection of privacy during the Pilot Program	46%	2%	52%
Security of personal information provided to account manager	39%	2%	59%
The available data security protections related to the Pilot Program	43%	2%	55%

From the perspective of the commercial trucking managers, when asked about their overall levels of satisfaction with the RCPP—on a scale of 1 to 5, with 5 representing “very satisfied” and 1 representing “very unsatisfied”—three managers gave a 5, two gave a 4, and two gave a 3. Notable also is that two managers who gave the RCPP a “5” rating are also continuing with the other services (e.g., IFTA reporting, safety information) provided by EROAD (the HVAM) following the pilot.

Another important conclusion is that the RCPP participants are optimistic about the future. Most think they would participate in another road charge program and most think that a road charge funding model should continue to be researched, as shown in Figure 3-2 from the participant surveys.

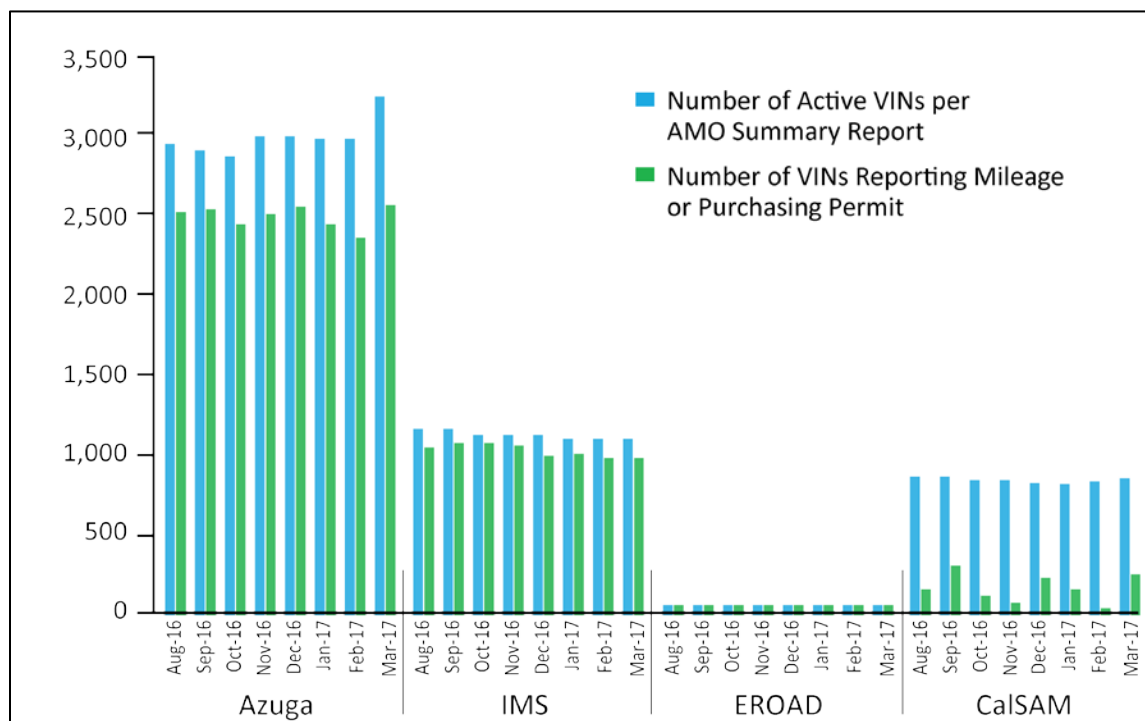
Figure 3-2. Survey Results on Future Road Charge Pilot Programs



The RCPP did not address every issue as it was a proof-of-concept; many issues still need to be addressed in terms of a potential future road charge program, including the following:

- Costs** – One arguments against road charging is that the administrative costs will be greater than those of administering the current pay-at-the-pump gas tax. The overall cost for the RCPP was approximately \$9 million, which equates to around \$2,000 per enrolled vehicle. However, a note of caution is that this value should not be extrapolated to estimate costs for a statewide-mandated pilot. The budget included a significant amount of planning and oversight administration as part of the research effort, including holding TAC meetings and preparing associated documents. Moreover, all account managers noted that economies of scale could not be achieved through a pilot, but will likely be available in a statewide scenario consisting of millions of users. Additionally, the account managers' respective business models can accommodate a road charge with the other services and driver amenities they already provide to customers. One account manager estimated a full implementation cost range of 4 to 25 percent of fees, depending on program flexibility and the extent of value added services. Under such circumstances, the lower end of this range of administration costs could conceivably be in the vicinity of the costs associated with administering the gas tax. Privacy requirements and audit stipulations are also likely to have an impact on account manager pricing.
- Technology**—Technology is always changing, and future pilots and road charge systems should investigate such changes, and be designed in a way to accommodate these technology advancements. In that regard, California's recent federal grant under the Surface Transportation System Funding Alternatives program will include an investigation of a pay-at-the-pump/charging-station option that replicates the current gas tax collection mechanism, along with the potential use of connected vehicle technology (e.g., vehicle-to-infrastructure concepts and standards) in a future road charge system.
- Compliance and enforcement**—Compliance and enforcement were not tested or evaluated as part of the pilot program. Figure 3-3 shows the monthly comparison of the number of actively reporting vehicles (i.e., those reporting data during the month) relative to the number of vehicles enrolled in the program (i.e., active VINs per AMO report). As shown, some vehicles—particularly those with manual methods (e.g., time permit, mileage permit, odometer charge)—did not provide mileage data monthly; this is a critical issue for the future. The ease and costs of enforcement for each alternative mileage reporting method needs to be considered. Another consideration is the potential impact on the State's cash flow.

Figure 3-3. Monthly Comparison of Actively Reporting Vehicles Relative to Total Vehicles (Compliant) in the RCPP



- Protection of privacy**— The RCPP satisfied the various privacy criteria. Nevertheless, privacy will continue to be a major policy and technology issue as road charge matures and moves towards a mandated system. One key issue will be data ownership and retention. A mandated road charge system could generate additional data sets in this new information era. As such, some compromises will need to be considered between privacy and convenience, especially in the private sector in terms of their business model. Establishing privacy requirements that are viewed by the private sector as too onerous could result in businesses choosing to not get involved with road charge or at a cost that would not be feasible to the state government. In contrast, establishing privacy requirements that do not provide drivers an appropriate level of privacy protection could hamper a potential road charge program from being adopted.

There are still many policies to address in terms of a potential future road charge program, including but not limited to administrative approach, compliance and enforcement, new technologies, interoperability, and future costs. The potential to further road charge research efforts in the aforementioned areas may prove complementary to the RCPP, and provide decision-makers with additional valuable insights as California continues to research alternative transportation funding mechanisms long term.

Appendix A

California Senate Bill 1077

Senate Bill No. 1077

CHAPTER 835

An act to add and repeal Chapter 7 (commencing with Section 3090) of Division 2 of, and to repeal Chapter 7 (commencing with former Section 3100) of Division 2 of, the Vehicle Code, relating to vehicles.

[Approved by Governor September 29, 2014. Filed with
Secretary of State September 29, 2014.]

LEGISLATIVE COUNSEL'S DIGEST

SB 1077, DeSaulnier. Vehicles: road usage charge pilot program.

Existing law establishes the Transportation Agency, which consists of the Department of the California Highway Patrol, the California Transportation Commission, the Department of Motor Vehicles, the Department of Transportation, the High-Speed Rail Authority, and the Board of Pilot Commissioners for the Bays of San Francisco, San Pablo, and Suisun.

This bill would require the Chair of the California Transportation Commission to create a Road Usage Charge (RUC) Technical Advisory Committee in consultation with the Secretary of the Transportation Agency. The bill would require the technical advisory committee to study RUC alternatives to the gas tax and to make recommendations to the Secretary of the Transportation Agency on the design of a pilot program, as specified. The bill would also authorize the technical advisory committee to make recommendations on the criteria to be used to evaluate the pilot program. The bill would require the technical advisory committee to consult with specified entities and to consider certain factors in carrying out its duties. The bill would require the Transportation Agency, based on the recommendations of the technical advisory committee, to implement a pilot program to identify and evaluate issues related to the potential implementation of an RUC program in California by January 1, 2017. The bill would require the agency to prepare and submit a report of its findings to the technical advisory committee, the commission, and the appropriate fiscal and policy committees of the Legislature by no later than June 30, 2018, as specified. The bill would also require the commission to include its recommendations regarding the pilot program in its annual report to the Legislature, as specified. The bill would repeal these provisions on January 1, 2019.

The people of the State of California do enact as follows:

SECTION 1. The Legislature finds and declares all of the following:

(a) An efficient transportation system is critical for California's economy and quality of life.

(b) The revenues currently available for highways and local roads are inadequate to preserve and maintain existing infrastructure and to provide funds for improvements that would reduce congestion and improve service.

(c) The gas tax is an ineffective mechanism for meeting California's long-term revenue needs because it will steadily generate less revenue as cars become more fuel efficient and alternative sources of fuel are identified. By 2030, as much as half of the revenue that could have been collected will be lost to fuel efficiency. Additionally, bundling fees for roads and highways into the gas tax makes it difficult for users to understand the amount they are paying for roads and highways.

(d) Other states have begun to explore the potential for a road usage charge to replace traditional gas taxes, including the State of Oregon, which established the first permanent road user charge program in the nation.

(e) Road usage charging is a policy whereby motorists pay for the use of the roadway network based on the distance they travel. Drivers pay the same rate per mile driven, regardless of what part of the roadway network they use.

(f) A road usage charge program has the potential to distribute the gas tax burden across all vehicles regardless of fuel source and to minimize the impact of the current regressive gas tax structure.

(g) Experience to date in other states across the nation demonstrates that mileage-based charges can be implemented in a way that ensures data security and maximum privacy protection for drivers.

(h) It is therefore important that the state begin to explore alternative revenue sources that may be implemented in lieu of the antiquated gas tax structure now in place.

(i) Any exploration of alternative revenue sources shall take privacy implications into account, especially with regard to location data. Travel locations or patterns shall not be reported, and legal and technical safeguards shall protect personal information.

SEC. 2. Chapter 7 (commencing with Section 3090) is added to Division 2 of the Vehicle Code, to read:

CHAPTER 7. ROAD USAGE CHARGE PILOT PROGRAM

3090. (a) The Chair of the California Transportation Commission shall create, in consultation with the Secretary of the Transportation Agency, a Road Usage Charge (RUC) Technical Advisory Committee.

(b) The purpose of the technical advisory committee is to guide the development and evaluation of a pilot program to assess the potential for mileage-based revenue collection for California's roads and highways as an alternative to the gas tax system.

(c) The technical advisory committee shall consist of 15 members. In selecting the members of the technical advisory committee, the chair shall

consider individuals who are representative of the telecommunications industry, highway user groups, the data security and privacy industry, privacy rights advocacy organizations, regional transportation agencies, national research and policymaking bodies, including, but not limited to, the Transportation Research Board and the American Association of State Highway and Transportation Officials, Members of the Legislature, and other relevant stakeholders as determined by the chair.

(d) Pursuant to Section 14512 of the Government Code, the technical advisory committee may request the Department of Transportation to perform such work as the technical advisory committee deems necessary to carry out its duties and responsibilities.

(e) The technical advisory committee shall study RUC alternatives to the gas tax. The technical advisory committee shall gather public comment on issues and concerns related to the pilot program and shall make recommendations to the Secretary of the Transportation Agency on the design of a pilot program to test alternative RUC approaches. The technical advisory committee may also make recommendations on the criteria to be used to evaluate the pilot program.

(f) In studying alternatives to the current gas tax system and developing recommendations on the design of a pilot program to test alternative RUC approaches pursuant to subdivision (e), the technical advisory committee shall take all of the following into consideration:

(1) The availability, adaptability, reliability, and security of methods that might be used in recording and reporting highway use.

(2) The necessity of protecting all personally identifiable information used in reporting highway use.

(3) The ease and cost of recording and reporting highway use.

(4) The ease and cost of administering the collection of taxes and fees as an alternative to the current system of taxing highway use through motor vehicle fuel taxes.

(5) Effective methods of maintaining compliance.

(6) The ease of reidentifying location data, even when personally identifiable information has been removed from the data.

(7) Increased privacy concerns when location data is used in conjunction with other technologies.

(8) Public and private agency access, including law enforcement, to data collected and stored for purposes of the RUC to ensure individual privacy rights are protected pursuant to Section 1 of Article I of the California Constitution.

(g) The technical advisory committee shall consult with highway users and transportation stakeholders, including representatives of vehicle users, vehicle manufacturers, and fuel distributors as part of its duties pursuant to subdivision (f).

3091. (a) Based on the recommendations of the RUC Technical Advisory Committee, the Transportation Agency shall implement a pilot program to identify and evaluate issues related to the potential implementation of an RUC program in California by January 1, 2017.

(b) At a minimum, the pilot program shall accomplish all of the following:

(1) Analyze alternative means of collecting road usage data, including at least one alternative that does not rely on electronic vehicle location data.

(2) Collect a minimum amount of personal information including location tracking information, necessary to implement the RUC program.

(3) Ensure that processes for collecting, managing, storing, transmitting, and destroying data are in place to protect the integrity of the data and safeguard the privacy of drivers.

(c) The agency shall not disclose, distribute, make available, sell, access, or otherwise provide for another purpose, personal information or data collected through the RUC program to any private entity or individual unless authorized by a court order, as part of a civil case, by a subpoena issued on behalf of a defendant in a criminal case, by a search warrant, or in aggregate form with all personal information removed for the purposes of academic research.

3092. (a) The Transportation Agency shall prepare and submit a report of its findings based on the results of the pilot program to the RUC Technical Advisory Committee, the California Transportation Commission, and the appropriate policy and fiscal committees of the Legislature by no later than June 30, 2018. The report shall include, but not be limited to, a discussion of all of the following issues:

(1) Cost.

(2) Privacy, including recommendations regarding public and private access, including law enforcement, to data collected and stored for purposes of the RUC to ensure individual privacy rights are protected pursuant to Section 1 of Article I of the California Constitution.

(3) Jurisdictional issues.

(4) Feasibility.

(5) Complexity.

(6) Acceptance.

(7) Use of revenues.

(8) Security and compliance, including a discussion of processes and security measures necessary to minimize fraud and tax evasion rates.

(9) Data collection technology, including a discussion of the advantages and disadvantages of various types of data collection equipment and the privacy implications and considerations of the equipment.

(10) Potential for additional driver services.

(11) Implementation issues.

(b) The California Transportation Commission shall include its recommendations regarding the pilot program in its annual report to the Legislature as specified in Sections 14535 and 14536 of the Government Code.

3093. This chapter shall remain in effect only until January 1, 2019, and as of that date is repealed, unless a later enacted statute, that is enacted before January 1, 2019, deletes or extends that date.

SEC. 3. Chapter 7 (commencing with former Section 3100) of Division 2 of the Vehicle Code is repealed.

O

Appendix B
California Road Charge Pilot Program
In-Vehicle Telematics Participating
Vehicles

Smartcar Support of Vehicle Telematics

as of June 2, 2016

SmartCar Compatible Models			Participant vehicle count			Count
Make	Model	Year	Make	Model	Year	
Acura	MDX	2014	Acura	MDX	2014	6
Acura	MDX	2015	Acura	MDX	2015	2
Acura	MDX	2016	acura	MDX	2016	1
Acura	TLX	2015	Acura	TLX	2015	7
BMW	i3	2014	Bmw	i3	2014	8
BMW	i3	2015	BMW	i3	2015	3
Ford	C-Max Energi	2013	Ford	C-Max Energi	2013	5
Ford	C-Max Energi	2014	Ford	C-Max Energi	2014	8
Ford	C-Max Energi	2015	Ford	C-Max Energi	2015	3
Ford	C-Max Energi	2016	Ford	C-Max Energi	2016	3
Ford	Fusion Energi	2013	Ford	Fusion Energi	2013	2
Ford	Fusion Energi	2014	Ford	Fusion Energi	2014	3
Ford	Fusion Energi	2015	Ford	Fusion Energi	2015	8
Ford	Fusion Energi	2016	Ford	Fusion Energi	2016	2
Lexus	CT 200h	2015	Lexus	CT 200h	2015	4
Lexus	CT 200h	2016	Lexus	CT 200h	2016	1
Lexus	ES 300h	2015	Lexus	ES 300h	2015	5
Lexus	ES 300h	2016	Lexus	ES 300h	2016	2
Lexus	ES 350	2016	Lexus	ES 350	2016	1
Lexus	GS 350	2016	Lexus	GS 350	2016	3
Lexus	IS 200t	2016	Lexus	IS 200t	2016	1
Lexus	IS 250	2015	Lexus	IS 250	2015	1
Lexus	IS 350	2015	Lexus	IS 350	2015	1
Lexus	LS 460	2015	Lexus	LS 460	2015	1
Lexus	NX 200t	2015	Lexus	NX 200t	2015	5
Lexus	NX 200t	2016	Lexus	NX 200t	2016	1
Lexus	NX 300h	2015	Lexus	NX 300h	2015	2
Lexus	NX 300h	2016	Lexus	NX 300h	2016	1
Lexus	RC 350	2015	Lexus	RC 350	2015	1
Lexus	RC 350	2016	Lexus	RC 350	2016	1
Lexus	RX 350	2015	Lexus	RX 350	2015	4
Lexus	RX 350	2016	Lexus	RX 350	2016	3
Lexus	RX 450h	2015	Lexus	RX 450h	2015	1
Tesla	Model S	2013	Tesla	Model S	2013	14
Tesla	Model S	2014	Tesla	Model S	2014	11
Tesla	Model S	2015	Tesla	Model S	2015	16
Tesla	Model S	2016	Tesla	Model S	2016	3
Volvo	V60	2016	Volvo	V60	2016	1
Volvo	XC90	2016	Volvo	XC90	2016	1
Total guaranteed compatible (exl Acura &Lexus ES, NX)						113

Appendix C
Road Charge Pilot Program
Technical Advisory Committee
Evaluation Criteria and Analysis
Methods

California Road Charge Pilot Program Independent Evaluation

Technical Advisory Committee Evaluation Criteria and Analysis Methods

Category	ID	Goal	Criteria	Measures	Analysis Method(s)
Revenue	Rev01-01	Create a revenue stream that is able to match the fuel tax at time of implementation	Ability of Road Charge revenue to match fuel tax revenue at time of implementation	Estimated fuel tax revenues paid by pilot participants	- Data Analysis
	Rev01-02			Estimated road charge (hypothetical) paid by pilot participants	- Data Analysis
	Rev02-01	Avoid double taxation of Road Charge and fuel tax	Ability to credit fuel taxes paid against Road Charges owed for pilot participants	Rate of participant satisfaction with accuracy of <u>estimated fuel tax paid</u>	- Participant Surveys
	Rev02-02			Accuracy of estimated fuel tax paid for each <u>applicable operational concept</u>	- Data Analysis
Cost	Cost01-01	Administer Road Charges efficiently	Estimated agency cost of administering a statewide Road Charge based on relevant cost data from the pilot	Cost of collecting road charge per vehicle in the pilot by operational concept	- Interviews
	Cost02-01	Incorporate cost efficiencies where available	Estimated agency cost of administering a statewide Road Charge based on relevant costs from the pilot, relative to fuel taxes	Estimated average cost of collecting road charge per vehicle based on mix of operational concepts in pilot	- Interviews
	Cost02-02			Estimated per-vehicle cost of collecting road charge per operational concept at scale divided by per-vehicle cost to collect fuel tax	- Interviews
	Cost02-03			Estimated per-vehicle cost of collecting road charge based on mix of operational concepts in pilot at scale divided by per-vehicle cost to collect fuel tax	- Interviews
	Cost03-01	Provide users with low- cost compliance options	Costs incurred by motorists in recording and reporting highway use	Time spent by participants devoted to road charge pilot activities related to reporting miles and <u>making payments</u>	- Participant Surveys - Fleet Questionnaire
	Cost03-02			Financial costs incurred by participants related to reporting miles and making payments	- Participant Surveys
	Cost04-01	Implement projects on time and on budget	Completion of pilot project milestones relative to schedule required in SB 1077	Pilot delivery time divided by initial schedule <u>estimate</u>	- Interviews
	Cost04-02			Pilot delivery costs divided by initial budget <u>estimate at January 2016</u>	- Interviews
Operation	Oper01-01	Be easy to administer	Ease of administering collection of Road Charges	Number of vendor staff (full time equivalents) <u>devoted to pilot effort</u>	- Interviews
	Oper02-01	Clearly identify responsibilities	Ease of administering collection of Road Charges	Number of agency staff (full time equivalents) devoted to pilot effort	- Interviews

California Road Charge Pilot Program Independent Evaluation

Technical Advisory Committee Evaluation Criteria and Analysis Methods

Category	ID	Goal	Criteria	Measures	Analysis Method(s)
Operation	Oper03-01	Clearly identify responsibilities	Adherence of all pilot vendors and administrators to operations responsibility matrix	Number of deviations from responsibility matrix and description of each deviation	- Interviews - Participant Surveys - Documentation Review
	Oper04-01	Maintain compliance	Effectiveness of methods for encouraging voluntary compliance	Rate of voluntary compliance by participants, per operational concept	- Interviews - Participant Surveys - Data Analysis
	Oper05-01	Be enforceable	Effectiveness of methods for encouraging voluntary compliance	None	None
	Oper06-01	Be enforceable	Resistance of methods to tampering and fraud	Number and description of detected instances of attempted tampering or fraud, per operational concept	- Interviews - Data Analysis
	Oper07-01	Have neutral or efficient behavior impacts	Changes in individual road use behavior	Proportion of participants expressing change in behavior as a result of road charge, per operational concept	- Participant Surveys - Focus Groups
	Oper07-02			Description of individual behavior changes noted as a result of road charge, per operational concept	- Participant Surveys - Focus Groups
	Oper08-01	Have neutral or efficient behavior impacts	Changes in collective road use behavior	Aggregate change in behavior of all participants, per operational concept	- Participant Surveys - Focus Groups
	Oper09-01	Integrate with other charges	Ease of administering interoperability with other jurisdictions	Number of FTEs devoted to interoperability during the course of the pilot	- Interviews - Documentation Review
	Oper10-01	Optimize collection of charges in accordance with enforcement features recommended by the TAC	Difference between expected and realized revenue per mile	Theoretical gross road charge revenue from pilot participants during pilot project	None
	Oper10-02			Theoretical adjusted gross revenue expected from pilot participants during pilot project	None
	Oper11-01	Optimize collection of charges in accordance with enforcement features recommended by the TAC	Implementation of and adherence to enforcement features recommended by the TAC	Number of enforcement features tested	None
	Oper11-02			Description of anomalies detected and action taken	None
	Oper12-01	Be compliant with financial guidelines	Auditability of accounts	Number of account managers audited	- Documentation Review
	Oper12-02			Number of audits resulting in identification of missing mileage and corresponding amount of mileage	- Documentation Review

California Road Charge Pilot Program Independent Evaluation
Technical Advisory Committee Evaluation Criteria and Analysis Methods

Category	ID	Goal	Criteria	Measures	Analysis Method(s)
Operation	Oper13-01	Be compliant with financial guidelines	Auditability of account managers	Number of account managers audited	- Documentation Review
	Oper13-02			Number and description of account manager audits resulting in changes	- Interviews - Documentation Review
	Oper13-03			Description of changes, if any	- Interviews - Documentation Review
User Experience	UX01-01	Administer Road Charges effectively	Users' ease of recording and reporting highway use	Number of complaints about ease of recording and reporting, per operational concept	- Focus Groups - Participant Surveys - Data Analysis
	UX02-01	Administer Road Charges effectively	Users' ease of recording and reporting highway use	Number of calls to help- line on which references to inadequacies of user instructions were mentioned, per operational concept	- Focus Groups - Documentation Review
	UX02-02			Description of issues related to inadequacies of user instructions mentioned on calls to help line	- Focus Groups - Documentation Review
	UX03-01	Administer Road Charges effectively	Quality/accuracy of highway use data reported	Percentage of participants satisfied with accuracy of road use data reported on road charge invoices	- Interviews - Participant Surveys
	UX03-02			Estimated percentage deviation of road use data reported from "true distance."	- Data Analysis
	UX04-01	Allow user choice	User acceptance of methods available	Proportion of each operational concept available chosen by participants	- Data Analysis
	UX04-02			Percentage of participants satisfied by choices available	- Focus Groups - Participant Surveys
	UX05-01	Allow user choice	User acceptance of methods available	Percentage of participants satisfied by their original choice of operational concept	- Focus Groups - Participant Surveys
	UX05-02			Percentage of participants that changed operational concepts during pilot	- Focus Groups - Participant Surveys

California Road Charge Pilot Program Independent Evaluation

Technical Advisory Committee Evaluation Criteria and Analysis Methods

Category	ID	Goal	Criteria	Measures	Analysis Method(s)
User Experience	UX06-01	Allow user choice	User acceptance of methods available	Among participants who changed operational concepts, percentage that are satisfied with the change process	- Focus Groups - Participant Surveys
	UX07-01	Allow user choice	User acceptance of methods available	Among participants who changed operational concepts, percentage that are satisfied with their new choice	- Focus Groups - Participant Surveys
	UX08-01	Allow user choice	Market availability of methods	Number of operational concepts recommended by TAC made available to pilot participants	- Documentation Review
	UX08-02			Number of operational concepts available during the entire pilot project	- Documentation Review
	UX09-01	Keep pace with change over the long term	Openness of system architecture for future providers	Number of vendors participating in pilot, per operational concept	- Documentation Review
	UX10-01	Keep pace with change over the long term	Long-term ability of methods to incorporate other services	Number and description of other services made available during pilot	- Documentation Review - Interviews
	UX10-02			Number and description of other services that could be made available to road charge payers	- Documentation Review - Interviews
	UX11-01	Provide methods that are available, adaptable, reliable, and secure	IT availability of methods	Percentage up-time of mileage reporting subsystem, per operational concept	- Interviews
	UX11-02			Percentage up-time of web-based account management features	- Interviews
	UX12-01	Provide methods that are available, adaptable, reliable, and secure	Long-term adaptability of methods to changing technologies	Observed ability of operational concepts to be updated (hardware or software)	- Documentation Review - Interviews
	UX13-01	Provide methods that are available, adaptable, reliable, and secure	Reliability of methods	Number of instances of technical support, per operational concept	- Data Analysis
	UX13-02			Average time to resolve technical issues, per operational concept	- Participant Surveys
	UX13-03			Description of technical support instances	- Focus Groups - Interviews

California Road Charge Pilot Program Independent Evaluation
Technical Advisory Committee Evaluation Criteria and Analysis Methods

Category	ID	Goal	Criteria	Measures	Analysis Method(s)
User Experience	UX14-01	Provide methods that are available, adaptable, reliable, and secure	Security of methods	Number of instances of participant data being compromised, per operational concept	- Documentation Review - Interviews
	UX14-02			Description of data compromising events, if any	- Interviews
	UX14-03			Percentage of participants satisfied with data security, per operational concept	- Focus Groups - Interviews
	UX15-01	Be transparent about how charge works	User understanding of system, including choices, operations, and invoices	Percentage of participants expressing <u>understanding of choices available</u>	- Participant Surveys
	UX15-02			Percentage of participants expressing <u>understanding of how their choice works</u>	- Focus Groups - Participant Surveys
	UX16-01	Be transparent about how charge works	User understanding of system, including choices, operations, and invoices	Percentage of participants expressing <u>understanding of road charge invoices</u>	- Focus Groups - Participant Surveys
	UX16-02			Percentage of participants expressing satisfaction <u>with user instructions</u>	- Focus Groups - Participant Surveys
	UX17-01	Do not negatively impact safety	Incidence of safety issues related to Road Charging	Number of instances reported by participants of negative safety impacts directly related to road <u>charging</u>	- Focus Groups - Participant Surveys
	UX17-02			Description of safety incidents reported by <u>participants</u>	- Focus Groups - Participant Surveys
	UX17-03			Number of instances detected by system of negative safety impacts directly related to road <u>charging</u>	- Interviews
	UX17-04			Description of safety incidents detected by system	- Interviews
Privacy	Priv01-01	Honor personal privacy through privacy policies	User perception of privacy protections	Percentage of participants who claim to understand privacy protections in road charge pilot	- Focus Groups - Participant Surveys
	Priv01-02			Percentage of participants who are satisfied with privacy protections in the road charge pilot	- Focus Groups - Participant Surveys
	Priv02-01	Honor personal privacy through <u>privacy policies</u>	User perception of privacy protections	Description of privacy concerns expressed by <u>participants that the pilot did not resolve</u>	- Focus Groups - Participant Surveys
	Priv03-01	Protect personally-identifiable information (PII)	Protection of PII in accordance with principles adopted by the TAC	Number and characterizations of violations of Section 1 of Article I of the California Constitution	- Interviews
	Priv03-02			Availability of a time based option for participants	- Documentation Review - Data Analysis

California Road Charge Pilot Program Independent Evaluation
Technical Advisory Committee Evaluation Criteria and Analysis Methods

Category	ID	Goal	Criteria	Measures	Analysis Method(s)
Privacy	Priv04-01	Ensure identity protection using location data even after removal of PII	Protection of PII in accordance with principles adopted by the TAC	Availability of more than one choice for distance based options for participants	- Documentation Review - Interviews
	Priv04-02			Number and characterization of violations of federal and state laws governing privacy and information security	- Interviews
	Priv05-01	Ensure privacy protection when using location data with other technologies	Protection of PII in accordance with principles adopted by the TAC	Number and extent of information disclosures without motorist consent, specific statutory authority, appropriate legal process, or emergency circumstances as defined in law	- Interviews
	Priv06-01	Protect privacy pursuant to Article I Section 1 of the California Constitution with respect to data access by public agencies (including law enforcement) and private firms	Protection of privacy, including implementation and operation of procedures, in accordance with principles adopted by the TAC	Number and characterization of instances of information collection beyond that needed to properly calculate, report and collect the road charge, unless the motorist provides his or her consent.	- Documentation Review - Interviews
	Priv06-02			Number and characterization of instances of PII retention beyond the period of time necessary to ensure proper mileage account payment	- Documentation Review - Interviews
	Priv06-03			Percentage of motorists who were aware of whether they provided consent for their personal data to be used	- Interviews
	Priv07-01	Protect privacy pursuant to Article I Section 1 of the California Constitution with respect to data access by public agencies (including law enforcement) and private firms	Protection of privacy, including implementation and operation of procedures, in accordance with principles adopted by the TAC	Number and characterization of any instances of the system using specific locational information, including specific origins or destinations, travel patterns or times of travel beyond that needed for routine operations.	- Interviews
	Priv08-01	Protect privacy pursuant to Article I Section 1 of the California Constitution with respect to data access by public agencies (including law enforcement) and private firms	Protection of privacy, including implementation and operation of procedures, in accordance with principles adopted by the TAC	Number and percentage of motorists who had the opportunity to view all personal data being collected and stored to ensure proper usage	- Documentation Review - Interviews

California Road Charge Pilot Program Independent Evaluation

Technical Advisory Committee Evaluation Criteria and Analysis Methods

Category	ID	Goal	Criteria	Measures	Analysis Method(s)
Privacy	Priv09-01	Protect privacy pursuant to Article I Section 1 of the California Constitution with respect to data access by public agencies (including law enforcement) and private firms	Protection of privacy, including implementation and operation of procedures, in accordance with principles adopted by the TAC	Number and characterization of investigations into potential errors identified by motorists, and number of corresponding corrections made to ensure accuracy.	- Documentation Review - Interviews
	Priv10-01	Respect user privacy trade-offs	Ability of the system to accommodate user privacy preferences and choices relative to opt-in services	Percentage of participants who selected location-based operational concepts	- Data Analysis
	Priv10-02			Percentage of participants who were satisfied with privacy choices	- Participant Surveys
	Priv10-03			Description of privacy trade-offs that participants faced in choosing an operational concept	- Participant Surveys - Focus Groups
Data Security	DatSec01-01	Honor personal privacy through data security	User perception of data security	Percentage of participants who claim to understand data security protections in road charge pilot	- Participant Surveys - Focus Groups
	DatSec01-02			Percentage of participants who are satisfied with data security protections in the road charge pilot	- Participant Surveys - Focus Groups
	DatSec01-03			Description of data security concerns expressed by participants that the pilot did not resolve	- Participant Surveys - Focus Groups
	DatSec02-01	Ensure data are secure from external breaches	Ability of system to withstand breaches or attacks	Number of instances and characterization of instances of deviations from TAC data security recommendations	- Documentation Review
	DatSec03-01	Ensure data are secure from internal breaches	Protection of data in accordance with TAC direction on data security	Number of instances and characterization of instances of deviations from TAC data security recommendations	- Interviews
	DatSec03-02			Number of instances and characterization of instances of deviations from TAC data security recommendations	- Interviews
	DatSec04-01	Ensure data are secure from abuse based on internal process exposure	Conformity with relevant ISO 9000 data security standards	Number of instances and characterization of instances of deviations from TAC data security recommendations	- Interviews
	DatSec04-02			Number of instances and characterization of instances of deviations from TAC data security recommendations	- Interviews
Equity	Equi01-01	Be fair and equitable	User perception of equity, relative to fuel taxes	Percentage of participants who view road charge as more fair, less fair, or as fair as fuel taxes	- Participant Surveys - Focus Groups - Fleet Questionnaire

California Road Charge Pilot Program Independent Evaluation

Technical Advisory Committee Evaluation Criteria and Analysis Methods

Category	ID	Goal	Criteria	Measures	Analysis Method(s)
Equity	Equi02-01	Preserve or improve horizontal equity (relative to fuel taxes), which provides that people of similar abilities to pay would pay at the same (effective) rates	Road Charges and compliance costs incurred, by distance traveled, relative to fuel taxes	Average hypothetical road charge paid by pilot participants, by distance traveled	- Participant Surveys - Data Analysis
	Equi02-02			Average fuel tax paid by pilot participants, by distance traveled	- Data Analysis
	Equi03-01	Preserve or improve vertical equity (relative to fuel taxes), which provides that people of differing abilities to pay would pay at different (effective) rates	Road Charges and compliance costs incurred, by household income, relative to fuel taxes	Average hypothetical road charge paid by pilot participants, by household income	- Data Analysis
	Equi03-02			Average fuel tax paid by pilot participants, by household income	- Data Analysis
	Equi04-01	Preserve or improve spatial equity (relative to fuel taxes)	Road Charges and compliance costs incurred, by location, relative to fuel taxes: North, Central, South; urban/suburban, rural/agricultural; in-state, out-of-state	Average hypothetical road charge paid by pilot participants, by region, location, and in- state/out-of-state	- Data Analysis
	Equi04-02			Average fuel tax paid by pilot participants, by region, location, and in-state/out-of-state	- Data Analysis
	Equi05-01	Preserve or improve procedural equity (relative to fuel taxes)	Road Charges and compliance costs incurred, by method chosen, relative to fuel taxes	Average hypothetical road charge paid by pilot participants, by operational concept	- Data Analysis
	Equi05-02			Average fuel tax paid by pilot participants, by operational concept	- Data Analysis
Communications	Comm01-01	Engage the public meaningfully	Opportunities for participant feedback	Number of opportunities for participants to provide feedback, including evaluation surveys	- Participant Surveys - Focus Groups - Documentation Review
	Comm01-02			Number and percentage of participants providing feedback	- Participant Surveys - Focus Groups - Documentation Review
	Comm02-01	Engage the public meaningfully	Opportunities for general public feedback	Number of opportunities for general public to provide feedback	- Data Analysis
	Comm02-02			Number of members of the general public providing feedback	- Interviews
	Comm03-01	Engage the public meaningfully	Participant satisfaction with interactions and feedback opportunities	Percentage of participants satisfied with quality of feedback opportunities	- Participant Surveys
	Comm03-02			Reasons for satisfaction or dissatisfaction with feedback opportunities.	- Focus Groups

Appendix D
California Road Charge Pilot Program
Participant Survey and
Focus Group Questions

Appendix D: Pre-Pilot Survey Phase 1

-1-

California Road Charge Pilot Evaluation

Pre-Pilot Survey of California Road Charge Pilot Program Participants

Phase One

EMC Research 16-5937

Subject line: California Road Charge Pre-Pilot Program Survey

Invitation email text: Thank you for participating in California's Road Charge Pilot Program! As part of the program, we would like to gather information about why you joined, what you think of the program, and your experience so far with a short survey. The survey will only take about 15 minutes of your time and your participation is an extremely important component of the pilot evaluation process.

For your participation in this survey, you will have the opportunity to enter the Miles of Thanks Sweepstakes 1 for a chance to win one-of-five \$200 prizes! Also, for every completed survey submitted for the Miles of Thanks Sweepstakes 1, 2, and 3, you will be entered into our GRAND PRIZE DRAWING for \$500!

To participate, please click the link below:

[SURVEY LINK](#)

Thank you for your participation!

**Must be 18 years of age or older to participate in the survey. By taking the survey, you can choose to be entered into a drawing for one-of-five \$200 prizes and one entry into the Grand Prize Drawing for \$500.*

*Please click **here** to unsubscribe if you would no longer like to receive these emails or if you are no longer able to participate as a volunteer.*

Reminder email text: This is a reminder to please take a moment to participate in a short survey to gather information about why you joined the pilot program. The survey will only take about 15 minutes of your time and your participation is an extremely important component of the pilot evaluation process. If you have already started the survey, you can resume where you left off.

For your participation in this survey, you will have the opportunity to enter the Miles of Thanks Sweepstakes 1 for a chance to win one-of-five \$200 prizes! Also, for every completed survey submitted for the Miles of Thanks Sweepstakes 1, 2, and 3, you will be entered into our GRAND PRIZE DRAWING for \$500!

To participate, please click the link below:

[**SURVEY LINK**](#)

Thank you for your participation!

**Must be 18 years of age or older to participate in the survey. By taking the survey, you can choose to be entered into a drawing for a \$200 prize. To enter without taking the survey, please mail your name, phone number, and mailing address to CA Road Charge Pilot Program, c/o EMC Research, 610 SW Alder Street, Suite 521, Portland, OR 97205.*

*Please click **here** to unsubscribe if you would no longer like to receive these emails or if you are no longer able to participate as a volunteer.*

Survey Questionnaire text: This first survey is to gather information about why you joined the pilot program, what you think of the program, and your experience so far.

Your participation in this survey is an extremely important component of the pilot evaluation process, so please make sure you get all the way to the end of the survey. It should take you no more than about 15 minutes to complete, and if you get interrupted you may come back to finish later using the same link in your email. All of your answers are strictly confidential.

At the end of the survey you will have the opportunity to enter the Miles of Thanks Sweepstakes 1 for a chance to win one-of-five \$200 prizes! Also, every completed survey submitted for the Miles of Thanks Sweepstakes 1, 2, and 3, will be entered into our GRAND PRIZE DRAWING for \$500!

PILOT PROGRAM SATISFACTION (questions repeated in mid and post-pilot surveys)

Q1INT. First, some questions about your experience so far with the California Road Charge Pilot Program. How satisfied are you with the following?

1. 1 – Very unsatisfied
2. 2
3. 3
4. 4
5. 5 – Very satisfied
6. Don't know

ALWAYS ASK FIRST

1. The Pilot Program overall

RANDOMIZE REMAINING LIST

2. Ease of participating in the Pilot Program
3. Clarity of communications and instructions you have received about the Pilot Program

4. Amount of time you have spent on your participation in the Pilot Program
5. The mileage reporting option you chose
6. Getting your questions about the Pilot Program answered
7. Opportunities for providing feedback on the Pilot Program
8. Your Account Manager
9. The security of your personal information

END RANDOMIZE

10. Would you say that paying for road maintenance and repair based on the miles you drive is **more fair** or **less fair** than paying based on the amount of gas you buy?
 1. Paying per mile is **more fair**
 2. Paying per mile is **less fair**
 3. They are about the same
 4. Not sure

PILOT PROGRAM ENROLLMENT MOTIVATION (questions asked only in pre-pilot survey)

11. How did you first hear about the California Road Charge Pilot Program?
 1. Someone told me about it
 2. Online advertisement
 3. Social media posting
 4. Publicity at an event or conference
 5. In a physical or online newspaper article
 6. In a radio news piece
 7. In a television news piece
 8. Somewhere else (specify _____)
 9. Not sure
12. Why did you choose to enroll in the California Road Charge Pilot Program? (**OPEN-ENDED TEXT BOX**)

Q13INT. How much of a factor was each of the following in you deciding to enroll in the California Road Charge Pilot Program?

1. 1 – Not a factor at all
2. 2
3. 3
4. 4
5. 5 – Major factor
6. Don't know

RANDOMIZE LIST

13. Wanted to have a say in how the California Road Charge Pilot Program will work
14. Wanted to be among the first in California to try it
15. Concerned about how road maintenance and repair are funded in California
16. Wanted to see if the Pilot Program succeeded or failed
17. Wanted to keep better track of how many miles I drive
18. Wanted to know how much I pay in gas tax
19. Concerned about how the California Road Charge Pilot Program will ensure privacy protections and data security

END RANDOMIZE**PILOT PROGRAM EXPECTATIONS (questions asked only in pre-pilot survey; similar questions in mid and post-pilot survey to ask how they felt these items matched their expectations)**

20. Which of the following best describes the amount of time you think you will spend on your participation in the California Road Charge Pilot Program **in an average month**?
 1. Less than 30 minutes
 2. 30 minutes to one hour
 3. One to two hours
 4. More than two hours
 5. Not sure
21. How much do you think you would be charged in **an average month** under a road charge? \$ **(NUMERIC TEXT BOX, ACCEPT WHOLE NUMBERS ONLY)** (Please enter a dollar amount.)

PILOT PROGRAM ENROLLMENT PROCESS (questions asked only in pre-pilot survey)

Q22INT. Now we have some questions about your enrollment process, meaning your experience in signing up for the California Road Charge Pilot Program. Please rate your satisfaction with each of the following parts of the enrollment process.

1. 1 – Very unsatisfied
2. 2
3. 3
4. 4
5. 5 – Very satisfied
6. Don't know

ALWAYS ASK FIRST

22. The Account Manager enrollment process overall

RANDOMIZE REMAINING LIST

23. Ease of enrolling with an Account Manager in the Pilot Program
24. Clarity of communications and instructions you received about enrolling with your account manager
25. Amount of time you spent enrolling with your Account Manager
26. The process of choosing your mileage reporting option
27. The mileage reporting options you had available to choose from
28. The process of choosing your Account Manager
29. Getting your questions about enrollment answered
30. Ease of navigating the California Road Charge Pilot Program website
31. Ease of navigating your Account Manager's website

END RANDOMIZE

Q32INT. For each of the following mileage reporting mechanisms, please indicate whether you personally think it is a good or bad idea.

1. 1 – Very bad idea
2. 2
3. 3
4. 4
5. 5 – Very good idea
6. Don't know

RANDOMIZE

32. **Time Permit** (Purchase a permit that allows unlimited road use in California for a specific period of time.)
33. **Mileage Permit** (Purchase a block of miles based on your expected use of California's roads.)
34. **Odometer Charge** (Make payments based on periodic manual odometer readings.)
35. **Location Aware Plug-in Device** (Report miles using a plug-in device for your car with optional smartphone app. Location data used to remove out of state and private land travel mileage.)
36. **Plug-in Device without location** (Report miles using a plug-in device for your car with optional smartphone app. Device does not reveal vehicle location.)
37. **Location Aware Smartphone App** (Report miles using a smartphone app. Location data used to remove out of state and private land travel.)
38. **Smartphone App without location** (Report miles using a smartphone app. Device does not reveal vehicle location.)
39. **Car's Built-in Technology** (Report using your car's built-in technology, also known as telematics.)

END RANDOMIZE

PROFILE QUESTIONS A *(questions repeated in mid and post-pilot surveys)*

40. Do you have any feedback about the pilot program that has not been addressed in any of the previous questions? **(OPEN-ENDED TEXT BOX)**
41. How many miles do you think you drive **in an average month**? **(NUMERIC TEXT BOX, ACCEPT WHOLE NUMBERS ONLY)**
42. How much do you think you pay in state gas taxes in **an average month** (California state gas tax is 27.8 per gallon, please enter a dollar amount.)? \$ **(NUMERIC TEXT BOX)**
(Please enter a dollar amount.)

Q43INT. How often do you do each of the following:

1. Daily (or every workday)
 2. Weekly
 3. Monthly
 4. Less than every month
 5. Never
 6. Don't know
43. Drive a vehicle alone
44. Ride or drive in a carpool
45. Ride in a taxi, Uber, or Lyft vehicle
46. Ride a bus, commuter train, or shuttle

PROFILE QUESTION B (*question asked only once per participant, in pre-pilot survey initially, or mid- or post-pilot survey if they skip the pre-pilot survey*)

47. Thinking about the motor vehicle you drive **most often**, is it powered by...
1. A gasoline engine
 2. A diesel engine
 3. An all-electric engine
 4. A hybrid gas-electric engine
 5. Another type of engine (specify _____)
 6. Not sure
48. Those are all of the questions we have for your today. Thank you for taking the time to participate in this important survey. Please indicate below if you would like to be entered into the Miles of Thanks Sweepstakes 1, for your chance to win one-of-five \$200 prizes. Remember every completed survey submitted for the Miles of Thanks Sweepstakes 1, 2, and 3, will enter you into the GRAND PRIZE of \$500!

PLEASE NOTE: It is important to answer this question and click the ">>" button at the bottom to ensure your survey responses are fully submitted.

1. Yes, please enter me into the Miles of Thanks Sweepstakes 1
2. No, please do not enter me into the Miles of Thanks Sweepstakes 1

49. **(IF Q48=YES)** Thank you for entering the Miles of Thanks Sweepstakes 1! Please find more information about the Sweepstakes and Grand Prize HERE.
[<http://www.californiaroadchargepilot.com/sweepstakes-1/>]

Appendix D: Pre-Pilot Survey Phase 2

California Road Charge Pilot Evaluation

Pre-Pilot Survey of California Road Charge Pilot Program Participants

Phase Two: Onboarding process for Smartphone App and Plug-in Device users

EMC Research 16-5937

Subject line: California Road Charge Pre-Pilot Program Survey

Invitation email text: Thank you for participating in California's Road Charge Pilot Program! You recently participated in a survey to provide your initial feedback about the program. This short follow-up survey will ask you some questions about your experience downloading a smartphone app and/or installing equipment for the pilot program. This survey will only take a few minutes to complete.

To participate, please click the link below:

[**SURVEY LINK**](#)

Thank you for your participation!

Subject line: California Road Charge Pre-Pilot Program Survey

Reminder email text: This is a reminder to please take a moment to participate in a short survey to gather information about your experience downloading a smartphone app and/or installing equipment for the California Road Charge Pilot Program. The survey will only take a few minutes of your time and your participation is an extremely important component of the pilot evaluation process. If you have already started the survey, you can resume where you left off.

To participate, please click the link below:

[**SURVEY LINK**](#)

Thank you for your participation!

Survey Questionnaire text: This short follow-up survey asks about your experience downloading a smartphone app and/or installing equipment for the pilot program.

Your participation in this survey is an extremely important component of the pilot evaluation process, please make sure you get all the way to the end of the survey. This survey will only take you a few minutes to complete, and if you get interrupted, you may come back to finish later using the same link in your email. All of your answers are strictly confidential.

PILOT PROGRAM ONBOARDING PROCESS *(Questions are only asked of participants downloading an app or installing a plug-in device; survey logic will be in place to ensure participants get the correct questions.)*

1. First, how satisfied are you with the California Road Charge Pilot Program overall?
 1. 1 – Very unsatisfied
 2. 2
 3. 3
 4. 4
 5. 5 – Very satisfied
 6. Not sure

2. How satisfied were you with the enrollment process overall?
 1. 1 – Very unsatisfied
 2. 2
 3. 3
 4. 4
 5. 5 – Very satisfied
 6. Not sure

SMARTPHONE APP SECTION

3. Once you completed the enrollment process, you were told to install an app to your smartphone that you would use to participate in the Road Charge Pilot Program. Have you downloaded and installed that app to your smartphone yet?
 1. I have downloaded and installed the app → **SKIP TO Q5**
 2. I have not completed downloading and installing the app → **CONTINUE TO Q4**

4. **(IF HAVE NOT DOWNLOADED THE APP; Q3=2)** Please select the reason that have you not completed downloading the app:
 1. I have not had time

2. I do not know how to download the app
3. The app would not work when I tried to install it/Technical error
4. The app was not available/I could not find it in the store
5. I decided that I did not want to download the app
6. Other (Specify:_____)

(SURVEY ENDS FOR Q3=2)

5. **(ASK IF HAVE DOWNLOADED AND INSTALLED THE APP; Q3=1)** Have you opened the app and explored how it works?
1. Yes
 2. No

(ASK IF HAVE DOWNLOADED AND INSTALLED THE APP; Q3=1) Please rate your satisfaction with each of the following parts of the app process.

1. 1 – Very unsatisfied
2. 2
3. 3
4. 4
5. 5 – Very satisfied
6. Don't know

RANDOMIZE LIST

6. Ease of downloading and installing the app
7. Clarity of communications and instructions you received about downloading and installing the app
8. Amount of time you spent downloading and installing the app
9. The ease of using or navigating the app
10. Mileage reporting process in the app

END RANDOMIZE

11. **(ASK IF HAVE DOWNLOADED AND INSTALLED THE APP; Q3=1)** Did you encounter any issues when installing the Smartphone App? **(OPEN END TEXT BOX)**

(SURVEY ENDS FOR Q3=1)

PLUG-IN DEVICE SECTION

12. Once you completed the enrollment process, your Account Manager should have sent you the equipment you needed to install in your vehicle(s) to participate in the Road Charge Pilot Program. Have you received and installed the equipment yet?

1. I have received and installed the equipment → **SKIP TO Q14**
2. I have received the equipment, but I have not yet installed it → **CONTINUE TO Q13**
3. I have not received the equipment yet → **TERMINATE AND RESCHEDULE SURVEY – SEND NOTE TO ACCOUNT MANAGER**

(SURVEY ENDS IF Q12=3)

13. **(IF RECEIVED DEVICE BUT HAVE NOT INSTALLED; Q12=2)** Please select the reason that you have not installed your device yet:

1. I have not had time
2. I do not know how to install it
3. I could not find the on-board diagnostics port
4. The device did not work when I tried to install it
5. My vehicle does not support this type of device
6. The device is damaged
7. I lost my device
8. I decided that I did not want to install the device in my vehicle
9. Other (Specify:_____)

14. **(IF Q12=1 OR 2)** About how many days lapsed between when you completed your enrollment and when you received your equipment in the mail? **(NUMERIC TEXT BOX, ACCEPT WHOLE NUMBERS ONLY)**

(SURVEY ENDS FOR Q12=2)

(ASK FOR THOSE WHO ALREADY RECEIVED AND INSTALLED EQUIPMENT; Q12=1) Please rate your satisfaction with each of the following parts of the process.

1. 1 – Very unsatisfied
2. 2
3. 3
4. 4
5. 5 – Very satisfied
6. Don't know

RANDOMIZE LIST

15. Amount of time it took to receive the equipment in the mail
16. Ease of installing the equipment
17. Clarity of communications and instructions you received about installing the equipment
18. Amount of time you spent installing the equipment

19. Mileage reporting process using the equipment
END RANDOMIZE

20. **(ASK FOR THOSE WHO ALREADY RECEIVED AND INSTALLED EQUIPMENT; Q12=1)** Did you encounter any issues when installing the device in your vehicle? **(OPEN END TEXT BOX)**

Thank you very much for your participation in this important survey!

Appendix D: Mid-Pilot Survey

California Road Charge Pilot Program Evaluation Mid-Pilot Survey

Among Pilot Program Participants

EMC Research #16-6217

(T) marks questions that have been asked previously

SURVEY INVITATION, REMINDER, AND INTRO TEXT

Subject line: California Road Charge Mid-Pilot Program Survey

Invitation email text: Thank you for participating in California's Road Charge Pilot Program! As part of the program, we would like to gather information about why you joined, what you think of the program, and your experience so far with a short survey. The survey will only take about 15 minutes of your time and your participation is a critical component of the pilot evaluation process.

For your participation in this survey, you will have the opportunity to enter into the Miles of Thanks Sweepstakes 2 for a chance to win one-of-five \$200 prizes! Also, for every completed survey submitted for the Miles of Thanks Sweepstakes 1, 2, and 3, you will be entered into our GRAND PRIZE DRAWING for \$500!

To participate, please click the link below:

[SURVEY LINK](#)

Thank you for your participation!

**Must be 18 years of age or older to participate in the survey. By taking the survey, you can choose to be entered into a drawing for one-of-five \$200 prizes and one entry into the Grand Prize Drawing for \$500.*

*Please click **here** to unsubscribe if you would no longer like to receive these emails or if you are no longer able to participate as a volunteer.*

Reminder email text: This is a reminder to please take a moment to participate in a short survey to gather information about why you joined the California Road Charge Pilot Program. The survey will only take about 15 minutes of your time and your participation is an extremely important component of the pilot evaluation process. If you have already started the survey, you can resume where you left off.

For your participation in this survey, you will have the opportunity to enter into the Miles of Thanks Sweepstakes 2 for a chance to win one-of-five \$200 prizes! Also, for every completed survey submitted for the Miles of Thanks Sweepstakes 1, 2, and 3, you will be entered into our GRAND PRIZE DRAWING for \$500!

To participate, please click the link below:

[SURVEY LINK](#)

Thank you for your participation!

**Must be 18 years of age or older to participate in the survey. By taking the survey, you can choose to be entered into a drawing for a \$200 prize. To enter without taking the survey, please mail your name, phone number, and mailing address to CA Road Charge Pilot Program, c/o EMC Research, 610 SW Alder Street, Suite 521, Portland, OR 97205.*

*Please click **here** to unsubscribe if you would no longer like to receive these emails or if you are no longer able to participate as a volunteer.*

Survey intro text: This survey will gather information about your experience with the California Road Charge Pilot Program so far.

Your participation in this survey is an extremely important component of the pilot evaluation process, so please make sure to complete the entire survey. It should take you no more than about 15 minutes to complete, and if you get interrupted you may come back to finish later using the same link in your email. All of your answers are strictly confidential.

At the end of the survey you will have the opportunity to enter into the Miles of Thanks Sweepstakes 2 for a chance to win one-of-five \$200 prizes! Also, every completed survey submitted for the Miles of Thanks Sweepstakes 1, 2, and 3, will be entered into our GRAND PRIZE DRAWING for \$500!

PILOT PROGRAM SATISFACTION

1INT. First, some questions about your experience so far with the California Road Charge Pilot Program. How satisfied are you with the following?

1. 1 – Very unsatisfied
2. 2
3. 3
4. 4
5. 5 – Very satisfied
6. Don't know

ALWAYS ASK FIRST

1. (T) The Pilot Program overall

RANDOMIZE

2. (T) Ease of participating in the Pilot Program
3. (T) Clarity of communications and instructions you have received about the Pilot Program
4. (T) Amount of time you have spent on your participation in the Pilot Program
5. (T) The mileage reporting option you chose
6. (T) Getting your questions about the Pilot Program answered
7. (T) Opportunities for providing feedback on the Pilot Program
8. (T) Your Account Manager
9. (T) The security of your personal information

END RANDOMIZE

10. (T) Would you say that paying for road maintenance and repair based on the miles you drive is **more fair** or **less fair** than paying based on the amount of gas you buy?
 1. Paying per mile is **more fair**
 2. Paying per mile is **less fair**
 3. They are about the same
 4. Not sure

11INT. How long does it take you to do each of the following in an average month?

1. Less than 5 minutes
2. 5 to 9 minutes
3. 10 to 14 minutes
4. 15 to 29 minutes
5. 30 minutes to one hour
6. One to two hours
7. Two to three hours
8. More than three hours
9. Not sure
10. Have never done

RANDOMIZE

11. Log into your account and review your data
12. Review your monthly invoice
13. Contact your Account Manager

END RANDOMIZE

14. In an average month, how much money have you spent reporting miles, reviewing your invoice and doing other activities to participate in the Pilot Program? Please report in dollars, no dollar sign necessary. **(NUMERIC TEXT BOX)**

REPORTING METHODS

15. Which mileage reporting method did you choose? **(Multiple answers accepted)**

1. Time permit
2. Mileage permit
3. Odometer charge
4. Location aware plug-in device
5. Plug in device without location
6. Location aware smartphone app
7. Smartphone app without location
8. Car's built in technology/telematics

16INT. How much do you agree with the following statements about your reporting method(s)?

1. 1 – Strongly disagree
2. 2
3. 3
4. 4
5. 5 – Strongly agree
6. Don't know

RANDOMIZE

16. Instructions to set up my reporting method were clear
17. It was easy for me to set up an account
18. My reporting method accurately reports my trips
19. My reporting method is easy to use

END RANDOMIZE

ASK Q20-23 ONLY OF DEVICE USERS (q15=4 or 5)

20INT. Once you completed the enrollment process, a device was installed in your vehicle(s). Referring to that device, how much do you agree with the following?

1. 1 – Strongly disagree
2. 2
3. 3
4. 4
5. 5 – Strongly agree
6. Don't know

RANDOMIZE

20. Trips that I am making are recognized by the device
21. The device has obstructed my ability to drive
22. The device has prevented me from making trips
23. Installing the device caused damage to my vehicle

END RANDOMIZE**ASK Q24-30 ONLY OF ODOMETER CHARGE USERS (q15=3)**

24. How have you reported the mileage on your odometer for the Pilot Program? **(RANDOMIZE RESPONSES)**
 1. Drove to an independent location to have it read
 2. Texted a picture of my odometer to my Account Manager
 3. Sent a picture of my odometer within my Account Manager app
 4. Other (Please Specify)
 5. Don't know

25INT. How satisfied are you with the following.

1. 1 – Very unsatisfied
2. 2
3. 3
4. 4
5. 5 – Very satisfied
6. Don't know

ALWAYS ASK FIRST

25. The overall odometer reading process

RANDOMIZE

26. **(ASK ONLY IF Q24 = 1)** Getting to the location where my odometer was read
27. **(ASK ONLY IF Q24 = 1)** Safety of the location where my odometer was read
28. **(ASK ONLY IF Q24 = 1)** Convenience of odometer reading
29. **(ASK ONLY IF Q24 = 1)** Ease of scheduling odometer reading appointment
30. **(ASK ONLY IF Q24 = 1)** The staff who read my odometer

END RANDOMIZE**(RESUME ASKING EVERYONE)**

31. Have you downloaded and installed your Account Manager app?
 1. Yes → **CONTINUE TO Q32**
 2. No → **SKIP Q32-35**
 3. Not applicable don't know → **SKIP TO Q32-35**
 4. Don't know → **SKIP TO Q32-35**

ASK Q32-Q35 ONLY OF APP USERS

32INT. Referring to your Account Manager app, how much do you agree with the following?

1. 1 – Strongly disagree

2. 2
3. 3
4. 4
5. 5 – Strongly agree
6. Don't know

RANDOMIZE

32. Trips that I am making are recognized by the app
33. The app is a convenient way to participate in the program
34. The app is easy to use
35. The app runs smoothly and consistently

END RANDOMIZE

36. **(ASK IF Q15=4 THRU 8, tech users)** Have you experienced any technical issues with your reporting method?
 1. Yes
 2. No
 3. Don't know
 4. Prefer not to respond
37. **(ASK IF Q36=1, experienced technical issues)** What technical issues did you experience? **(OPEN END)**
38. **(ASK IF Q36=1, experienced technical issues)** Were the technical issues you experienced resolved to your satisfaction?
 1. Yes
 2. No
 3. Don't know
 4. Prefer not to respond
39. **(ASK IF Q36=1, experienced technical issues)** How long did it take to resolve your technical issue?
 1. Less than an hour
 2. Between an hour and 3 hours
 3. Between 4 hours and a day
 4. Between 2 days and a week
 5. Between 2 weeks and a month
 6. More than a month
 7. Don't know
 8. Not resolved

REPORTING METHOD EVALUATION

40INT. The following are questions about your choice of mileage reporting method for the Pilot Program. How much do you agree with the following?

1. 1- Strongly disagree
2. 2
3. 3
4. 4
5. 5 – Strongly agree
6. Don't know

RANDOMIZE

40. I made the right choice of reporting method
41. I considered multiple methods when choosing my reporting method
42. The process of choosing the reporting method was clear

43. A different reporting mechanism would be better than the one I chose

END RANDOMIZE

44. Why did you choose your mileage reporting method? **(OPEN END)**

45. **(IF Q41=4 or 5, I considered multiple methods when choosing my reporting method)** What other reporting methods did you consider? **(Check all that apply)**

1. Time permit
2. Mileage permit
3. Odometer charge
4. Location aware plug-in device
5. Plug in device without location
6. Location aware smartphone app
7. Smartphone app without location
8. Car's built in technology or telematics
9. Don't know

(RESUME ASKING EVERYONE)

46. As you may know, in November Pilot Program participants will have the option to **switch their mileage reporting method**. Do you intend to switch your mileage reporting method?

1. Yes
2. No
3. Don't know

47. **(IF Q46=Yes, intend to switch)** What mileage reporting method do you intend to switch to?

1. Time permit
2. Mileage permit
3. Odometer charge
4. Location aware plug-in device
5. Plug in device without location
6. Location aware smartphone app
7. Smartphone app without location
8. Car's built in technology or telematics
9. Don't intend to switch
10. Don't know

ACCOUNT MANAGER

48INT. Thinking about your experience with your Account Manager, how satisfied are you with the following?

1. 1 – Very unsatisfied
2. 2
3. 3
4. 4
5. 5 – Very satisfied
6. Don't know

RANDOMIZE

48. Communications with your Account Manager

49. The security of your personal information and data that you provided to your Account Manager

50. The promptness of responses from your Account Manager

51. The ability of your Account Manager to resolve issues

52. The ability to reach your Account Manager when needed

END RANDOMIZE

53. As you may know, in November Pilot Program participants will have the option to switch **their Account Manager**. Do you intend to switch your Account Manager?

1. Yes
2. No
3. Don't know

54. **(IF Q53=Yes, intend to switch)** What Account Manager do you intend to switch to?

1. Azuga
2. CalSAM
3. DriveSync By IMS
4. Don't intend to switch
5. Don't know

INVOICES

55. How much, on average, is your monthly road charge invoice? **(NUMERIC TEXT BOX, ACCEPT NUMBERS ONLY) (Please enter a dollar amount, no dollar sign necessary.)**

56INT. How satisfied are you with the following?

1. 1 – Very unsatisfied
2. 2
3. 3
4. 4
5. 5 – Very satisfied
6. Don't know

RANDOMIZE

56. The clarity of your invoice

57. The accuracy of the estimated fuel tax

58. The transparency of the charges on your invoice

59. The fairness of the charges on your invoice

END RANDOMIZE

PRIVACY AND SAFETY

60INT. Now thinking about privacy and security, how much do you agree with the following?

1. 1 – Strongly disagree
2. 2
3. 3
4. 4
5. 5 – Strongly agree
6. Don't know

RANDOMIZE

60. I am concerned about my privacy while participating in the Pilot Program

61. My personal information and the data that I provide the Pilot Program is secure, private, and protected

END RANDOMIZE

62. **(ASK IF Q60=4 or 5, concerned about privacy)** Why are you concerned about your privacy due to participating in the Pilot Program? **(OPEN END)**
63. Have you experienced any safety issues that occurred as a result of participating in the Pilot Program?
1. Yes
 2. No
 3. Don't know
 4. Prefer not to respond
64. **(ASK IF Q63=1, experienced safety issue)** Please explain any safety issues that you have experienced. **(OPEN END)**

PROFILE QUESTIONS

65INT. How much do you agree with the following statements?

1. 1 – Strongly disagree
2. 2
3. 3
4. 4
5. 5 – Strongly agree
6. Don't know

RANDOMIZE

65. Participating in the Pilot Program has changed my driving behavior
66. I now drive less as a result of participating in the Pilot Program
67. I am more aware of the amount I pay for road maintenance as a result of participating in the Pilot Program
68. I am more aware of how many miles I drive as a result of participating in the Pilot Program

END RANDOMIZE

69. (T) Do you have any feedback about the Pilot Program that has not been addressed in any of the previous questions? **(OPEN-ENDED TEXT BOX)**

70INT. (T) How often do you do each of the following:

1. Daily (or every workday)
2. Weekly
3. Monthly
4. Less than every month
5. Never
6. Don't know

70. (T) Drive a vehicle alone
71. (T) Ride or drive in a carpool
72. (T) Ride in a taxi, Uber, or Lyft vehicle
73. (T) Ride a bus, commuter train, or shuttle

74. **[ASK ONLY IF NOT ANSWERED IN THE PRE PILOT SURVEY]** Thinking about the motor vehicle you drive **most often**, is it powered by...
1. A gasoline engine
 2. A diesel engine

3. An all-electric engine
4. A hybrid gas-electric engine
5. Another type of engine (specify _____)
6. Not sure

75. Those are all of the questions we have for your today. Thank you for taking the time to participate in this important survey. Please indicate below if you would like to be entered into the Miles of Thanks Sweepstakes 2, for your chance to win one-of-five \$200 prizes. Remember every completed survey submitted for the Miles of Thanks Sweepstakes 1, 2, and 3, will enter you into the GRAND PRIZE of \$500!

PLEASE NOTE: It is important to answer this question and click the ">>" button at the bottom to ensure your survey responses are fully submitted.

1. Yes, please enter me into the Miles of Thanks Sweepstakes 2
2. No, please do not enter me into the Miles of Thanks Sweepstakes 2

76. **(IF Q75=YES)** Thank you for entering the Miles of Thanks Sweepstakes 2! Please find more information about the Sweepstakes and Grand Prize HERE.
[<http://www.californiaroadchargepilot.com/sweepstakes-2/>]

Appendix D: Mid-Pilot Open-Enrollment Survey

California Road Charge Pilot Program Evaluation
Trigger-Based Survey for Open Enrollment Changes
Among Pilot Program Participants
EMC Research #16-6323
Approved



Subject line: California Road Charge Pilot Program Option Change Survey

Invitation email text: Thank you for participating in California's Road Charge Pilot Program! You have been identified as someone who changed their mileage reporting and/or account management choice during the Open Enrollment Period from November 1st to November 15th. We would like to gather some information about why you changed your original choice, and what you hope to gain from choosing this new option. The survey will only take about 5 minutes of your time and your participation is a critical component of the pilot evaluation process.

To participate, please click the link below:

[SURVEY LINK](#)

Thank you for your participation!

**Must be 18 years of age or older to participate in the survey.*

*Please click **here** to unsubscribe if you would no longer like to receive these emails or if you are no longer able to participate as a volunteer.*

Reminder email text: This is a reminder to please take a moment to participate in a short survey to gather information about why you changed your mileage reporting and/or account management option during the California Road Charge Pilot Program Open Enrollment Period. The survey will only take about 5 minutes of your time and your participation is an extremely important component of the pilot evaluation process. If you have already started the survey, you can resume where you left off.

To participate or resume, please click the link below:

[SURVEY LINK](#)

Thank you for your participation!

**Must be 18 years of age or older to participate in the survey.*

*Please click **here** to unsubscribe if you would no longer like to receive these emails or if you are no longer able to participate as a volunteer.*

Survey intro text: This survey will gather information about why you changed your mileage reporting and/or account management option during the California Road Charge Pilot Program Open Enrollment Period.

Your participation in this survey is an extremely important component of the pilot evaluation process, so please make sure to complete the entire survey. It should take no more than about 5 minutes to complete, and if you get interrupted - you may come back to finish later using the same link in your email. All of your answers are strictly confidential and appreciated.

[BEGIN SURVEY]

1. In November you had the opportunity change your reporting method and/or account manager. Which did you change?
 1. Mileage reporting method → **ASK BLOCK A ONLY**
 2. Account manager → **ASK BLOCK B ONLY**
 3. Both (Changed mileage reporting method AND account manager) → **ASK BLOCK A AND BLOCK B**
 4. Neither (Did not change mileage reporting method or account manager) → **TERMINATE**

[ROTATE BLOCK A AND BLOCK B]**[BEGIN BLOCK A – REPORTING METHOD]**

2. Why did you change your reporting method? (**OPEN END**)
3. What did you not like about your first reporting method? (**OPEN END**)
4. What attracted you to your new reporting method? (**OPEN END**)
5. Overall, how satisfied were you with the process of changing your reporting method?
 1. 1 – Very unsatisfied
 2. 2
 3. 3
 4. 4
 5. 5 – Very satisfied
 6. Don't know
6. Overall, how satisfied were you with the communications related to changing your reporting method?
 1. 1 – Very unsatisfied
 2. 2
 3. 3
 4. 4
 5. 5 – Very satisfied
 6. Don't know

[END BLOCK A – REPORTING METHOD]**[BEGIN BLOCK B – ACCOUNT MANAGER]**

7. Why did you change your account manager? (**OPEN END**)
8. What did you not like about your first account manager? (**OPEN END**)
9. What attracted you to your new account manager? (**OPEN END**)
10. Overall, how satisfied were you with the process of changing your account manager?
 1. 1 – Very unsatisfied
 2. 2
 3. 3
 4. 4

- 5. 5 – Very satisfied
- 6. Don't know

11. Overall, how satisfied were you with the communications related to changing your account manager?

- 1. 1 – Very unsatisfied
- 2. 2
- 3. 3
- 4. 4
- 5. 5 – Very satisfied
- 6. Don't know

[END BLOCK B – ACCOUNT MANAGER]

[RESUME ASKING ALL]

12. Are you willing to participate in an upcoming focus group, where you would be compensated \$100 for your time?

- 1. Yes
- 2. No

13. **(IF Q12 = 1; Yes)** Thank you, we may contact you again at a date in the near future with the details of the focus group, if you are selected.

[END OF SURVEY]

Appendix D: Final Pilot Survey

California Road Charge Pilot Program Evaluation Final Pilot Survey

Among Pilot Program Participants

EMC Research #17-6281

(T) marks questions that have been asked previously

SURVEY INVITATION, REMINDER, AND INTRO TEXT

Subject line: California Road Charge Final-Pilot Program Survey

Invitation email text: Thank you for participating in California's Road Charge Pilot Program! As part of the program, we would like to gather information about why you joined, what you think of the program, and your experience so far with a short survey. The survey will only take about 15 minutes of your time and your participation is a critical component of the pilot evaluation process.

For your participation in this survey, you will have the opportunity to enter into the Miles of Thanks Sweepstakes 3 for a chance to win one-of-five \$200 prizes! Also, for every completed survey submitted for the Miles of Thanks Sweepstakes 1, 2, and 3, you will be entered into our GRAND PRIZE DRAWING for \$500!

To participate, please click the link below:

[SURVEY LINK](#)

Thank you for your participation!

**Must be 18 years of age or older to participate in the survey. By taking the survey, you can choose to be entered into a drawing for one-of-five \$200 prizes and one entry into the Grand Prize Drawing for \$500.*

*Please click **here** to unsubscribe if you would no longer like to receive these emails or if you are no longer able to participate as a volunteer.*

Reminder email text: This is a reminder to please take a moment and participate in a short survey to gather information about your experience with the California Road Charge Pilot Program. The survey will only take about 15 minutes of your time and your participation is an extremely important component of the pilot evaluation process. If you have already started the survey, you can resume where you left off.

For your participation in this survey, you will have the opportunity to enter into the Miles of Thanks Sweepstakes 3 for a chance to win one-of-five \$200 prizes! Also, for every completed survey submitted for the Miles of Thanks Sweepstakes 1, 2, and 3, you will be entered into our GRAND PRIZE DRAWING for \$500!

To resume or participate, please click the link below:

[SURVEY LINK](#)

Thank you!

**Must be 18 years of age or older to participate in the survey. By taking the survey, you can choose to be entered into a drawing for a \$200 prize. To enter without taking the survey, please mail your name, phone number, and mailing address to CA Road Charge Pilot Program, c/o EMC Research, 610 SW Alder Street, Suite 521, Portland, OR 97205.*

*Please click **here** to unsubscribe if you would no longer like to receive these emails or if you are no longer able to participate as a volunteer.*

Survey intro text: This survey will gather information about your full experience with the California Road Charge Pilot Program.

Your participation in this survey is an extremely important component of the pilot evaluation process, so please make sure to complete the entire survey. It should take you no more than about 15 minutes to complete, and if you get interrupted you may come back to finish later using the same link in your email. All of your answers are strictly confidential.

At the end of the survey you will have the opportunity to enter into the Miles of Thanks Sweepstakes 3 for a chance to win one-of-five \$200 prizes! Also, every completed survey submitted for the Miles of Thanks Sweepstakes 1, 2, and 3, will be entered into our GRAND PRIZE DRAWING for \$500!

PILOT PROGRAM SATISFACTION

1INT. First, some questions about your experience with the California Road Charge Pilot Program. How satisfied are you with the following?

1. 1 – Very unsatisfied
2. 2
3. 3
4. 4
5. 5 – Very satisfied
6. Don't know

ALWAYS ASK FIRST

1. (T) The Pilot Program overall

RANDOMIZE

2. (T) Ease of participating in the Pilot Program
3. (T) Clarity of communications and instructions you have received about the Pilot Program
4. (T) Amount of time you have spent on your participation in the Pilot Program
5. (T) The mileage reporting option you chose
6. (T) Getting your questions about the Pilot Program answered
7. (T) Opportunities for providing feedback on the Pilot Program
8. (T) Your Account Manager
9. (T) The security of your personal information

END RANDOMIZE

10. (T) Would you say that paying for road maintenance and repair based on the miles you drive is **more fair** or **less fair** than paying based on the amount of gas you buy?
 1. Paying per mile is **more fair**
 2. Paying per mile is **less fair**
 3. They are about the same
 4. Not sure

11INT. How long does it take you to do each of the following in an average month?

1. Less than 5 minutes
2. 5 to 9 minutes
3. 10 to 14 minutes
4. 15 to 29 minutes
5. 30 minutes to one hour
6. One to two hours
7. Two to three hours
8. More than three hours
9. Not sure
10. Have never done

RANDOMIZE

11. (T) Log into your account and review your data
12. (T) Review your monthly invoice
13. (T) Contact your Account Manager

END RANDOMIZE

14. (T) In an average month, how much money have you spent reporting miles, reviewing your invoice and doing other activities to participate in the Pilot Program? Please report in dollars, no dollar sign necessary. **(NUMERIC TEXT BOX)**

REPORTING METHODS

15. (T) Which mileage reporting method do you use? **(Multiple answers accepted)**
 1. Time permit
 2. Mileage permit
 3. Odometer charge
 4. Plug in device with location
 5. Plug in device without location
 6. Location aware smartphone app
 7. Smartphone app without location
 8. Car's built in technology/telematics

16INT. How much do you agree with the following statements about your reporting method(s)?

1. 1 – Strongly disagree
2. 2
3. 3
4. 4
5. 5 – Strongly agree
6. Don't know

RANDOMIZE

16. (T) My reporting method accurately reports my trips
17. (T) My reporting method is easy to use

END RANDOMIZE

ASK Q18 21 ONLY OF DEVICE USERS (Q15 4 or 5)

18INT. Thinking about the reporting device that was installed in your vehicle, how much do you agree with the following?

1. 1 – Strongly disagree
2. 2

3. 3
4. 4
5. 5 – Strongly agree
6. Don't know

RANDOMIZE

18. (T) Trips that I am making are recognized by the device
19. (T) The device has obstructed my ability to drive
20. (T) The device has prevented me from making trips
21. (T) Installing the device caused damage to my vehicle

END RANDOMIZE**ASK Q22 29 ONLY OF ODOMETER CHARGE USERS (Q15 3)**

22. (T) How have you reported the mileage on your odometer for the Pilot Program? **(RANDOMIZE RESPONSES; MULTIPLE RESPONSES ACCEPTED)**

1. Drove to an independent location to have it read
2. Texted a picture of my odometer to my Account Manager
3. Sent a picture of my odometer within my Account Manager app
4. Other (Please Specify)
5. Don't know

- 23INT. How satisfied are you with the following?

1. 1 – Very unsatisfied
2. 2
3. 3
4. 4
5. 5 – Very satisfied
6. Don't know

ALWAYS ASK FIRST

23. (T) The overall odometer reading process

RANDOMIZE

24. **(ASK ONLY IF Q22=1)** (T) Getting to the location where my odometer was read
25. **(ASK ONLY IF Q22=1)** (T) Safety of the location where my odometer was read
26. **(ASK ONLY IF Q22=1)** (T) Convenience of odometer reading
27. **(ASK ONLY IF Q22=1)** (T) Ease of scheduling odometer reading appointment
28. **(ASK ONLY IF Q22=1)** (T) The staff who read my odometer
29. **(ASK ONLY IF Q22=1)** The amount of time that it takes to have my odometer read

END RANDOMIZE**(RESUME ASKING EVERYONE)**

30. (T) Have you downloaded and installed your Account Manager app?
1. Yes → **CONTINUE TO Q31INT**
 2. No → **SKIP Q35**
 3. Not applicable → **SKIP TO Q35**
 4. Don't know → **SKIP TO Q35**

ASK Q31 Q34 ONLY OF APP USERS

- 31INT. Referring to your Account Manager app, how much do you agree with the following?

1. 1 – Strongly disagree
2. 2
3. 3
4. 4

5. 5 – Strongly agree
6. Don't know

RANDOMIZE

31. (T) Trips that I am making are recognized by the app
32. (T) The app is a convenient way to participate in the program
33. (T) The app is easy to use
34. (T) The app runs smoothly and consistently

END RANDOMIZE

35. **(ASK IF Q15=4 THRU 8, Tech users)** (T) Have you experienced any technical issues with your reporting method?
 1. Yes
 2. No
 3. Don't know
 4. Prefer not to respond
36. **(ASK IF Q35=1, experienced technical issues)** (T) What technical issues did you experience? **(OPEN END)**
37. **(ASK IF Q35=1, experienced technical issues)** (T) Were the technical issues you experienced resolved to your satisfaction?
 1. Yes
 2. No
 3. Don't know
 4. Prefer not to respond
38. **(ASK IF Q35=1, experienced technical issues)** (T) How long did it take to resolve your technical issue?
 1. Less than an hour
 2. Between an hour and 3 hours
 3. Between 4 hours and a day
 4. Between 2 days and a week
 5. Between 2 weeks and a month
 6. More than a month
 7. Don't know
 8. Not resolved

REPORTING METHOD EVALUATION**(RESUME ASKING ALL)**

39INT. The following are questions about your choice of mileage reporting method for the Pilot Program.

How much do you agree with the following?

1. 1- Strongly disagree
2. 2
3. 3
4. 4
5. 5 – Strongly agree
6. Don't know

RANDOMIZE

39. (T) I made the right choice of reporting method
40. (T) A different reporting method would be better than the one I chose

END RANDOMIZE

41. **(IF Q40=4-5, agree a different reporting method would be better)** You agreed that a different reporting method would be better than the one you chose. Which reporting method or methods do you think would be better than the one you chose? **(ALLOW MULTIPLE RESPONSES)**
1. Time permit
 2. Mileage permit
 3. Odometer charge
 4. Plug in device with location
 5. Plug in device without location
 6. Location aware smartphone app
 7. Smartphone app without location
 8. Car's built in technology/telematics
 9. Don't know

ACCOUNT MANAGER EVALUATION

- 42INT. Thinking about your experience with your Account Manager, how satisfied are you with the following?
1. 1 – Very unsatisfied
 2. 2
 3. 3
 4. 4
 5. 5 – Very satisfied
 6. Don't know

RANDOMIZE

42. (T) Communications with your Account Manager
43. (T) The security of your personal information and data that you provided to your Account Manager
44. (T) The promptness of responses from your Account Manager
45. (T) The ability of your Account Manager to resolve issues
46. (T) The ability to reach your Account Manager when needed

END RANDOMIZE

INVOICES

47. (T) How much, on average, is your monthly road charge invoice? **(NUMERIC TEXT BOX, ACCEPT NUMBERS ONLY) (Please enter a dollar amount, no dollar sign necessary.)**

- 48INT. How satisfied are you with the following?

1. 1 – Very unsatisfied
2. 2
3. 3
4. 4
5. 5 – Very satisfied
6. Don't know

RANDOMIZE

48. (T) The clarity of your invoice
49. (T) The accuracy of the estimated fuel tax
50. (T) The transparency of the charges on your invoice
51. (T) The fairness of the charges on your invoice

END RANDOMIZE

PRIVACY AND SAFETY

52. Have you experienced any safety issues that occurred as a result of participating in the Pilot Program?

1. Yes
2. No
3. Don't know
4. Prefer not to respond

53. **(IF Q52=1, yes)** Were your concerns resolved?

1. Yes
2. No, they were not resolved
3. Don't know

54. **(IF Q53=2, not resolved)** Please explain the safety issues that you have experienced and how they were not resolved. **(OPEN END)**

(RESUME ASKING ALL)

55INT. How satisfied are you with the following?

1. 1 – Very unsatisfied
2. 2
3. 3
4. 4
5. 5 – Very satisfied
6. Don't know

(RANDOMIZE)

55. The protection of my privacy during the Pilot Program

56. The available data security protections related to the Pilot Program

(END RANDOMIZE)

57INT. How much do you agree or disagree with the following statements?

1. 1 – Strongly disagree
2. 2
3. 3
4. 4
5. 5 – Strongly agree
6. Don't know

(RANDOMIZE)

57. The privacy protections in the Pilot Program were clear to me

58. I sacrificed some of my privacy to take part in the Pilot Program

59. The data security protections related to the Pilot Program were clear to me

(END RANDOMIZE)**(ALWAYS ASK LAST)**

60. I experienced a privacy concern while participating in the pilot program.

61. **(IF Q60=4 or 5)** Can you please describe the circumstance that occurred when you experienced a privacy concern? **(OPEN END)**

PROFILE QUESTIONS

(RESUME ASKING ALL)

62INT. How much do you agree with the following statements?

1. 1 – Strongly disagree
2. 2
3. 3
4. 4
5. 5 – Strongly agree
6. Don't know

RANDOMIZE

62. (T) Participating in the Pilot Program has changed my driving behavior
63. (T) I now drive less as a result of participating in the Pilot Program
64. (T) I am more aware of the amount I pay for road maintenance as a result of participating in the Pilot Program
65. (T) I am more aware of how many miles I drive as a result of participating in the Pilot Program
66. I would participate in another road charge pilot program in the future
67. I think that a road charge funding model should continue to be researched

END RANDOMIZE

68. (T) Do you have any feedback about the Pilot Program that has not been addressed in any of the previous questions? **(OPEN-ENDED TEXT BOX)**

69INT. (T) How often do you do each of the following:

1. Daily (or every workday)
2. Weekly
3. Monthly
4. Less than every month
5. Never
6. Don't know

69. (T) Drive a vehicle alone
70. (T) Ride or drive in a carpool
71. (T) Ride in a taxi, Uber, or Lyft vehicle
72. (T) Ride a bus, commuter train, or shuttle

73. **[ASK ONLY IF NOT ANSWERED IN THE PRE PILOT SURVEY]** (T) Thinking about the motor vehicle you drive **most often**, is it powered by...

1. A gasoline engine
2. A diesel engine
3. An all-electric engine
4. A hybrid gas-electric engine
5. Another type of engine (specify _____)
6. Not sure

74. Those are all of the questions we have for your today. Thank you for taking the time to participate in this important survey. Please indicate below if you would like to be entered into the Miles of Thanks Sweepstakes 3, for your chance to win one-of-five \$200 prizes. Remember every completed survey

submitted for the Miles of Thanks Sweepstakes 1, 2, and 3, will enter you into the GRAND PRIZE of \$500!

PLEASE NOTE: It is important to answer this question and click the ">>" button at the bottom to ensure your survey responses are fully submitted.

1. Yes, please enter me into the Miles of Thanks Sweepstakes 3
2. No, please do not enter me into the Miles of Thanks Sweepstakes 3

75. **(IF Q74=1, yes)** Thank you for entering the Miles of Thanks Sweepstakes 3! Please find more information about the Sweepstakes and Grand Prize HERE.
[<http://www.californiaroadchargepilot.com/sweepstakes-3/>]

Appendix D: Focus Group Guide

California Road Charge Focus Group Discussion Guide

EMC Research #17-6282

1. **Introduction (10 minutes for section/10 minutes time elapsed)**

- a) Introduce moderator
- b) Disclosures
- c) Focus group rules
- d) Introduction of participants
 - a. Name
 - b. Occupation
 - c. Where you live
 - d. Where you typically drive to each week

2. **General Discussion (10 minutes for section/20 minutes time elapsed)**

- a) As you may know, in 2014 the California State Legislature passed Senate Bill 1077, which directed the state to study a road charge as a potential alternative to the gas tax to fund highways and roads.
- b) As a participant in the pilot program, you are helping the state to test out different ways a road charge program might be implemented in California.
- c) How did you first hear about the California Road Charge Pilot Program?
- d) Why do you think the state wants to study the idea of a road charge to fund roads and highways?
 - a. Is a new way to fund California roads and highways necessary? Why or why not?
 - b. Did you initially think a road charge was a good idea or a bad idea? Why?
- e) What were your initial impressions of the California Road Charge Pilot Program?
- f) Why did you decide to participate in the California Road Charge Pilot Program?

3. **Mileage Reporting Method Choice (15 minutes for section/35 minutes time elapsed)**

- a) I'd like to talk specifically about the method that you used to report the mileage you drove in the pilot program. Please take a look at this handout as we discuss. *(Hand out list of reporting methods for reference)*
 - 1. **Time permit:** Purchase a permit that allows unlimited road use in California for a specific period of time
 - 2. **Mileage permit:** Purchase a block of miles based on your expected use of California's roads
 - 3. **Odometer charge:** Make payments based on periodic manual odometer readings
 - 4. **Plug-in device with location:** Report miles using a plug-in device for your car with optional smartphone app; Location data used to remove out of state and private land travel mileage
 - 5. **Plug-in device without location:** Report miles using a plug-in device for your car with optional smartphone app; Device does not reveal vehicle location

6. **Location-aware smartphone app:** Report miles using a smartphone app; Location data used to remove out of state and private land travel
7. **Smartphone app without location:** Report miles using a smartphone app; Device does not reveal vehicle location
8. **Car's built in technology/telematics:** Report using your car's built-in technology, also known as telematics

- b) What mileage reporting method did you choose to participate in the pilot program? (UX04-01) *(If they ask about switching methods, tell them we'll talk about that a little later)*
 - a. Why did you choose that method?
 - b. What factors did you consider when you selected your mileage reporting method?
- e) Did you consider any of the other mileage reporting methods during pilot enrollment? Which ones?
 - a. Were there any mileage reporting methods you did not understand?

4. Participation Process (20 minutes for section/55 minutes time elapsed)

- a) Overall, how satisfied would you say you are with participating in the pilot program? (UX05-01)
- b) Did you feel you got clear instructions about how to enroll in the pilot program, or not? (UX16-02)
 - a. Did you have any questions about how to enroll? How did you get those answered?
- c) Did you feel you got clear instructions about how use the mileage reporting method you chose, or not? (UX16-02)
 - a. How well do you feel you understand how your mileage reporting method works? (UX15-02)
 - b. Is it easy to report your mileage? (UX01-01)
 - c. Did you have any questions about how to report your mileage? How did you get those answered?
- d) Did you contact the pilot program's help line at any point during the pilot? (UX02-01)
 - a. **(IF YES)** What did you call the help line about? (UX02-02)
 - b. **(IF NO)** Did you ever think about calling the help line? Why didn't you do it?
- e) Have you needed any technical support over the course of the pilot program? (UX13-03)
 - a. **(IF YES)** What was the reason you needed technical support?
 - b. **(IF YES)** Who did you contact for technical support?
 - c. **(IF YES)** Were your technical issues addressed? By your account manager or someone else?
 - d. **(IF YES)** How long did it take for your technical issues to be resolved?
- f) Do you receive monthly road charge invoices from your account manager?
 - a. Do you understand your road charge invoices? (UX16-01)
 - b. Were the road charges on your invoice what you thought they would be? Were they higher or lower?
 - c. Do you think the mileage shown on your invoice was accurate?

- g) Do you ever look at information online about the California Road Charge Pilot Program? What do you look at?
 - a. Website or dashboard provided by your account manager
 - b. Smartphone app provided by your account manager
 - c. Invoice sent via email
 - d. Something else?
- h) Is this online information useful to you? Why or why not?

5. Switching (10 minutes for section/65 minutes time elapsed)

- a) Did you switch reporting methods during open enrollment in November? (UX05-02)
 - a. **(IF YES)** Why did you decide to switch?
 - b. **(IF YES)** What was the switching process like?
 - c. **(IF YES)** Were you satisfied with the switching process? (UX06-01)
 - i. Clarity of communications about it
 - ii. How long it took to get set up with your new method
 - d. **(IF YES)** Were you more satisfied with your new choice to report mileage? (UX07-01)
 - e. **(IF NO)** Why did you decide to stay with the mileage reporting method you were already using, instead of making a switch?

6. Privacy and Data Security (15 minutes for section/80 minutes time elapsed)

- a) As part of your participation in the program, you have been asked to share information about yourself and your vehicle, and the mileage you drive.
- b) How satisfied are you with the protection of your privacy as you participate in the pilot program? (Priv01-02)
 - a. What have been your concerns about your privacy as you participate in the pilot program? (Priv02-01)
 - b. How was your choice of mileage reporting method impacted by your privacy concerns?
 - c. What other steps have you taken to address your privacy concerns?
 - d. What measures are in place for the pilot program to protect your privacy? (Priv01-01)
 - e. Is there anything else you'd like to know about the privacy measures that are in place?
 - f. Did participating in the pilot program make you more concerned or less concerned about the protection of privacy if a road charge program was implemented for all Californians?
- c) How satisfied are you with the security of your data as you participate in the pilot program? (UX14-03)
 - a. What have been your concerns about data security protection as you participate in the pilot program? (DatSec01-02)
 - b. How was your choice of mileage reporting method impacted by your data security concerns?
 - c. What other steps have you taken to address your data security protection concerns?

- d. What measures are in place for the pilot program to protect the security of your data?
(*DatSec01-01*)
- e. Is there anything else you'd like to know about the data security measures that are in place?
- f. Did participating in the pilot program make you more concerned or less concerned about data security if the road charge program was implemented for all Californians?

7. Driving Behavior and Safety (10 minutes for section/90 minutes time elapsed)

- a) Now, I'd like to talk about how the pilot program may have impacted your behavior while driving.
- b) Did you feel like your driving behavior changed as a result of participating in the pilot program? (*Oper07-01*)
 - a. How has your driving behavior changed? (*Oper07-02*)
 - b. What prompted you to change your behavior?
 - c. Are you more aware of the number of miles you drive because of your participation in the program?
- c) Have you experienced any safety issues as a result of your participation in the pilot program? (*UX17-01*)
 - a. **(IF YES)** Can you please describe the safety problem(s) that occurred? (*UX17-02*)
 - b. **(IF YES)** How was the issue resolved?

8. Value of Participation (10 minutes for section/100 minutes time elapsed)

- a) Over the course of the pilot program, do you feel you have had opportunities to provide feedback about your experience? (*Comm03-02*)
- b) Do you feel like your input was important?
- c) How do you think your participation will impact the pilot program?

9. Wrap Up (20 minutes for section/120 minutes time elapsed)

- a) Finally, I'd like you to think about your overall experience with the California Road Charge Pilot Program.
- b) Now that you have participated in this pilot program, do you think a road charge program is a good idea or a bad idea for California?
 - a. Would you recommend the mileage reporting method you chose to others?
 - b. Do you feel that the miles people drive will be accurately reported under the road charge program? (*Oper05-01*)
 - c. Do you think people will look for ways to under-report their mileage? (*Oper06-03*)
- c) Has your participation in the California Road Charge Pilot Program changed how you feel about a road charge as a way to fund roadways in California? How so?
- d) Is paying a road charge for miles driven a fair way to fund roads and transportation infrastructure in California?
 - a. Is it *more fair* or *less fair* than the current gas tax? (*Equi01-01*)

Appendix D: Focus Group Handouts

Please answer the following questions while you wait for the focus group to begin. Please bring the completed form in with you to the focus group.

Name: _____

1. Please circle the mileage reporting method(s) you used during the California Road Charge Pilot Program.

Time permit	Plug-in device without location
Mileage permit	Location aware smartphone app
Odometer charge	Smartphone app without location
Plug-in device with location	Car's built in technology/telematics

2. How satisfied are you with the mileage reporting you chose? Use a 1 to 5 scale, 1 is very unsatisfied, 5 is very satisfied. Please circle your answer.

1	2	3	4	5
Very unsatisfied		Neutral		Very satisfied

3. How satisfied are you with your participation in the California Road Charge Pilot Program overall?

1	2	3	4	5
Very unsatisfied		Neutral		Very satisfied

4. How satisfied are you with the protection of your privacy as you participate in the California Road Charge Pilot Program?

1	2	3	4	5
Very unsatisfied		Neutral		Very satisfied

5. How satisfied are you with the security of your data as you participate in the California Road Charge Pilot Program?

1	2	3	4	5
Very unsatisfied		Neutral		Very satisfied

6. How much do you agree or disagree with the following statement?

Participating in the California Road Charge Pilot Program has changed my driving behavior

1	2	3	4	5
Strongly disagree		Neutral		Strongly agree

7. How much do you agree or disagree with the following statement?

I think that the input I provided for the California Road Charge Pilot Program is important.

1	2	3	4	5
Strongly disagree		Neutral		Strongly agree

8. Now that you have participated in the California Road Charge Pilot Program, do you think that a road charge is a good idea or a bad idea for California?

1	2	3	4	5
Very bad idea		Neutral		Very good idea

Appendix D: Focus Group Handouts

Mileage Reporting Method Descriptions



Time permit: Purchase a permit that allows unlimited road use in California for a specific period of time



Mileage permit: Purchase a block of miles based on your expected use of California's roads



Odometer charge: Make payments based on periodic manual odometer readings



Plug-in device with location: Report miles using a plug-in device for your car with optional smartphone app; Location data used to remove out of state and private land travel mileage



Plug-in device without location: Report miles using a plug-in device for your car with optional smartphone app; Device does not reveal vehicle location



Location-aware smartphone app: Report miles using a smartphone app; Location data used to remove out of state and private land travel



Smartphone app without location: Report miles using a smartphone app; Device does not reveal vehicle location



Car's built in technology/telematics: Report using your car's built-in technology; also known as telematics

Appendix E
California Road Charge Pilot Program
Interview Forms

California Road Charge Pilot Project Independent Evaluation – Interview Guide

PREPARED FOR: Brady Tacdol/Caltrans
PREPARED BY: Jenny Roberts/CH2M, Mike Warren/CH2M
DATE: May 13, 2016

The California Road Charge Pilot Project is a 5,000-person statewide program aimed at evaluating the feasibility of a per-mile road charge for road use as a replacement for the gas tax.

This technical memorandum provides a guide for conducting interviews for the California Road Charge Pilot Project Independent Evaluation. It includes a list of interview questions that span several categories as prescribed by the Road Charge Technical Advisory Committee (TAC) (Revenue, Cost, Operation, User Experience, Privacy, and Communications) and goals listed in the objectives traceability matrix and will be part of the interviews conducted before, during and after the pilot. The questions provided in this interview guide will be used for three categories of pilot stakeholders:

Pilot Delivery Team (PDT): The PDT is the entity responsible for the planning, design, and deployment of the pilot project. The PDT consists of members of Caltrans and D'Artagnan Consulting

Interagency Working Group (IAWG): The IAWG consists of other governmental organizations that will take on larger roles for administering, enforcing, and supporting a large-scale, statewide program. The IAWG is working with the PDT to define their roles and responsibilities, and to identify needed resources and infrastructure for future programs.

Account Managers will provide the primary interface for pilot participants. They will support the mileage reporting, data handling, customer service, and reporting to the PDT on the mileage traveled by participants, and the potential road charge each participant would pay compared to the gas tax.

Pilot Delivery Team

Pre-Pilot Questions

Cost

- What is the project cost to date? Is this cost in-line with the overall budget?
- Based on the January 2016 initial budget estimate, have any budget overruns been experienced to date? If so, what was the cause for those overruns?
- Do you expect any budget overruns over the course of the project? If so, what is the expected cause of these overruns?
- Have project milestones relative to the schedule required in SB1077 to date been completed on time? If not, what were the causes for those delays?
- What is the expected agency cost of administering a statewide Road Charge?
-

Operation

- What does the onboarding process of participants entail?
- How many staff and how many hours per staff were devoted to the pilot effort prior to launch? Did (or do you anticipate) the number to change during the onboarding process?

- Were the staffing resources adequate for the onboarding process? If not, what would be the optimal number of staff and hours?
- What is the optimal number of resources needed to administer a statewide Road Charge?
- Were clearly defined staff roles and responsibilities established? Was your role clearly defined?
- Were your roles and responsibilities identified in the operations responsibility matrix?
- As launch of the pilot program approaches will staff roles and responsibilities evolve? If so, in what way?
- Are participants being incentivized for their participation? If so, how?
- What is the relationship between the PDT and technical advisory committee (TAC), and the PDT and Account Managers?
- What is the relationship between the Account Managers and the participants?
- What is the relationship between the PDT and the participants?
- What methods are in place for each operational concept to identify instances of tampering or fraud?
- What methods of interstate interoperability, including the concept of transferring funds between states are being used during the pilot? How many FTEs have been devoted to interoperability to this point?
- What process is in place to identify and address any anomalies, errors, or omissions in motorist account data?
- What process will be used to audit account managers and reconcile any variances in missing mileage and associated road charges?

User Experience

- What sort of onboarding information is provided to participants? Have you tried being a participant? Did you receive adequate information relative to your signup as an interested party/participant?
- How are participants being informed of available choices, including any additional services being offered?
- Does the current system provide an open architecture for new vendors to enter the market?
- How does the current system architecture support new technologies in the marketplace?
- What is the process for identifying and resolving data compromises?

Privacy

- Has the PDT or TAC defined what delineates personal information from Personally Identifiable Information (PII)?
- Does the participant agreement explicitly state how privacy is protected?
- Was information disseminated to participants as to how their location information will be used and protected?
- What existing standards and/or requirements are you using for the protection of personal information?
- What specific technical standards or protocols related to data security will be used to protect motorist data?
- How will the PDT and/or Account Managers track instances of unauthorized dissemination of personal information and/or data security breaches?
- Are there any specific statutes, legal processes, or emergency circumstances that allow the non-consented disclosure of a participant's location data?
- Have there been any instances of personal information being disclosed inappropriately during the recruitment process?
- Are any agreements with account managers in place to collect driver data for purposes other than road charging? If so, what safeguards are in place to prevent the disclosure of PII?

- Can Account Managers refuse service to a participant who does not consent to data retainage and/or uses other than road charging?
- What stipulations or restrictions are in place for account managers to use participant's location data for purposes other than road charging?
- What assurances are in place to protect motorist data from unauthorized data breaches?

Communications

- Are there any key concerns or issues from participants that you have heard to this point?
- Is there a method for receiving comments from interested parties, participants, and the general public? What is being done with any received comments?
- What sort of information is being provided to interested parties?
- What type of notification will be provided to interested parties notifying them that they have been selected as participants?
- What types of information will be provided to participants over the course of the pilot? How will that information be disseminated?
- Will participant communications and information be separated from public information? If so, what safeguards are in place to maintain separation?
- What avenues do you have in place for the general public to provide public comment/feedback or ask questions?

Mid-Pilot Questions

Cost

- What is the project cost to date? Is this cost in-line with the overall budget?
- Based on the January 2016 initial budget estimate, have any budget overruns been experienced to date? If so, what was the cause for those overruns?
- Do you expect any budget overruns over the course of the project? If so, what is the expected cause of these overruns?
- Have project milestones relative to the schedule required in SB1077 to date been completed on time? If not, what were the causes for those delays?
- What is the expected agency cost of administering a statewide Road Charge?

Operation

- How many staff and how many hours per staff do you have devoted to the pilot effort during pilot operations? Has this number changed from the initial onboarding of the pilot? What functional area (administration, communications, operations, etc.) is using the most staff and hours?
- Have any participants changed their mileage reporting and/or account management options? Did they follow the established processes for changing? Was any reason given for the change? Is one mileage reporting and/or account management option being chosen over others?
- Have any participants dropped out of the program? Did they follow the established processes for dropping out? Was any reason given for leaving?
- Have there been any major challenges in administering the program?
- Have your roles/responsibilities changed since the start of the pilot?
- Have any anomalies, errors, or omissions in motorist account data been identified? If so, what identified those anomalies and what remediation actions were taken to resolve them?
- How would you change the way the program is being administered in order to improve efficiency or participant satisfaction/participant service?
- What tampering or fraud instances have you encountered since the launch? If any, how were they identified and addressed?

- What methods of interstate interoperability, including the concept of transferring funds between states have been used during the pilot? How many FTEs have been devoted to interoperability to this point?
- Have any audits been conducted to this point? If so, were any deviations identified and what was taken to remediate them?
- Have any inaccuracies identified in the road use data reported and who reported them (e.g. participant, account manager, audit results, etc.)? What measures were employed to resolve the inaccuracies?

User Experience

- What sort of statistics do you have from Help Desk operations in terms of issues and problems identified?

Privacy

- Have any new standards, requirements, and/or protocols been introduced or existing ones revised during the pilot to protect personal information? Why were the changes made?
- Have any Account Managers and/or the PDT identified instances of unauthorized dissemination of personal information and/or data security breaches?
- Describe how account managers are complying with the privacy and data security requirements.

Communications

- Are there any key concerns or issues from the participants that you have heard to this point?
- What types of information is being provided to participants over the course of the pilot? How will this information be disseminated?
- Has participant communications and information been separated from public information? If so, what safeguards are in place to maintain separation?
- What types of information is being provided to the general public over the course of the pilot? How is this information being disseminated?
- What avenues do you have in place for the general public to provide public comment/feedback or ask questions?

Post-Pilot Questions

Cost

- What is the project cost to date? Is this cost in-line with the overall budget?
- Based on the January 2016 initial budget estimate, have any budget overruns been experienced to date? If so, what was the cause for those overruns?
- Have project milestones relative to the schedule required in SB1077 to date been completed on time? If not, what were the causes for those delays?
- What is the expected agency cost of administering a statewide Road Charge?

Operation

- What was the off-boarding process and were any issues related to off-boarding encountered?
- How many staff and how many hours per staff did you have devoted to the pilot effort during closeout/off-boarding? Were staff and hours adequate to support off-boarding?
- What is the optimal number of resources needed to administer a statewide Road Charge?
- Have any additional participants changed their mileage reporting and/or account management options? Did they follow the established processes for changing? Was any reason given for the change? Is one mileage reporting and/or account management option being chosen over others?
- Have any additional participants dropped out of the program? Did they follow the established processes for dropping out? Was any reason given for leaving?
- Did your roles/responsibilities change during the pilot?

- What were the major challenges for administering the pilot?
- What tampering or fraud instances were encountered during the pilot, if any? How were these discovered? Was anything done to address these instances?
- How would you change the way the program was administered in order to improve efficiency or participant satisfaction/participant service?
- How many accounts were audited? How many audits resulted in missing mileage and what was the corresponding mileage and revenues gained/lost due to the missed mileage? How many audits resulted in changes and what was the net gain/loss from the audit (mileage and revenue)?
- Were any inaccuracies identified in the road use data reported and who reported them (e.g. participant, account manager, audit results, etc.)? What measures were employed to resolve the inaccuracies?
- What methods of interstate interoperability, including the concept of transferring funds between states were used during the pilot?
- In what ways was this program scalable and flexible to support long term evolution and marketability?

User Experience

- Were any outages or web-based system losses encountered? If so, what were the root causes?
- What sort of statistics do you have from Help Desk operations in terms of issues and problems identified?
- Have any anomalies, errors, or omissions in motorist account data been identified? If so, what identified those anomalies and what remediation actions were taken to resolve them?

Privacy

- Did any instances of non-consented location data disclosure occur? If so, what was the cause and what remediation actions were employed?
- How many instances was locational information used? What were the triggers for requesting that data? What format was the data provided?
- Were participants provided opportunities to view personal data? How was this data viewed?
- Were there any security breaches? How was notification of the breach provided? What remediation actions were conducted (by the PDT and/or the Account Managers) were employed?
- Were there any instances of unauthorized dissemination of personal information during the pilot, and if so, what were the causes?
- How well did the privacy and security-related standards, requirements and/or protocols function during the pilot?
- Now that the pilot has concluded, do you have any concerns over data security?
- How well did the Account Managers protect personal information? Describe the security performance for each Account Manager. Did they conform to ISO 9000 and 27001 data security standards? If not, why?

Communications

- Other than evaluation surveys and focus groups, were the participants provided opportunities to provide feedback throughout the pilot? If so, was this information helpful in determining the participants' experiences? Were any consistent themes uncovered?
- What information regarding the pilot was disseminated to the participants? When was this information disseminated? Were any key concerns or sentiments discovered with the release of this information?
- Are there any key concerns or issues from participants that you heard during the pilot?
- Are there any key concerns or issues from the general public that you heard during the pilot?

- What information regarding the pilot was disseminated to the general public? When was this information disseminated? Were any key concerns or sentiments discovered with the release of this information?
- Has participant communications been separated from general public communications? If so, what safeguards were established to maintain separation?

Interagency Working Group

Pre-Pilot Questions

Cost

- How are gas taxes currently collected and administered (BoE only)?
- What is your per-vehicle cost for collecting and administering the gas tax (BoE only)?
- Are there any efficiencies to the current gas tax collection that should be considered (BoE only)?
- What is your per-transaction costs for collecting and administering registration fees (DMV only)?

Operation

- What has been your role in the pilot? How were these roles communicated?
- Were your roles and responsibilities identified in the operations responsibility matrix?
- What organizational tools and resources will your organization provide for the pilot?
- Describe your current organization and infrastructure, including any larger scale programs your organization is administering. How many FTE's are devoted to these programs?
- What function could you and your organization potentially play in the administration of a statewide Road Charge?
- What is your organization's role related to interstate interoperability, including the concept of transferring funds between states in the pilot?

User Experience

- What systems within your organization would need access to a Road Charge system? Can these systems support industry acceptable data protocols?
- What types of information collected from the road charge pilot could be used by your organization for other purposes? Does your organization currently collect information that could be used for road charge value added services?
- Would your organization be involved in activities related to the unauthorized compromise of participant data?
- What is your current understanding of road charge? What new things do you hope to learn about road charging over the course of the pilot?

Privacy

- Does your organization currently deal with Personally Identifiable Information (PII) and/or participant location data? If so, what safeguards do you currently have in place to protect PII and/or location data?
- In what instances would your organization require PII and/or location data collected from pilot participants? What process would be used to request that information and what safeguards would be needed to protect PII and/or location data?

Communications

- What communications related to road charging and the pilot have you been involved with?
- Have you been involved in recruiting activities for the pilot?
- Do you have participants involved in the pilot (*yes or no; no names*)? If so, is there any information your organization is requesting them to provide on the pilot?

Mid-Pilot Questions

Cost

- Have there been any changes in how gas taxes are collected and administered? Does this change the per-vehicle cost for collecting and administering the gas tax (BoE only)?
- Have any efficiencies been implemented that impact the per-vehicle cost? Are there any efficiencies to the current gas tax collection that should be considered (BoE only)?

Operation

- Now that the pilot is underway, have your roles or responsibilities changed?

User Experience

- Have any of your organizations systems accessed data from the road charge pilot? If so, were any issues encountered with the accessibility of the data?
- Was your organization involved in activities related to the unauthorized compromise of participant data? If so, what role did your organization play and what was done by your organization to address any compromises?
- What is your current understanding of road charge? Has your understanding changed over the course of the pilot? What new things do you hope to learn about road charging over the course of the pilot?

Communications

- What communications related to road charging and the pilot have you been involved with?
- What information relative to the pilot activities has been developed by, or relayed to your organization?

Post-Pilot Questions

Cost

- Have there been any changes in how gas taxes are collected and administered? Does this change the per-vehicle cost for collecting and administering the gas tax (BoE only)?
- Have any efficiencies been implemented that impact the per-vehicle cost? Are there any efficiencies to the current gas tax collection that should be considered (BoE only)?

Operation

- Now that the pilot is completed, have your roles or responsibilities changed?
- What is the optimal number of resources (staff and hours) your organization would need to administer a statewide Road Charge?
- What organizational or resource challenges do you see to support a larger scale road charge program?
- Has your organization been involved in any activities related to interstate interoperability, including the concept of transferring funds between states in the pilot?
- Has your organization been involved in any audits during the pilot? If so, what role did your organization play? How were the audit results communicated to you?

User Experience

- Have any of your organizations systems accessed data from the road charge pilot? If so, were any issues encountered with the accessibility of the data?

- What is your current understanding of road charge? Has your understanding changed over the course of the pilot? What new things do you hope to learn about road charging over the course of the pilot?

Communications

- What communications related to road charging and the pilot have you been involved with?
- What information relative to the pilot activities has been developed by, or relayed to your organization?
- What were your questions/issues during the program if any and were they answered to your satisfaction?

Account Managers

Pre-Pilot Questions

Cost

- What is your per-unit or per-concept operations cost for the pilot?
- What would be your per-unit or per-concept operations cost for a large-scale program? What assumptions underlie your operational cost estimates for a large-scale program?
- Were you able to successfully launch on July 1, 2016? If not, what were some of the challenges that prevented this?
- Did you encounter any obstacles that required additional, unanticipated resources or costs?

Operation

- What does your onboarding process for participants entail?
- Did staff and hours change during the onboarding process?
- Were clearly defined roles and responsibilities established?
- What is the relationship between the Account Managers and PDT?
- What is the relationship between the Account Managers and the participants?
- Are you performing any interstate interoperability functions in the pilot? If so, what methods of interstate interoperability are being used during the pilot? What is your role in this regard? Do your existing systems/processes support interstate interoperability for a large-scale program?
- Are participants required to give you any pre-notification that they are going to drop out of the program or change options? If so, what are the off-boarding expectations?
- How does your current system architecture support new technologies in the marketplace (if applicable)?
- What process is in place to identify and address any anomalies, errors, or omissions in motorist account data?
- What process will be used to support audits and reconcile any variances in missing mileage and associated road charges?

User Experience

- What sort of information is provided to the user in support of onboarding? How was that information disseminated?
- How are participants being informed of available choices, including any additional services being offered?

Privacy

- Was privacy protection information disseminated to participants, if so, how? Does your agreement with the participants support their expressed consent for data usage?
- Was information disseminated to participants as to how their location information is used and protected?
- What existing standards and/or requirements are you using for the protection of personal information?
- Will you be using pilot participant data for other activities? If so, what processes are used to prevent personal information from being used for other activities?
- How are you tracking instances of unauthorized dissemination of personal information and/or data security breaches?
- How will your system protect privacy?

Communications

- What types of communications (websites, mailings) are you using to communicate with participants? What methods do you have to support feedback from participants?
- Are there any key concerns or issues from the participants that you have heard to this point?
- What methods are available for participants to communicate with you?
- What methods are available for the general public to communicate with you?

Mid-Pilot Questions

Cost

- Have your per-unit or per-concept costs changed since pilot launch? If so, what was the driver for that change?
- Has your per-unit or per-concept operations cost for a large-scale program changed? What was the driver for the change?

Operation

- How many staff and how many hours per staff do you have devoted to the pilot effort during pilot operations?
- What is the optimal number of staff and hours needed for administering a large-scale program?
- Have any participants changed their mileage reporting and/or account management options? Did they follow the established processes for changing? Was any reason given for the change? Is one mileage reporting and/or account management option being chosen over others?
- Have any participants dropped out of the program? Did they follow the established processes for dropping out? Was any reason given for leaving?
- What have been the major challenges for administering the program?
- What tampering or fraud instances have you encountered since the launch? If any, how were they identified?
- What methods of interstate interoperability have been used in the pilot so far? How well have they worked? What changes will be needed to support increased interoperability?
- Has your organization been involved in any audits during the pilot? If so, what role did your organization play? How were the audit results communicated to you?
- Have any anomalies, errors, or omissions in motorist account data been identified? If so, what identified those anomalies and what remediation actions were taken to resolve them?

User Experience

- What sort of statistics do you have from Help Desk operations in terms of issues and problems identified?
- Have any key themes or issues been identified from participants on your offerings?

Privacy

- Have any new standards, requirements, and/or protocols been introduced or existing ones revised during the pilot to protect personal information or enhance security? Why were the changes made?
- Have there been any instances of unauthorized dissemination of personal information and/or data security breaches? What was the nature and cause?

Communications

- Are there any key concerns or issues from the participants that you have heard to this point?
- What sort of follow-up communications and information has been sent out to the participants since onboarding? How has this information been disseminated?
- What sort of follow-up communications and information has been sent out the general public since pilot launch? How has this information been disseminated? Has the PDT reviewed this information prior to dissemination?

Post-Pilot Questions

Cost

- Have your per-unit or per-concept costs changed since pilot launch? If so, what was the driver for that change?
- Has your per-unit or per-concept operations cost for a large-scale program changed? What was the driver for the change?
- Have any resources been reallocated from the mid-point of the pilot until now? How does this reallocation compare against your staffing plan?
- What were the key cost drivers for the pilot program and their associated costs (e.g. customer support, system support, hardware, etc.)?

Operation

- What was the off-boarding process and how did it work?
- How many staff and how many hours per staff did you have devoted to the pilot effort during closeout? Did that number change during the off-boarding process?
- Did your roles/responsibilities change during the pilot?
- How easy or difficult was it to administer the pilot program, and what were the major challenges?
- What tampering or fraud instances were encountered during the pilot, if any? How were these discovered? How did you address these instances and communicate the instances and remediation activities?
- How easy or difficult was it for you to create a system to work in the context of the California Road Charge Pilot Program? What aspects of your capabilities made the effort easy? What aspects of your capabilities proved difficult?
- Has your organization been involved in any audits during the pilot? If so, what role did your organization play? How were the audit results communicated to you?
- Have any anomalies, errors, or omissions in motorist account data been identified? If so, what identified those anomalies and what remediation actions were taken to resolve them?
- What methods of interstate interoperability were used during the pilot? How well did they work?
- What enhancements to your system would you need to make to support interstate interoperability?
- How many staff and how many hours per staff did you have devoted to interoperability during the course of the pilot?
- Is your system scalable? What would comprise the additional operational demands of a fully implemented program?
- What added user services are currently available or could be made available for future programs?
- Is your system adaptable to changing technologies, and what might these new technologies and approaches be (e.g., Connected Vehicles, automated vehicles, multi-modal)?

User Experience

- Were any inaccuracies identified in the road use data reported, how were they identified, and what measures were employed to resolve the inaccuracies?
- What marketing of options was offered to participants?
- Were any free services offered to participants? Would you consider these services to be free to participants or would you require some sort of subscription?
- Were any outages to systems encountered and what were the root causes?
- What sort of statistics do you have from Help Desk operations in terms of issues and problems identified?

Privacy

- Did you encounter any security breaches and what was the cause and what was done to remedy the root cause of the issue?

- Were there any instances of unauthorized dissemination of personal information during the pilot, and if so, what were the causes?
- What instances and triggers, if any, allowed you to disclose location data information without the motorist's consent, and what process do you follow to disclose the information? What sort of notification, if any, did you make to the motorist regarding the disclosure and why it occurred?
- Were participants provided opportunities to view personal data? How many requested to view the data? What methods were they given to review the data?
- How did your system protect privacy?
- How does your system protect against security breaches?
- How did the privacy and security-related standards, requirements and/or protocols function during the pilot?
- How many data compromising events occurred and what were they? Do you have overall concerns about security?

Communications

- What information was disseminated to participants about pilot completion, closeout activities, or next steps?
- Are there any key concerns or issues from participants that you heard during the pilot?
- What criteria do you have for participants to off-board from your program?
- What methods were available for participants to communicate with you? Was one method used more often than others?
- What methods were available for the general public to communicate with you? Was one method used more often than others?

Appendix F
California Road Charge Pilot Program
Heavy Truck Fleet Questionnaire

California Road Charge Pilot Project Independent Evaluation – Commercial Trucking Manager Questionnaire

CH2M is under contract with Caltrans to conduct an Independent Evaluation of the California Road Charge Pilot Program. To support our independent evaluation, we would like to gather some information about your experience in participating in the road charge pilot, some of your attitudes towards road charging, the value of the other services offered by your account manager (EROAD), and additional considerations we can use for future pilots. The survey should only take about 15 minutes of your time and your participation is a critical component of the pilot evaluation process. We will follow up with a quick call to discuss in the next few weeks. Please return to lou.neudorff@ch2m.com.

Thank you for your participation!

Name: _____

Number of vehicles in Road Charge Pilot Program _____

Questions:

How satisfied are you with the following? Please use a scale from 1 to 5, with 1 being “very unsatisfied” and 5 being “very satisfied”.

1 – Very unsatisfied

2

3

4

5 – Very satisfied

1. The Pilot Program overall	
2. Ease of participating in the Pilot Program	
3. Clarity of communications and instructions you have received about the Pilot Program	
4. Your account manager (EROAD)	
5. Getting your questions about the Pilot Program answered	
6. The security of your company's information	
7. Do you have any comments or recommendations for improving the scores noted above, particularly those with a 1 or a 2?	

8. How much time did YOU spend per month on participating in the California Road Charge Pilot Program? 1. Less than 15 minutes 2. Between 15 and 30 minutes 3. Between 30 minutes and one hour 4. Greater than one hour	
9. How much time did YOUR DRIVERS spend per month on participating in the California Road Charge Pilot Program? 1. Less than 15 minutes 2. Between 15 and 30 minutes 3. Between 30 minutes and one hour 4. Greater than one hour	
10. How have your drivers reacted to the TECHNOLOGY used in the California Road Charge Pilot Program? 1. Positively 2. Neutral 3. Negatively	
11. If drivers reacted negatively to the TECHNOLOGY, what were their concerns and issues?	
12. How have your drivers reacted to the REPORTING REQUIREMENTS used in the California Road Charge Pilot Program? 1. Positively 2. Neutral 3. Negatively	
13. If drivers reacted negatively to the REPORTING REQUIREMENTS, what were their concerns and issues?	

How satisfied are you with the following? Please use a scale from 1 to 5, with 1 being “very unsatisfied” and 5 being “very satisfied”. 1 – Very unsatisfied 2 3 4 5 – Very satisfied	
14. The monthly account statements were clear and understandable	
15. The data provided from my account manager was accurate	
16. The technology correctly identified in-state versus out of state miles	
17. The technology correctly identified fuel tax credits.	
18. Do you have any comments or recommendations for improving the scores noted above regarding account statements, particularly those with a 1 or a 2?	
19. Was training provided for the new equipment installed for the California Road Charge Pilot Program? (Yes / No)	
20. Was training provided for the EROAD account interface for the California Road Charge Pilot Program? (Yes / No)	
21. Was the training adequate? (Yes / No)	
22. How might the training program be improved?	
23. Did you experience any technical issues with the equipment or access to information during the pilot (Yes / No)	
24. If yes, what was the nature of these issues and problems?	

25. Were the issues resolved to your satisfaction?	
26. On average, how long did it take to get such issues resolved?	
27. Does your fleet participate in the International Fuel Tax Agreement, IRP, etc.? (Yes / No)	
28. If yes, how does your fleet currently meet reporting requirements? 1. Manual Logging/Reporting 2. In-house Automated Logging Reporting 3. Outsourced Logging/Reporting	
29. Did your fleet test automatic electronic IFTA/IRP reporting as part of the California Road Charge Pilot? (Yes / No)	
30. IF YES (Q29) , please explain how well this testing worked and what considerations should be made for future programs:	
31. IF NO (Q29) , please explain what prevented you from conducting this testing and what considerations should be made for incorporating road charge into electronic IFTA/IRP reporting:	

In addition to IFTA, EROAD uses one advanced technology platform to support various fleet management services (collectively known as value-added services). Which of these did you use? (YES / NO)	
32. Safety (e.g., Over Speed Dashboard, Virtual Speed Camera, Leaderboard, Driver Insight, DVIR - Pre and Post Trip Inspection Reporting – Mobile, Driver Safety Report, Max Speed Alert)	
33. Fleet Management (e.g., Historical Daily Fleet Activity, Traffic, Truck and Satellite Map Layers, Geofencing, Geofence Site Activity)	
34. Fuel Management (Driver Entry, Easy Upload of Fuel Fills, Partner Fuel Integration, Fuel Efficiency and Usage Reports, Fuel Exception Report)	
35. Fleet Optimization Reports (Fleet Summary Report, Idle Report, Trip Investigator, Off Highway Fuel Usage Report)	
36. Other (FMCSA compliant Hours of Service, Hours of Service Recordkeeping, Automatic over the air updates, Driver Account Management, Hours of Service Violations Report)	
37. Of the value added services you used, which ones did you find most beneficial?	
38. Which value added services provided the least benefit	
39. How might these value added services be improved?	
40. Are you going to continue with any of these services following the pilot; and if so, which ones?	

On a scale of 1-5, with 1 being “not important at all” and 5 being “very important”, please rate how important you believe each of the following aspects of the California Road Charge Pilot Program are:

1 – Not important at all

2

3

4

5 – Very important

41. Privacy

42. Convenience of reporting

43. Simplicity

44. Cost

45. Value added Services

46. Would you say that paying for road maintenance and repair based on the miles you drive is **more fair** or **less fair** than paying based on the amount of fuel you buy?

1. Paying per mile is **more fair**

2. Paying per mile is **less fair**

3. They are about the same

4. Not sure

47. Did participating in the California Road Charge Pilot Program POSITIVELY or NEGATIVELY change your opinions on road charging?

1. Positively changed

2. Negatively changed

3. No change

48. What specific element(s) of the road charging program changed your opinions:

49. What was the most enjoyable aspect of participating in the California Road Charge Pilot Program?

50. What was the most difficult aspect of participating in the California Road Charge Pilot Program?

51. From the commercial trucking industry perspective, what barriers or challenges do you foresee for a potential statewide road charge program?

52. Are there any additional considerations for improving the California Road Charge Pilot Program?

Appendix G
California Road Charge Pilot Program
Policies and Participant Agreement

California Road Charge Pilot Program Policies & Participation Agreement

Welcome to the California Road Charge Pilot Project, [a live research test](#) of a potential new way to pay for California's roadways.

Before agreeing to participate in this project, please take time to read these policies. Let us know if you have any [Questions](#).

Pilot Program Policies

These policies will be followed to ensure that the goals of the pilot project are met, and that your personal information is protected and shared only as you authorize.

- 1. Participation.** Volunteers for the Road Charge Pilot Project are encouraged to participate for the full 9-month duration of the test unless their participation is terminated earlier by Caltrans or the program is terminated earlier by the State of California.
- 2. Eligible vehicles.** Only vehicles properly registered in the Volunteer's home state are eligible to participate. Volunteers must notify their account manager of the sale of any vehicle enrolled in the Road Charge Pilot Program, or of vehicle repairs that last more than five (5) days.
- 3. Enrollment in the program.** Volunteers will choose an account manager and provide all information required to enroll in the Road Charge Pilot Program, including selection of a mileage reporting method. Volunteers may change their mileage reporting method (or their account manager) once during the 9-month pilot test period.

4. **Mileage reporting requirements.** Volunteers will be given a choice of several Road Charge mileage reporting options. Volunteers who choose automated mileage reporting must install a device, or download and install a smartphone software application, or activate special mileage reporting software already installed in the vehicle. Account managers will provide more detailed information based on the option selected, and can assist with installation and activation.

Volunteers who do not select these automated technologies can instead choose to participate by allowing a visual inspection of their odometer readings, mileage permits, or a time permit. While these options do not require any technology, Volunteers must carefully follow instructions provided by their account manager for properly reporting their mileage (for the mileage permit and odometer charge) or activating their time permit.

Volunteers must report any problems with their chosen Road Charge mileage reporting method as soon as possible, including the theft, accidental loss, or damage to a mileage-reporting device. Account managers will make every effort to fix reported problems.

5. **Road Charge statements.** Volunteers will receive periodic statements of their Road Charges based on their miles traveled, but are not required to make any actual payments. Instead, Volunteers are asked to make a simulated payment via mail or through a special website that will be provided. No real currency will be exchanged or credit cards charged during the 9-month test period.
6. **Road Charge accounts.** The State of California, account managers, and authorized Third Parties may review Road Charge accounts at any time. Volunteers have the right to see and review their Road Charge account and all current information and data associated with it. Any errors or omissions that are reported to account managers will be corrected. Volunteers must not share the password to their Road Charge account with anyone.
7. **Revocation of participation.** Caltrans may revoke approval to participate in the pilot test if Volunteers:
 - Fail to report mileage driven as required during the test period;
 - Fail to install or activate mileage reporting equipment chosen for mileage reporting;

- Tamper with a mileage reporting device;
- Hack into a pilot project website or otherwise intentionally disrupt the operations of the pilot project;
- Intentionally report false mileage data or other required information; or
- Cease to own the vehicle enrolled in the pilot test and not promptly replace it with another vehicle for the pilot test.

8. **Privacy and protection of your information.** The Road Charge Pilot Program has developed a [Privacy Policy](#) to let Volunteers know how their personal information will be used and protected. Volunteers must read this [Privacy Policy](#) before agreeing to participate in the Road Charge Pilot Program.
9. **Your participation in surveys.** Volunteers are expected to participate in three or four surveys that will be used to evaluate the Road Charge Pilot Program. You will be asked to provide your contact information so you can be notified of the surveys.
10. **Copy of this Policy & Agreement.** Volunteers may obtain a copy of this Policy & Participation Agreement at any time by asking their Road Charge account manager or Caltrans.

Your Agreement with Us

By checking the boxes "I AGREE" below, you are agreeing to the following terms and conditions of participation:

11. **I will follow these policies.** I agree to abide by all of the California Road Charge Pilot Program Policies, numbered 1 through 10 above.
I AGREE: ☐

12. **My demographic and personal information will be used for account management and research purposes only.** I have read the Privacy Policy, and agree that all mileage data, demographic and other personal information I have provided may be used as described in the Privacy Policy.
I AGREE: ☐

13. **My location-based data may be collected if I have chosen a certain type of mileage reporting device.** I understand that depending upon the type of mileage reporting method I choose, I may be asked to provide my account manager access to information or data about my vehicle trip patterns or travel locations during the Road Charge Pilot Program. If I do not agree to share this information, I understand I must choose a different mileage reporting method.
I AGREE: ☐

Road Charge Pilot Program Privacy Policy

What is 'Personal Information' and why is it needed?

- Personal information is any information about a person which, on its own or when combined with other information, is reasonably capable of revealing the identity or activities of that person. Personal information includes items such as address, telephone number, email address, driver's license number, account numbers, bank account information, a photograph, travel or trip details, and similar information associated with a specific person.
- All Volunteers have been asked to provide personal information for two reasons: first, to determine eligibility to participate in the pilot test; and second, to accurately manage your account during course of the Road Charge pilot project. The following section details the type of personal information you will be asked to provide.

Collection and use of your personal information

- Since this pilot project is being conducted for research purposes, we have asked for demographic information to help us better understand how a future Road Charge system might affect people differently, depending on where they live, their gender, ethnicity, general income level, the number of people in their household, etc. We are collecting, and will use this information for research purposes:
 - ▶ Year, make and model of vehicles you own or lease
 - ▶ Your age range (age 18 – 45, or 46 – 65, or older than 65)
 - ▶ Your gender, unless you prefer not to disclose
 - ▶ The number of persons in your household
 - ▶ The California county you live in, or your state of residence if not in California
 - ▶ Your income range (above or below the median income range for your county)
 - ▶ Your ethnicity

- In addition, we are collecting the following information needed to set up and properly manage your Road Charge account during the 9-month pilot project:
 - ▶ Your full name and address, including zip code
 - ▶ Your email address and phone number
 - ▶ The Vehicle Identification Number (VIN) for the vehicle(s) you will enroll in the Pilot Project
- Occasionally, we may use your personal information to contact you or send important notices about your account, changes in the Road Charge pilot program, surveys, or changes to these policies.
- Depending upon which Road Charge mileage reporting method and account manager you choose, additional personal information may be collected and used, but only with your clear, written approval. If this situation applies to you, you will be provided with more detail about the collection and use of your personal information by your account manager at the time you select your preferred Road Charge mileage reporting method.

Collection and use of non-personal information

- We also collect data that does not reveal the identity, activities or contact details of any specific person. This non-personal information and data may be collected, used, transferred and disclosed to third parties, but only for research purposes. Below are examples of non-personal information and how it might be used:
 - ▶ We may collect and share total miles driven from persons living in a certain region of California, so that policymakers can better understand how a road charge might impact drivers differently, depending upon where they live.
 - ▶ We may collect information on any difficulties people have in setting up their road charge mileage accounts, so that these services can be improved for any future road charge system.
 - ▶ We may collect data on road charges paid by drivers of different makes and models of vehicles, to gain insight into how a road charge system compares against the gas tax system.

Disclosure of personal information to Third Parties

- In order to carry out the Road Charge Pilot Program and achieve its objectives, we may make certain personal information available to public agencies or private companies that are authorized to provide services in support of the Pilot Program. These agencies and companies are responsible for setting up your road charge account and processing your mileage reports, delivering mileage meters to persons who choose to test those devices, providing customer services, and conducting surveys for research and evaluation purposes. All of these third-party agencies and companies are legally required to adhere to this privacy policy and protect your personal information.

Your right to inspect your information and records

- Your account manager will provide you the opportunity to view all of your personal information and data collected and stored as part of the Road Charge Pilot Program to ensure only information and data you have authorized is being collected. To view your information, please contact your account manager.
- If you notice anything in your account that seems to be a mistake, you may request a review by your account manager, and a prompt correction of any errors discovered will be made.

Retention of your information and records

- Personal information that is collected to set up and manage your mileage account, including mileage and other data collected during the 9-month pilot, will be destroyed 30 days after the conclusion of the California Road Charge Pilot Program. Non-personal information may be retained indefinitely.

Any location-based services are entirely optional

- Your vehicle trip details are not required to participate in the Road Charge Pilot Program. However, a few of the automated mileage reporting methods have the capability to automatically calculate miles driven outside of California so that you won't need to fill out paperwork deducting those out-of-state miles from your Road Charge invoice. If you selected a method that uses a location-based mileage reporting service but don't want this information collected by your account manager, you must select a different mileage reporting method that does not use location-based services.
- As an added benefit of participating in the California Road Charge Program, your account manager may offer you, free of charge during the 9-month pilot test, other additional services and benefits not related to the Road Charge. Some of these services may require use of location-based technologies such as GPS devices. If your account manager offers you added services or benefits, they must clearly disclose if your location details will be used. You may always say no, and still be entitled to use their automated mileage reporting services during the 9-month Road Charge Pilot Program.

Summary of the Pilot Project

This pilot project is scheduled to last 9 months, from July 2016 through March 2017. More than 7,000 drivers have volunteered to participate. Each volunteer that participates in the pilot project will be asked to choose their preferred method of reporting miles driven. We are seeking a diverse group of participants. We want all ages, genders, races, income levels, vehicle types and parts of the state to be represented. The information you provide will help ensure we achieve our goal to have a fair distribution of volunteers across all categories.

For more information about the Road Charge Pilot Project, please visit www.CaliforniaRoadChargePilot.com

Questions?

Please email or call us for help or an explanation.

- ▶ Email: info@CaliforniaRoadChargePilot.com.
- ▶ Information line: 855-607-9768

PAC Test Report

Check

Date/Time	PAC Version	Standard
2019-12-13 09:31	3.0.7.0	PDF/UA

PDF Document

	Title			
	Evaluation of the California Road Charge Pilot Program Appendix 3			
	Filename			
	[TAG DEL EXP] Appendix_3-a11y.pdf			
	Language	Tags	Pages	Size
	en	9676	233	9 MB

Result



It's possible that some PDF/UA requirements aren't met.

Checkpoint	Passed	Warned	Failed
Basic Requirements			
PDF Syntax	10 146	0	0
Fonts	426	0	0
Content	1 171 206	0	0
Embedded Files	0	0	0
Natural Language	565 440	0	0
Logical Structure			
Structure Elements	3 364	0	0
Structure Tree	18 800	2	0
Role Mapping	19 490	0	0
Alternative Descriptions	39 274	0	0
Metadata and Settings			
Metadata	6	0	0
Document settings	76	0	0

PDF Accessibility Checker (PAC) evaluates the accessibility of PDF files according to [ISO-/DIN-Standard 14289-1 \(PDF/UA\)](#) by using the [Matterhorn Protocol](#). It checks 107 criteria that can be checked automatically.

PAC is a free checking tool of the foundation «Access for all»: www.access-for-all.ch