



# **BRIEFING BOOK FOR THE CALIFORNIA ROAD CHARGE TECHNICAL ADVISORY COMMITTEE**

## **Pre-Meeting Background Reading for TAC Meeting #2**

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February 23, 2015





**BRIEFING BOOK FOR TAC MEETING #2**

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# **SECTION 1 OVERVIEW**





**BRIEFING BOOK FOR TAC MEETING #2**

**Purpose of this briefing book**

Senate Bill (SB) 1077 requires the Chair of the California Transportation Commission to create a Technical Advisory Committee (TAC) to study road usage charging (or road charging, for purposes of this document) alternatives to the gas tax and make recommendations to the Secretary of the California State Transportation Agency (CalSTA) on the design and evaluation of a road charging pilot program.

This briefing book is the first in a series designed to provide background information to TAC members on key issues the TAC will have to decide in order to complete their charge from the Legislature. The expectation is that information contained in these briefing books will inform TAC members on critical matters prior to each meeting, facilitate better understanding of the presentations, and stimulate thoughtful discussion of key ideas during the meetings.

In many instances, the information provided will be broader in scope than the TAC's primary responsibilities and will include information about topics that are more properly addressed by CalSTA or through legislative action. The broader background on these topics is offered to provide TAC members with context since many of the policy, communications, and technical issues are highly interdependent. Additionally, TAC recommendations for the pilot program may well lay the foundation for any longer-term road charging system in California.





**BRIEFING BOOK FOR TAC MEETING #2**

**We designed the remainder of this document to help the TAC begin work on its four core activities**

Section 2 provides a summary of the policy context in California, including an outline of the four core activities the TAC will undertake:

- ▶ Study road charging methods
- ▶ Seek public input
- ▶ Recommend pilot design parameters
- ▶ Recommend pilot evaluation criteria

Section 2 also includes a broad overview of commonly raised road charging policy questions. Since policy choices drive so many aspects of the program, we believe it is important for the TAC to be aware of these questions when undertaking its work. **The TAC does not need to formulate answers to these policy questions, but awareness of the questions will inform decisions about pilot design and evaluation criteria.**

Section 3 provides a summary of key activities and lessons learned from road charging programs from around the world.

Section 4 is a discussion of communications issues related to road charging. It provides perspectives and lessons learned on gathering public comment on road charging, the related task of sharing information about the road charge with the public, and an overview of communications activities in the current work plan for the pilot program.





# **SECTION 2**

# **CALIFORNIA POLICY DIMENSIONS**

# **AND TASKS AHEAD FOR THE TAC**

(To be discussed during Item 7 on February TAC agenda)





**BRIEFING BOOK FOR TAC MEETING #2**

**“An efficient transportation system is critical for California’s economy and quality of life” – SB 1077**

California’s transportation system serves all 38 million residents. The state’s 175,000 miles and 400,000 lane-miles of roads directly serve 24.2 million licensed California drivers, 27.7 million registered California vehicles, and out-of-state visitors. Collectively, Californians and visitors are estimated to drive over 200 billion miles every year on California roads.

In Senate Bill 1077, the Legislature recognized the important role of an efficient transportation system for the state’s economy and quality of life. Well-maintained roads and bridges provide mobility and accessibility for residents and businesses alike.





**BRIEFING BOOK FOR TAC MEETING #2**

## **Revenues from existing taxes and fees dedicated to roadway infrastructure are not keeping pace with demands on roadway infrastructure**

The largest sources of funding for transportation projects in California are derived from excise taxes paid on fuel consumption. These funds are primarily used to preserve, maintain, expand, and modernize California's highway system.

Annual investments funded from these and other sources to preserve California's transportation infrastructure have not kept pace with the demands on the infrastructure.

*“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.” – SB 1077*

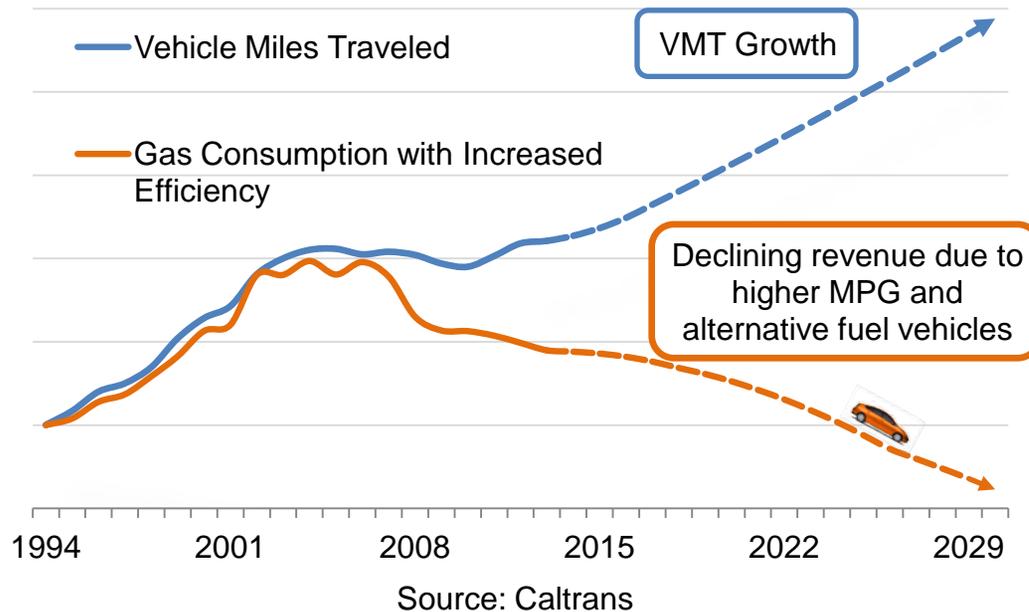




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# As California reduces fossil fuel consumption, gas taxes are not a sustainable source of funding

Fuel taxes are the primary source of funds to support California’s transportation system. Current funding levels are insufficient to properly maintain roads and bridges. In the future, as fuel tax receipts decline due to improved fuel economy and alternative fuel vehicles, the challenge of funding basic maintenance and repairs will be even more difficult.



*“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.” – SB 1077*

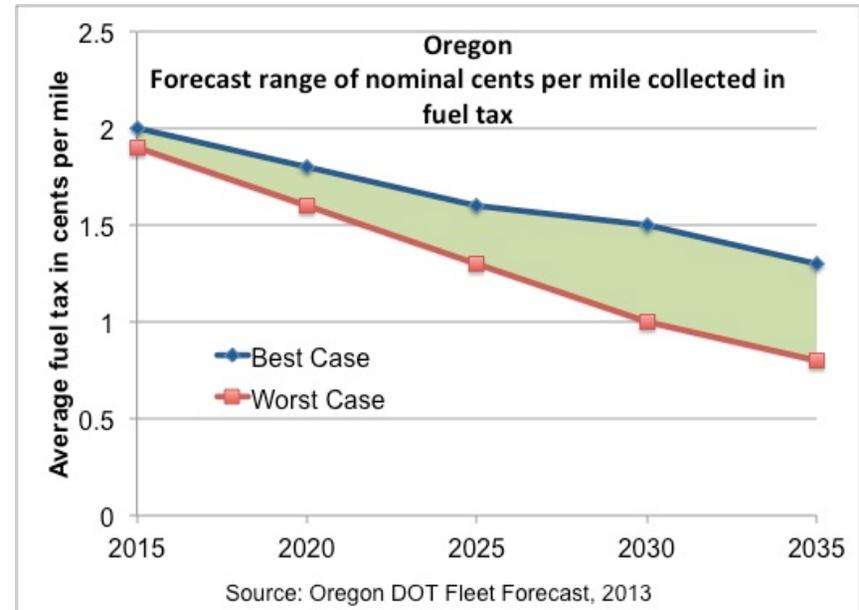
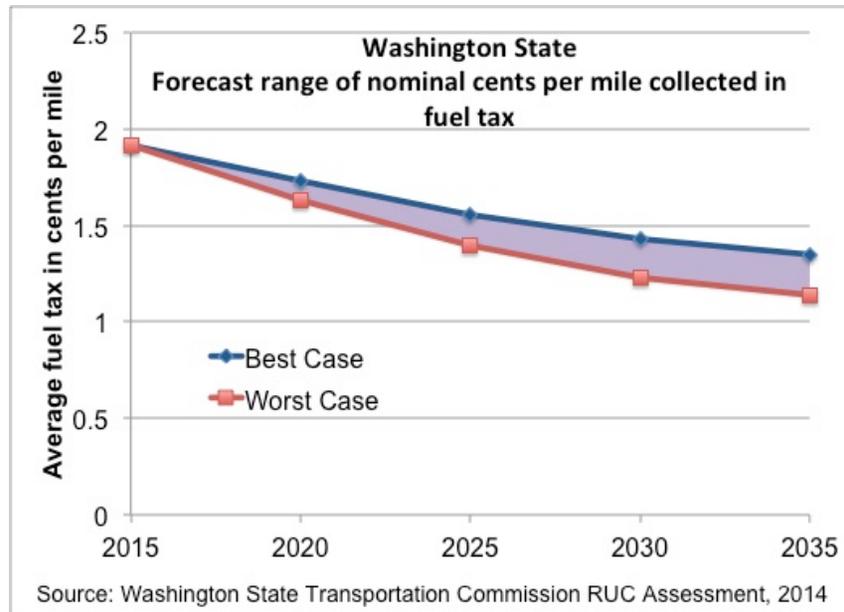




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# Other states are questioning reliance on fuel taxes and are examining alternatives, including road charging

Fuel tax revenue per mile driven has declined in the past decade due to improvements in fleet miles per gallon (MPG). Per-mile revenue will continue its decline as high MPG vehicles enter the fleet in greater numbers. According to a 2013 study commissioned by Caltrans (*Alternative Transportation Financing Strategies*) as well as our own tracking of state legislative activities, over half of all states have examined ways of stabilizing fuel tax revenue over the past several years.



For example, Oregon and Washington have examined the impact of new vehicles on fuel tax revenue. Washington is in advanced stages of study and preparation for a road charging pilot test, while Oregon will implement a permanent road charging system in July 2015.





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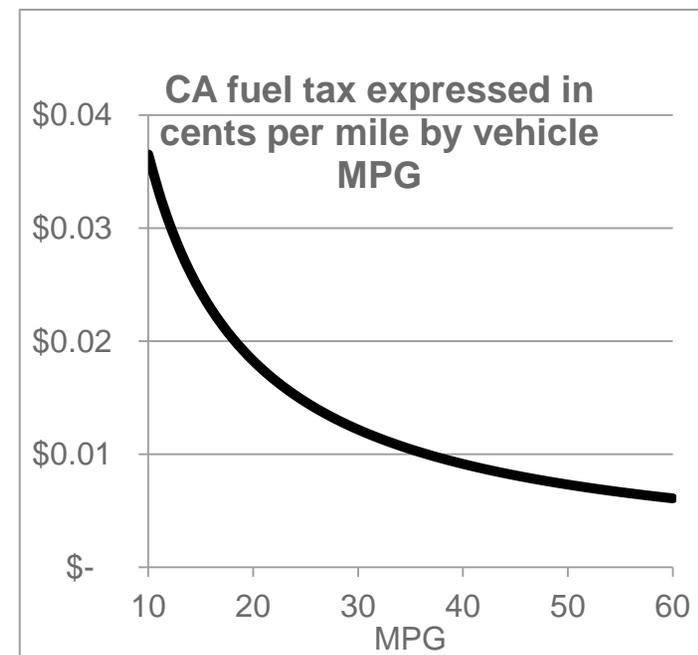
## **Road charging is a concept of funding roads and bridges based on distance traveled rather than fuel consumed**

*“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.” – SB 1077*

It is the consultants’ view that the per-mile rate(s) for any operational road charging system would ultimately be determined by the Legislature, or delegated by the Legislature to a rate-making body. Moreover, the legislative language of SB 1077 states that per-mile rate(s) could be flat (i.e., not vary by location or time of day) for each individual motorist.

However, based on the consultants’ interpretation of the legislative language, there are two rate possibilities the TAC could consider for pilot testing purposes:

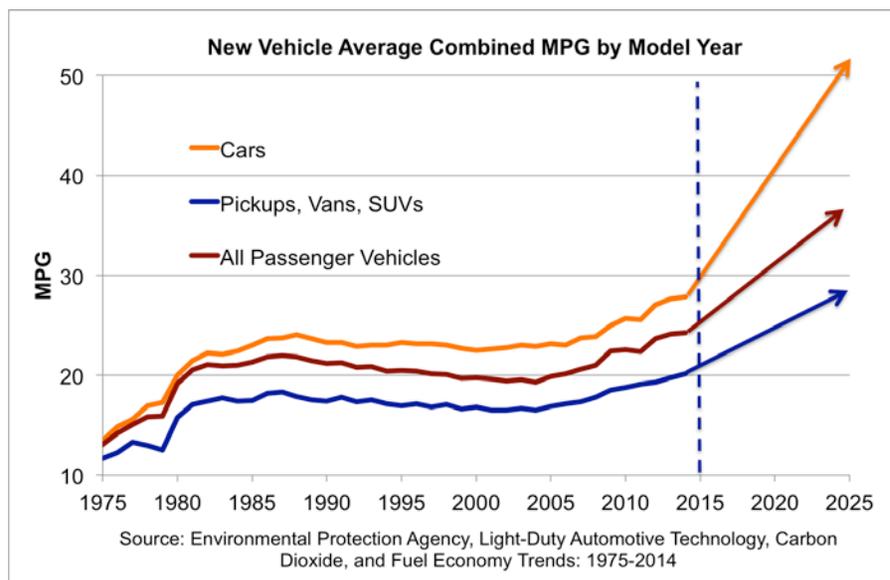
- ▶ The per-mile rate(s) could vary depending on the type of vehicle, including, for example, based on characteristics such as emissions.
- ▶ Some motorists could be offered the ability to “opt out” of reporting actual distance traveled, and instead report a default value. In other words, motorists could pay a fee for the right to drive an unlimited number of miles during a specified period of time. The TAC could recommend such default values to use in pilot testing, should such an option be desirable.





## BRIEFING BOOK FOR TAC MEETING #2

## Road charging ensures that all motorists contribute to road funding regardless of the type of vehicle they drive



Fuel taxes were designed to approximate road use: the more you drive, the more fuel you consume, the more tax you pay. Over most of the past century, the majority of passenger cars had similar fuel economy, meaning that motorists were paying approximately the same amount per mile driven regardless of the type of vehicle they drove.

In 2007, average MPG of new passenger cars began a steady, multi-year increase for the first time since the 1980s and the second time in a century. In addition, the number of vehicles achieving very high MPG (40+) has proliferated,

and many vehicles now have motive sources that do not use fossil fuels at all, such as electric vehicles. In this new environment, some vehicles pay nothing in fuel taxes for road use, some pay very little, and others pay a great deal. At the same time, however, these vehicles consume roughly equal portions of the state's roadway budget, occupy similar space in traffic, cause similar amounts of roadway wear, and use similar amounts of roadway lighting and signage. A road charge corrects this imbalance by ensuring that all vehicles pay the same per mile, regardless of fuel source.

*“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.” – SB 1077*





**BRIEFING BOOK FOR TAC MEETING #2**

## **Road charging programs can be viable without compromising motorist privacy or security of personal data**

Oregon was the first U.S. state to design (2010-2012), test (2012-2013), and implement (2014-2015) a road charging program that does not require motorists to share location information. In New Zealand, diesel vehicle driving motorists have paid road charges since 1978 through prepaid distance licenses, which do not require any location information or even any technology other than a functional odometer.

The success of New Zealand's and Oregon's systems have convinced lawmakers in other states like California to advance discussions of road charging.

*“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.” – SB 1077*





**BRIEFING BOOK FOR TAC MEETING #2**

**Now is the time to explore road charging in California, while heeding the privacy lessons of earlier efforts**

*“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... 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.” – SB 1077*

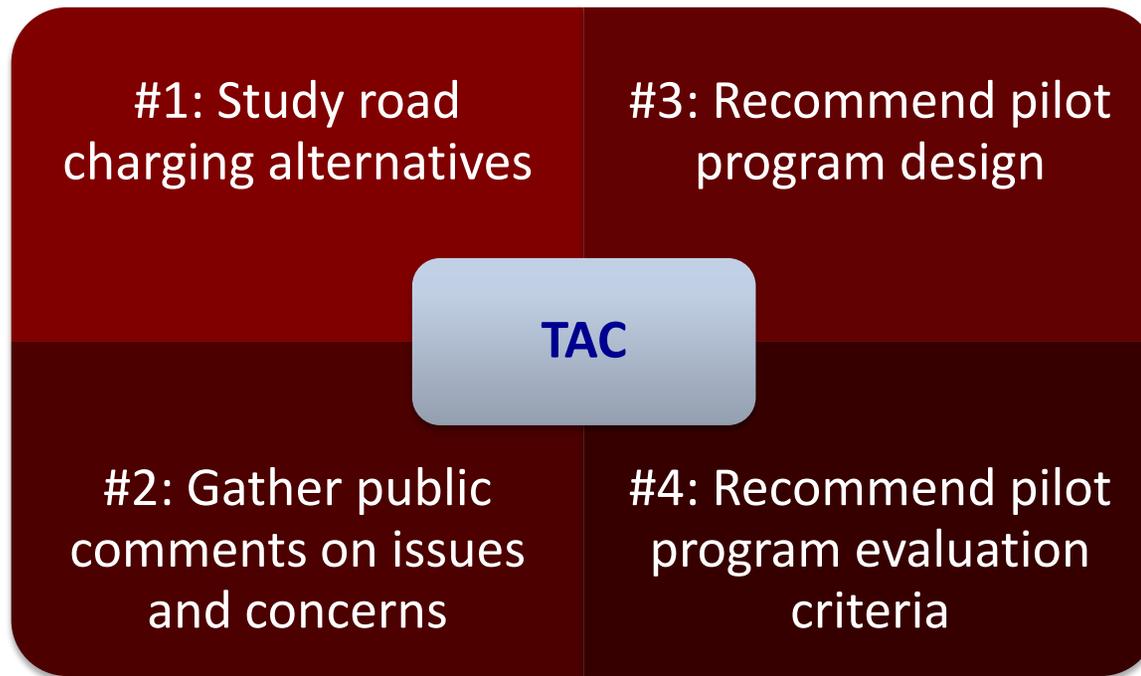




**BRIEFING BOOK FOR TAC MEETING #2**

**SB 1077 empowers the TAC to undertake four primary activities**

SB 1077 establishes the TAC as an independent body **studying technical aspects** of road charging alternatives and **gathering public input** on issues and concerns. The TAC is responsible for assimilating this information and using it as the basis for **pilot design** and **evaluation criteria** recommendations.





**BRIEFING BOOK FOR TAC MEETING #2**

**TAC activity 1: Study road charging alternatives to the gas tax**

There are many possibilities for measuring and reporting the road usage of a vehicle. Examples include self-reported mileage, certified odometer readings, smartphone-based mileage reporting, in-vehicle device-based mileage reporting, and telematics-based reporting. Throughout the year, the TAC will study these and other methods through operational concept development, business case analysis, policy issue evaluation, and organizational design.



Simultaneously, the TAC will develop evaluation criteria—formal criteria against which each possible method is rated—to guide its study of road charging methods. These criteria may ultimately correspond with the criteria recommended for pilot program evaluation.





**BRIEFING BOOK FOR TAC MEETING #2**

## **TAC activity 2: Gather public comment on issues and concerns related to the pilot program**

In addition to evaluating the technical dimensions of road charging, it is critical that the TAC consider public feedback on the road charging policy itself as well the methods being studied. The TAC has already identified a number of venues for seeking public and stakeholder input. This process involves two-way communication:



- ▶ The TAC will communicate what it is doing with the public, including its purpose, objectives, and process. As the year unfolds, the TAC can gradually communicate more detailed information about the methods being examined.
- ▶ By the same token, the TAC will open channels for receiving public feedback, including a website with social media, monthly meetings, and other public forums.

The information received throughout this process will inform the TAC's recommendations regarding pilot program design and evaluation criteria.



**BRIEFING BOOK FOR TAC MEETING #2****TAC activity 3: Recommend road charging approaches and pilot program design parameters to CalSTA**

The first category of TAC outputs is a set of design recommendations for a road charge pilot program, to be implemented and operated by CalSTA. Examples of the types of pilot design recommendations that the consultants believe the TAC will make are listed below. Please note that this list is neither exhaustive nor mandatory, but rather intended only for illustrative purposes:

- ▶ Road charging methods to test
  - ▶ Methods of recording and reporting road use
  - ▶ Methods of billing
  - ▶ Methods of payment
  - ▶ Mechanisms for enforcement
  - ▶ Involvement of commercial account managers
- ▶ Participants
  - ▶ Location and distribution
  - ▶ Type of participants (diverse households, businesses, public agencies)
  - ▶ Types of vehicles to include
- ▶ Public agency involvement
- ▶ Privacy protections to have in place
- ▶ Data security mechanisms to have in place
- ▶ Whether and how to test road charging on visitors from out of state





**BRIEFING BOOK FOR TAC MEETING #2**

## **TAC activity 4: Make recommendations on evaluation criteria to use for the pilot program**

In parallel with deciding the pilot dimensions to test, the TAC can develop and recommend criteria for evaluating the pilot program. These criteria could include any combination of the following:

- ▶ Internal evaluation criteria that the TAC uses in its study of road charging methods
- ▶ Standalone criteria designed to evaluate the pilot program
- ▶ Standalone criteria designed to evaluate a future operational program

The Legislature provided the following “considerations” in SB 1077. The consultants believe the TAC can consider this as a partial or initial list of potential evaluation criteria:

- ▶ Availability, adaptability, reliability, and security of methods of recording and reporting highway use
- ▶ Necessity of protecting personally identifiable information
- ▶ Ease and cost of recording and reporting highway use
- ▶ Ease and cost of administering road charges compared to fuel taxes
- ▶ Effectiveness of methods of maintaining compliance
- ▶ Ease of re-identifying location data even when personally identifiable information has been removed
- ▶ Privacy concerns if road charging location data are used in conjunction with other technologies
- ▶ Public agency, including law enforcement, and private entity access to data related to road charging, pursuant to Article I Section 1 of the California Constitution





**BRIEFING BOOK FOR TAC MEETING #2**

**SB 1077 also provides design parameters to CalSTA that the TAC may find useful**

CalSTA must consider the following in implementing the pilot. The consultants believe these items will be instructive for the TAC to consider in developing pilot design recommendations:

- ▶ Analyze alternative means of collecting road use data, including at least one alternative that must not rely on electronic vehicle location data
- ▶ Collect a minimum amount of personal information including location data
- ▶ Ensure that processes for collecting, managing, storing, transmitting, and destroying data are in place to safeguard data integrity and privacy
- ▶ Do not disclose data except under statutorily specified circumstances

CalSTA must report back to the TAC and legislative committees with a discussion of the following issues related to the pilot program. The consultants believe these items will be instructive for the TAC to consider in development of evaluation criteria:

- ▶ Cost
- ▶ Privacy
- ▶ Jurisdictional issues
- ▶ Feasibility
- ▶ Complexity
- ▶ Acceptance
- ▶ Use of revenues
- ▶ Security and compliance, including processes to minimize evasion and fraud
- ▶ Data collection technology
- ▶ Other driver services
- ▶ Implementation issues





**BRIEFING BOOK FOR TAC MEETING #2**

**To summarize, the TAC will collect input from staff and consultants as well as from the public**

**Input from staff and consultants on road charging methods**

- ▶ Policy lessons learned from around the globe
- ▶ Ongoing analysis of policy issues and concerns
- ▶ Special policy topics (e.g., privacy, rural driver impacts, relationship to other policy areas)
- ▶ Development of operational concepts
- ▶ Identification of technology requirements
- ▶ Business case analysis (costs of collection)
- ▶ Study of organizational design implications
- ▶ Risk analysis
- ▶ Analysis of pilot procurement alternatives

**Input from the California public on road charging attitudes and beliefs**

- ▶ Telephone surveys of public views
- ▶ Focus groups (public engagement sessions)
- ▶ Public comment at TAC meetings
- ▶ Outreach to general public and stakeholder groups
- ▶ Media monitoring
- ▶ Social media monitoring
- ▶ Web-based feedback from constituents
- ▶ Feedback from TAC member conversations with constituents
- ▶ Town hall events





## BRIEFING BOOK FOR TAC MEETING #2

## A distinction must be made between pilot design parameters and evaluation criteria

<u>EXAMPLE PILOT DESIGN PARAMETERS</u>	<u>EXAMPLE EVALUATION CRITERIA FOR EACH PARAMETER</u>
How many reporting methods? (SB 1077 requires >1)	Acceptance, ease & cost to administer
How many non-location reporting methods? ( $\geq 1$ )	Acceptance
Personal data to collect?	Type and amount of personal data collected
Which process(es) to safeguard data?	Security of methods, ease of re-identifying personal & location data
Which reporting methods to use?	Availability, adaptability, reliability, ease & cost to comply
Which billing methods to use?	Availability, adaptability, reliability
Which methods of collecting payment?	Availability, adaptability, reliability
Which mechanisms for enforcement?	Compliance (level of evasion/fraud), ease & cost to administer
Involve commercial account managers?	Acceptance, ease & cost to administer, access to data
Location and distribution of participants?	Acceptance, consultation with vehicle users
Type of participants/vehicles to include?	Acceptance, revenue collected
Level of involvement by agencies?	Ease & cost to administer, agency access to personal data
Will collected revenues be consistent with cost to administer?	Ease & cost to administer, appropriateness of revenue uses
Test road charging for visitors to the state?	Ease & cost to administer, jurisdictional issues, complexity
How to safeguard personally identifiable information?	Type and amount of personal data collected





**BRIEFING BOOK FOR TAC MEETING #2**

## **In deciding pilot design parameters and evaluation criteria, we recommend that the TAC consider policy questions**

The questions below are intended to illustrate the range and types of policy questions that commonly arise in studying and testing road charging programs. We recommend that the TAC think about these questions when considering design parameters and evaluation criteria for the pilot. The TAC's recommendations will influence whether and to what extent the state will be able to address the following questions through the pilot process:

- ▶ How should road charges be enforced?
- ▶ Should rates differ by vehicle type (e.g., weight, engine size, MPG)?
- ▶ Will there be unique impacts on rural drivers?
- ▶ What payment options should motorists have?
- ▶ What are the various agencies' roles?
- ▶ Should California address road charging interoperability with other states and if so how?
- ▶ What evaluation criteria and process should be used to evaluate the success of a road charging pilot?
- ▶ Should the road charging system be entirely state-run or should private account managers be allowed?
- ▶ Should standards be applied to vendor technology or systems? If so, which ones?
- ▶ How should technology or systems be certified?
- ▶ Will private account managers be regulated?
- ▶ What privacy protection requirements should the system include?
- ▶ How should personally identifiable information be protected?
- ▶ What data security requirements should the system include?
- ▶ How should privacy and data security requirements be enforced?
- ▶ Should road charging use open or closed systems?
- ▶ Should reporting technologies require location capability or not?
- ▶ Should both non-electronic and electronic options for road use reporting be offered?
- ▶ If private account managers are allowed, should there be a government-provided technology option?



**BRIEFING BOOK FOR TAC MEETING #2****The remainder of this section provides a cursory view of key considerations of each policy question for the TAC to consider in developing pilot design parameters and evaluation criteria**

The purpose of the next 19 slides is not to resolve policy questions. Rather, the purpose is to provide the TAC with the following:

- ▶ An appreciation of the breadth of questions that surround road charging
- ▶ An understanding of how such questions have been dealt with in other contexts both in the U.S. and abroad
- ▶ Awareness of the interdependencies between some of the open questions

The pages that follow detail some of the issues that commonly arise when states and countries have debated road charging as a potential policy. In this briefing book, we only focus on those issues most pressing for the TAC's immediate work. This section considers each issue one at a time, drawing on the experiences, deliberations, and decisions of other jurisdictions when appropriate.





**BRIEFING BOOK FOR TAC MEETING #2**

## **How should road charges be enforced?**

### **Why this question is important**

- ▶ Enforcement is any effort to deter evasion and encourage compliance. Any tax regime requires some level of enforcement. Visible enforcement ensures a level of voluntary compliance.

### **Relevant lessons learned**

- ▶ Enforcement programs should be comprehensive and intelligent. Enforcement is not only about detecting violations (cases of non-payment or underpayment of the road charge, whether fraudulent or inadvertent), but also notifying individuals responsible for the nonpayment or underpayment of any tax or penalty, and collecting any fines associated with the penalty.
- ▶ There are two main components of road charging enforcement:
  - ▶ The first component is to verify that all vehicles subject to road charges are recorded as charge-liable by the responsible agency, e.g., with the help of the vehicle registry.
  - ▶ The second component involves detecting attempts by individuals to defraud the system by misusing or hacking mileage reporting devices or vehicle odometers.
- ▶ In addition, it may be necessary to tighten administrative procedures around vehicle registration and titling, including any legally required odometer disclosures and timely registration upon moving to California.





**BRIEFING BOOK FOR TAC MEETING #2**

## **Should rates differ by vehicle type (e.g., weight, emissions)?**

### **Why this question is important**

- ▶ No two vehicles are identical, so some people may suggest creating charging schemes that differentiate road charges based on vehicle characteristics such as weight, engine size, MPG, emissions, or other factors.
- ▶ These are all dimensions of rate setting that can turn a simple policy into a complicated one.
- ▶ Fortunately, most of them can be readily incorporated into a pilot test.

### **Relevant lessons learned**

- ▶ This is one of the thorniest, most controversial policy questions related to road charging.
- ▶ When heavy vehicles are included in the road charge, it seems very logical to assign different rates to heavy vehicles based on weight, because the amount of roadway wear and tear caused by different vehicle weights varies so widely.
- ▶ Light vehicles, on the other hand, tend to cause similar amounts of roadway wear and tear with respect to each other, so differential rates are not justifiable on that basis. For that reason, Oregon chose to assign one per-mile rate to all light vehicles.
- ▶ Rates may be assigned for reasons other than to cover the cost of roadway wear and tear. For example, rates may be charged to discourage consumption of fuel and emissions.
- ▶ Rate setting algorithms work best when based on vehicle characteristics that can be easily captured in the state's vehicle registry.





**BRIEFING BOOK FOR TAC MEETING #2**

## **Will there be unique impacts on rural drivers?**

### **Why this question is important**

- ▶ The concept of road charging commonly elicits a reaction that it is punitive to rural drivers. Given the large number of rural and agricultural Californians, it will be important to address this concern.

### **Relevant lessons learned**

- ▶ Many people feel that because rural residents tend to drive longer distances each trip they take, they will end up being harmed by a road charge. However, few people readily appreciate that the gas tax also is more costly to those who drive more. Moreover, the effective per-mile rate of the gas tax is a function of fuel economy, with less fuel-efficient vehicles such as farm trucks and pickups paying more per mile than sedans and compact cars.
- ▶ An analysis of the Oregon vehicle registry demonstrated that rural residents tend to drive less fuel-efficient vehicles than urban residents. In that case, changing from a fuel tax to a road charge would be net positive for rural residents. In addition, Oregon found that there was no substantial difference between the amounts of driving by rural residents vs. urban residents: rural residents took longer trips, but less frequently.
- ▶ In Washington State, a survey panel analysis conducted determined that there is no significant difference in fuel efficiency between urban and rural drivers in that state, but that rural residents tend to drive more than urban residents. Under a road charge, rural drivers would save approximately \$2 per month relative to gas taxes, while urban drivers would pay approximately \$4 more.



**BRIEFING BOOK FOR TAC MEETING #2**

## What payment options should motorists have?

### Why this question is important

- ▶ Motorists may be more likely to accept a road charge if they can choose how to pay for it in a way that is convenient to them.

### Relevant lessons learned

- ▶ In Oregon, a study concluded that users want not only choice of reporting method, but also of payment method.
- ▶ Online account holders will want credit/debit card and ACH/bank transfer options.
- ▶ Payment by mail/check should also be possible for those who do not have a credit/debit card or do not use online services at all.
- ▶ In case of a mandatory road charge program, cash payment may be necessary to support individuals who do not have bank accounts. According to a 2012 study by the Federal Deposit Insurance Corporation (FDIC), 7.8% of California households do not have a checking or savings account.<sup>1</sup>

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<sup>1</sup> 2012. Federal Deposit Insurance Corporation (FDIC). *National Survey of Unbanked and Underbanked Households*.





**BRIEFING BOOK FOR TAC MEETING #2**

## **What are the various agencies' roles?**

### **Why this question is important**

- ▶ Department of Motor Vehicles (DMV), CalSTA, Caltrans, CTC, and the Board of Equalization (BOE) are all California government agencies that will have some role in implementing a road charge, and the precise roles will need to be determined before any potential future road charge program could be implemented.
- ▶ A pilot test offers the opportunity to simulate the actual implementation and to gather lessons learned for the final organizational design.

### **Relevant lessons learned**

- ▶ The administration for the new road charge will reside within one or more state agencies.
- ▶ DMV will almost certainly be involved, due to the need for the motor vehicle database as means of identifying vehicles liable for the road charge and the names and addresses of vehicle owners.
- ▶ CalSTA, Caltrans, CTC, and BOE also are likely to be involved with varying roles.
- ▶ The precise role of each agency is a question that should be approached gradually, thoughtfully, taking into account the unique strengths of each agency.
- ▶ The pilot project is an excellent opportunity to trial the agency roles.





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## **Should California address road charging interoperability with other states and, if so, how?**

### **Why this question is important**

- ▶ Oregon already has a road charging program, and other states are actively looking into the possibility of implementing one.
- ▶ It could be desirable that devices used to pay road charges in the various states also support payment in neighboring states with a road charge.
- ▶ It may also be desirable to study and begin developing multi-state agreements regarding charging for travel across multiple jurisdictions.

### **Relevant lessons learned**

- ▶ The Western Road Usage Charge Consortium (WRUCC), of which California is one of 11 members, is already investigating how to achieve interoperability and how to transfer funds among various states within the consortium.
- ▶ There are existing models for funds transfers within a consortium including the International Fuel Tax Agreement (IFTA) and the International Registration Program (IRP), which provide multi-jurisdictional reconciliation of fuel taxes and registration fees for heavy trucks, respectively.
- ▶ There are existing models for interstate road use sticker programs. The California DMV requires nonresident employees who travel frequently into California from border areas of Nevada and Arizona to purchase a registration sticker. In parts of Europe, “vignette” (sticker) programs are in place for light and heavy vehicles, requiring the pre-payment of road taxes through the purchase and display of a permit authorizing travel for a fixed period of time.





**BRIEFING BOOK FOR TAC MEETING #2**

## **What evaluation criteria and processes should be used to evaluate the success of a road charging pilot or program?**

### **Why this question is important**

- ▶ To assure the public and the government that the road charge program is operating well (efficiently, fairly, etc.) the TAC may establish a process by which the program can be evaluated, and criteria chosen upon which the program will be evaluated.

### **Relevant lessons learned**

- ▶ The evaluation process begins with the selection of criteria upon which the program will be evaluated (e.g., revenue generation efficiency, public acceptance). Each criterion is measured with a value called a metric (e.g., revenue divided by cost, change in public acceptance, etc.). Each metric has a unique process for measurement, typically involving computation of a value called an indicator from raw data.
- ▶ Raw data may be numerical observations from technical field trials; or it may be monetary (cost or revenue) data; or it may be public opinion survey / focus group data.
- ▶ For the sake of efficiency and consistency, it is typically desirable for any pilot program to be evaluated according to the process designed for evaluating the pilot while it was in live operations, so that the evaluation process itself can be refined.





**BRIEFING BOOK FOR TAC MEETING #2**

## **Should the road charging system be entirely state-run, or should commercial account managers be allowed?**

### **Why this question is important**

- ▶ Commercial account managers have the potential to reduce the overall cost of the road charging system, increase technical innovation, and reduce technical risk to the state.

### **Relevant lessons learned**

- ▶ Oregon has set up a system of “Commercial Account Managers” – private companies that provide hardware, invoicing, bill payment, and account management services for participants in their road charging program.
- ▶ These companies compete for users who choose a distance measurement device as their method of payment reporting. They could offer value added services, such as pay-as-you-drive insurance, to customers. They could, potentially, also charge a small fee for their account management service.
- ▶ To function properly, a private market for collection of road charges requires regulation of service providers, including certification of systems and technology, but companies would be allowed to compete for and have direct relationships with motorists.
- ▶ Commercial account managers have proven in other contexts to reduce the cost of program administration, the technical risk for the administering agency, and the cost of compliance for taxpayers.





**BRIEFING BOOK FOR TAC MEETING #2**

## **Should standards be employed for any vendor technology or systems? If so, which ones?**

### **Why this question is important**

- ▶ If the road charging system is to remain “open” – available for all potential private equipment or services vendors to support—then private companies servicing the road charging program will need to design and manufacture their equipment according to common, open technical standards.
- ▶ Lacking standards, vendors would use their own private and possibly proprietary technology, which would make the system closed, and potentially locking taxpayers in to particular technology solutions and providers.

### **Relevant lessons learned**

- ▶ In a closed system, opportunities for new entrants are minimized, and technical innovation and price competition suffer.
- ▶ In the tolling industry, closed systems mean that various tolling agencies are compelled to purchase equipment from the same vendor each time they need to upgrade systems, regardless of the quality or price.
- ▶ Standards would specify certain communications formats, such as how mileage information is transmitted.
- ▶ Standards could also govern the performance of equipment, security measures, etc.





**BRIEFING BOOK FOR TAC MEETING #2**

## **How should technology or systems be certified?**

### **Why this question is important**

- ▶ Certification is the means by which the state agency administering the road charge verifies that a private vendor's products or services comply with the relevant standards and rules.
- ▶ Certification is also the method by which the state agency guarantees to the public that all equipment or services in the system provided by private vendors perform with sufficient accuracy and reliability to merit collecting the road charge.

### **Relevant lessons learned**

- ▶ State agencies often lack the technical background and resources needed to act as certification agents.
- ▶ Self-certification may be a sufficiently rigorous process for the start of a system—so long as all self-certification documents and results are thoroughly audited by the state.
- ▶ When a certification program grows large, having a third party private certification agent guarantees consistency of results.
- ▶ Both private organizations and universities may act as third party certification agents.





**BRIEFING BOOK FOR TAC MEETING #2**

## **Will commercial account managers be regulated?**

### **Why this question is important**

- ▶ To guarantee that the private vendors provide a minimum level of service acceptable to the state, the state may wish to regulate some aspects of competition among vendors.

### **Relevant lessons learned**

- ▶ The state may require that commercial account managers meet certain minimum financial stability requirements.
- ▶ The state may require that road charge account data be stored in a format that would make it straightforward for another company to take over, in case the first company failed or the motorist chooses to switch account managers.
- ▶ Similarly, the state may wish to set a maximum amount that commercial account managers may charge customers for road charging services. However, the state should not limit pricing on other services that the vendors may offer customers.





**BRIEFING BOOK FOR TAC MEETING #2**

## **What privacy protection requirements should the system include?**

### **Why this question is important**

- ▶ Privacy concerns are among the most commonly cited concerns with a road charging program.

### **Relevant lessons learned**

- ▶ One important privacy protection measure is make the use of location-based devices (devices that include GPS) optional, so that those who do not wish their location ever to be recorded may have that be the case.
- ▶ Another measure is to prevent exact locations from ever being stored. In Oregon, for example, devices aggregate miles traveled into “buckets” including miles traveled in state, miles traveled in other states, and miles traveled on private roads, without ever record specific locations.
- ▶ Another measure is to have strict data retention and handling requirements clearly defined in the legislation that creates the road charge. In Oregon, for example, data may not be retained for more than 30 days after a given billing cycle, except when billing is disputed.





**BRIEFING BOOK FOR TAC MEETING #2**

## **How should personally identifiable information be protected?**

### **Why this question is important**

- ▶ Personally Identifiable Information (PII), such as name, address, phone number, and e-mail address, is very sensitive and must be handled appropriately.

### **Relevant lessons learned**

- ▶ All account management entities, public and private, will have access to users' PII.
- ▶ Rules for dealing with PII will need to be established in a road charge program. All account managers should be required to abide by these rules for handling and, when necessary, of communicating PII.
- ▶ Such rules should include only allowing access to PII for authorized users, requiring appropriate background screening of all authorized users, and recording of all access to such information and archiving such records for a defined period of time.





**BRIEFING BOOK FOR TAC MEETING #2**

## **What data security requirements should the system include?**

### **Why this question is important**

- ▶ Having strict data security measures will be vital for the success of a road charge system.

### **Relevant lessons learned**

- ▶ Data security practices should include using certain data encryption standards, requiring password authentication of all data users, and only allowing authorized users to access certain information.
- ▶ Such measures should apply to all account managers, as well as to any state systems that deal with a road usage charge.
- ▶ Such measures should be well documented and made publicly available to reassure the public of their data's security.





**BRIEFING BOOK FOR TAC MEETING #2**

## **How should privacy and data security requirements be enforced?**

### **Why this question is important**

- ▶ Enforcement measures are needed to ensure that the entire system is compliant with privacy and data security standards.

### **Relevant lessons learned**

- ▶ Fines and penalties can be assessed against offenders.
- ▶ Fines may increase per instance of violation.
- ▶ In the case of a commercial account provider, an effective deterrent is to make a certain number of violations grounds for contract termination.





**BRIEFING BOOK FOR TAC MEETING #2**

## **Should road charging use open or closed systems?**

### **Why this question is important**

- ▶ Deciding whether the road charge system will be open or closed may sound like a technical detail, but it is a fundamental policy choice with far reaching impacts on system cost, adaptability, customer friendliness, state agency procurement flexibility, and resources devoted to developing standardized interfaces.

### **Relevant lessons learned**

- ▶ Open Systems require common standards. Examples include Unix computer operating system, and mobile telephone networks (i.e., roaming).
- ▶ Examples of closed systems are based on proprietary standards. Examples include Apple computer operating system and road tolling systems in the U.S.
- ▶ Open systems tend to be more customer friendly, lower cost, and adaptable to latest technologies.
- ▶ Open systems require the state agency to develop common standards and interfaces between the interchangeable pieces of the system, whereas closed systems require the agency to specify the entire system.





**BRIEFING BOOK FOR TAC MEETING #2**

## **Should reporting technologies require location capability or not?**

### **Why this question is important**

- ▶ Some early and unsuccessful formulations of road charging are based on the notion that every charge should be based on location, which requires the motorist to have GPS technology capable of recording his or her location and calculating charges on that basis. The most important step forward in road charging policy in the U.S. in the past decade has been the recognition, led by Oregon, that GPS is not required. In SB 1077, California has reaffirmed this principle. In addition to a series of privacy protection and data security requirements, the law states that the road charging pilot program shall “analyze alternative means of collecting road usage data, including at least one alternative that does not rely on electronic vehicle location data.”

### **Relevant lessons learned**

- ▶ Non-location based technologies simply calculate or aggregate distance driven and report the aggregate mileage traveled by a vehicle. This can be done by odometers, add-on devices that use sensors to measure (or compute) distance traveled without detecting location, or sensors built into the vehicle that measure distance using dead reckoning or other similar techniques.
- ▶ Given the proliferation of accurate non-location-based measurement methods, it is not necessary to mandate GPS.





**BRIEFING BOOK FOR TAC MEETING #2**

## **Should both electronic and non-electronic options for road use reporting be offered?**

### **Why this question is important**

- ▶ In providing “user choice,” a range of options should be considered. These break down to electronic and non-electronic categories of options for taxpayers to choose based on their individual preferences.

### **Relevant lessons learned**

- ▶ Electronic options are those dealing with some form of technology to read and report distance traveled from the vehicle in automated fashion. They range from devices that plug into the vehicle data port to onboard GPS devices to in-vehicle sensors paired to a smartphone.
- ▶ Non-electronic options are those that do not use any technology. They can be:
  - ▶ A flat fee paid to cover some default mileage amount
  - ▶ A paper based system of pre-purchasing miles in mileage blocks
  - ▶ Manual reading of the vehicle odometer by an authorized agent at periodic intervals
  - ▶ Self-reporting of the odometer reading coupled with periodic verification by authorized agents
- ▶ “Simple” and “desirable” are in the eye of the beholder. Some motorists will prefer highly automated options, while others will prefer manual approaches.
- ▶ There is a tradeoff between cost and user acceptance—manual options are typically desirable to satisfy some segment of the public, but they do tend to add to costs.



**BRIEFING BOOK FOR TAC MEETING #2****If private account managers are allowed, should there be a government-provided technology option?****Why this question is important**

- ▶ Technology options such as distance measurement devices may be effectively offered by private industry, so it may be unnecessary for a state agency to offer this as well.
- ▶ However, some individuals may wish to do business with the state instead of a private company. The state could elect to provide technology options to such individuals.

**Relevant lessons learned**

- ▶ In the Oregon program, the absence of a manual or paper-based option means that all road charging program participants must use a technology option. Some individuals may not be eligible or willing to accept the terms of the available commercial account managers. (Oregon chose to provide a government technology alternative for such individuals).
- ▶ The presence of a state-offered technology option is a disincentive for the participation of private companies, since they are then competing with the state. Oregon chose to support only basic (non-location-based) distance reporting devices without value-added services as a state-offered technology option to reduce the level of competition with commercial providers.
- ▶ In Washington State, the steering committee has not made a final decision on whether to utilize commercial account managers in the road charging program, but they have noted that if they are allowed, there would be no need for the state to provide a technology option, since the state is offering paper-based/manual options.

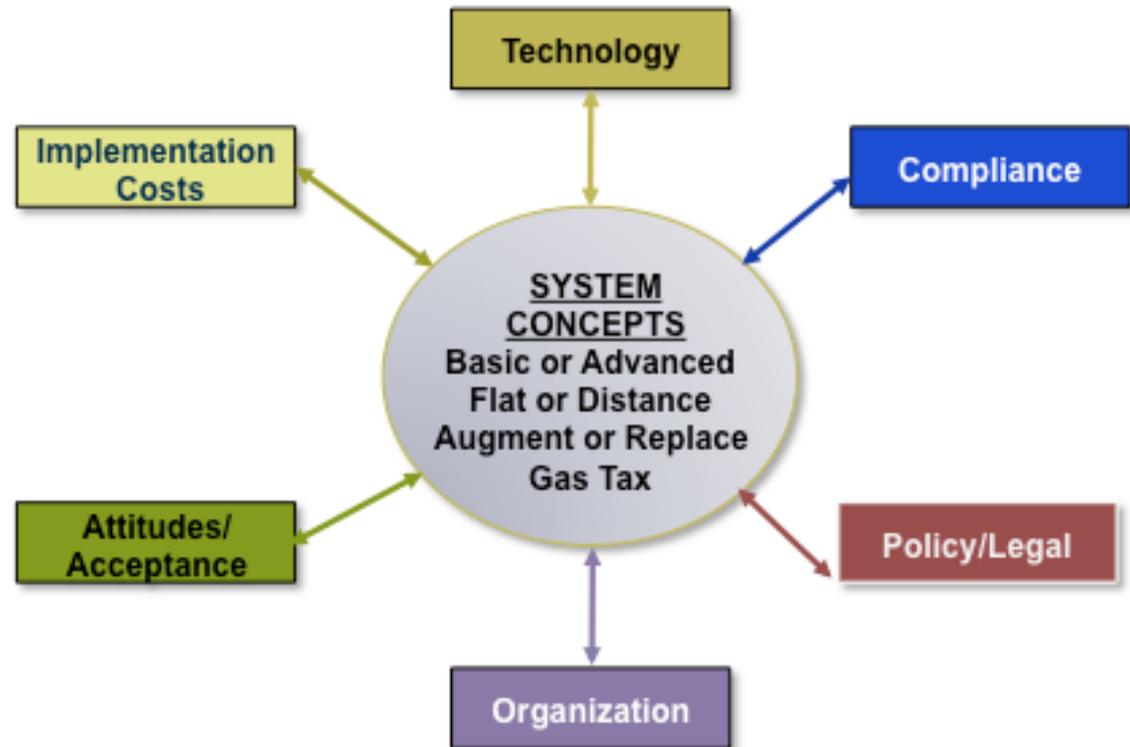




**BRIEFING BOOK FOR TAC MEETING #2**

# Road charging represents a major shift in how we fund roads and bridges

Road charging is a transformational concept. It requires policy, technology, design, and business innovation. It involves the change management of highly interdependent systems—interdependencies that are familiar and recognized by California transportation agencies and the public alike. To improve one aspect of the system without considering these interdependencies may produce unexpected and unwelcome side effects in other quarters of the system. The establishment of any road charging system is complex, ambiguous, and not well suited to the straightforward engineering progression from defining goals through designing and engineering solutions, to manufacturing/procurement of products, and system integration and deployment. We hope this section on policy questions has helped increase awareness of the many interconnected issues at play in recommending pilot design parameters and evaluation criteria.





# **SECTION 3**

# **GLOBAL EVOLUTION OF ROAD CHARGING POLICY**

(To be discussed with Item 8 on February agenda)

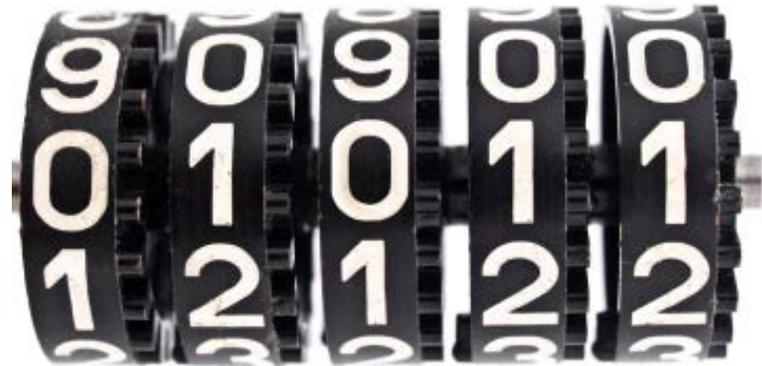


**BRIEFING BOOK FOR TAC MEETING #2**

## Experience with implementation of road charging on passenger cars is limited

Though studied extensively, both by academics and by practitioners, implementation of road charging has been limited to the following examples worldwide:

- ▶ **New Zealand.** All diesel and other alternative fuel vehicles have been subject to road charges since 1978 using a paper-based licensing scheme in which motorists pre-purchase blocks of kilometers.
- ▶ **Europe.** Several European nations use vignettes (stickers) that allow foreign motorists access to motorways for a designated period of time (a few days to a year).
- ▶ **Oregon.** Following over a decade of study and two pilot tests, Oregon is moving forward with an operational road charging system that will launch in July 2015, initially for 5,000 volunteer motorists, but with expectations to expand the program to include mandatory vehicles in the future.





**BRIEFING BOOK FOR TAC MEETING #2**

## **New Zealand: The largest and longest lived example of road charging for light vehicles**

**1978 Startup:** In 1978, New Zealand introduced a road charge (known in New Zealand as RUC) on all non-gasoline vehicles as well as any vehicles over 3.5 metric tons. A paper-based scheme was adopted that uses windshield-mounted sticker licenses. At the time of adoption, the number of non-gasoline passenger cars was negligible. Today, there are about 550,000 diesel cars subject to road charges. Compliance is enforced at roadside against odometer readings, through annual safety inspections, and using a robust audit program. Police have authority to ticket motorists whose licenses are not current. Because New Zealand is an island nation, cross-border travel is not an issue.



**2008 Update:** In 2008, government commissioned an independent review to provide recommendations on updating policies and technologies associated with road charges. The following passage punctuates their findings: *“A good charging system should not be discarded in the pursuit of a perfect system. The policy aim should be for a system that accomplishes as many and as much of the objectives as possible at low cost and, from a dynamic perspective, is not so complicated that different parties are constantly tempted to chip away at various components and undermine it.”*

**2009 Private Sector Agents:** The government certifies private sector agents to handle license sales and fee collection for motorists, some of whom use electronic methods to replace paper licenses.

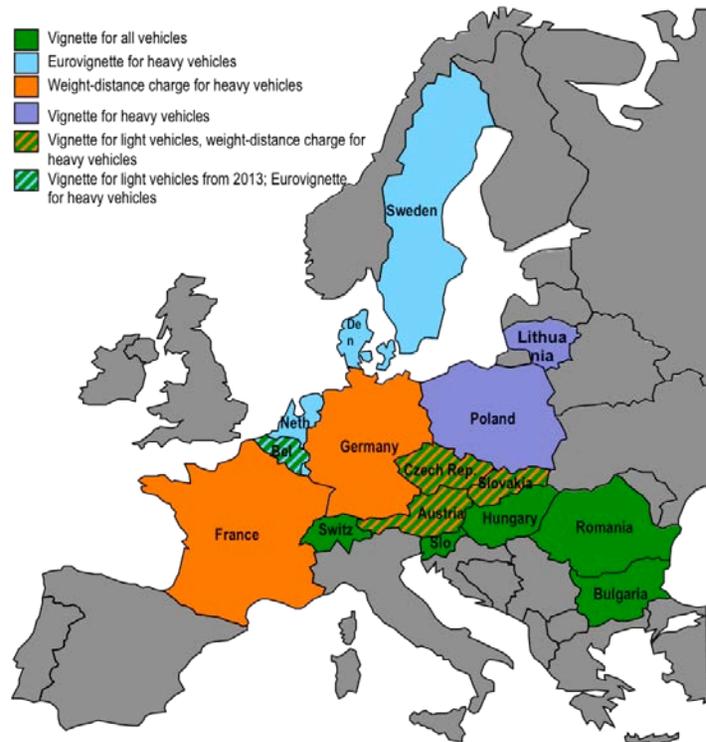




BRIEFING BOOK FOR TAC MEETING #2

# Europe: Several countries use vignettes (stickers) to charge for motorway use by visitors – an example of time-based road charging

**Paper vignettes.** A vignette is a windshield sticker that allows a vehicle to use certain roads in a country for a defined period. Frequent users typically buy a vignette that is good for a year, but shorter periods (down to a few days) are also available, depending on the country.



**Electronic vignettes.** Two countries (Hungary and Romania) have recently moved toward electronic vignettes. With an e-vignette, no physical sticker is required. Instead, the license plate is registered with authorities for a set number of days.



**Charge for motorways only.** In most countries, the vignettes are required only to use the limited-access highway system (e.g., Autobahn).

**Tax out-of-country motorists.** All countries that have vignettes also have fuel taxes, but as fuel prices vary across Europe, and distances are short, in many cases the fuel taxes are inadequate because foreign motorists may drive through a country without purchasing any fuel.

**Non-discriminatory.** EU rules require that vignettes not discriminate in design or practice. Systems must charge the same amount to everyone, regardless of nationality.





## BRIEFING BOOK FOR TAC MEETING #2

## Europe (continued): vignette pricing, volumes, and operational costs vary from country to country

COUNTRY	SYSTEM	NETWORK CHARGED	ANNUAL GROSS REVENUE (US \$ MILLIONS)	NUMBER OF UNITS SOLD	TOTAL OPERATING COSTS (US \$ MILLIONS)	COST AS A % OF REVENUE
Austria	Sticker	Motorway / expressways	\$494	21.2	\$7.2	1.5%
Bulgaria	Sticker	All national roads	\$20	N.A.	N.A.	N.A.
Czech R.	Sticker	Motorways / highways	\$167	4.8	\$17.0	10.2%
Hungary	Electronic	Motorways only	\$127	13.1	\$19.7	15.5%
Romania	Electronic	All main roads	\$114	5.7	\$6.4	5.6%
Slovakia	Sticker	Motorways / highways	\$47	3.3	\$0.3	0.6%
Slovenia	Sticker	Motorways / expressways	\$164	3.8	\$9.1	5.6%
Switzerland	Sticker	Motorways only	N.A.	N.A.	N.A.	N.A.





**BRIEFING BOOK FOR TAC MEETING #2**

**Oregon: The first U.S. jurisdiction to implement road charging for cars, with a statewide program set to launch in July, 2015**



Oregon has been a pioneer in transportation funding as the first state to implement a gas tax (1919), weight-mile tax (1925), and road charges for passenger cars (2015). Passenger vehicle road charging exploration began in 2001 with the legislature’s creation of the Road User Fee Task Force (RUFTF), which oversaw a study of revenue alternatives, resulting in the recommendation to pursue road charges through pilot testing.

Oregon’s first pilot (2006-2007) was a technical success but a policy failure. It featured a “pay at the pump” model, using an in-vehicle device to record mileage with GPS and communicate data to the point-of-sale system at fueling stations. At fueling, participants received a mock receipt showing gas tax credits and mileage fees due. The reliance on a single GPS-based device created public concerns about privacy, and the emergence of all-electric and plug-in hybrid vehicles raised doubts that a pay-at-the-pump model could keep up with a vehicle fleet trending away from fossil fuels.



Oregon’s second pilot (2012-2013) was both a technical and policy success. After several years of policy development and R&D, the second pilot demonstrated user choice, open systems, commercial account management, and no GPS mandate.



Following the success of the second pilot, the Oregon legislature passed SB 810, enabling legislation to create the nation’s first permanently operational road charge program, populated initially by 5,000 volunteer motorists. One government-run account manager and two commercial account managers have been announced, with others likely to provide services for the program in the future.





## BRIEFING BOOK FOR TAC MEETING #2

## As with light vehicles, there are only a few examples of distance-based heavy vehicle road charging

- ▶ **New Zealand.** All vehicles over 3.5 tons are subject to road charges based on weight and distance traveled, enforced using prepaid window licenses or, more recently, electronic compliance systems.
- ▶ **Europe.** Several European nations require trucks to pay weight-distance charges for use of motorway networks.
- ▶ **North America.** Four states have weight-mile taxes (Oregon, Kentucky, New York, and New Mexico). These taxes rely on self-reporting and roadside enforcement, although Oregon recently certified an electronic compliance service provider. In addition, the lower 48 states and 10 Canadian provinces require all interstate truck operators to report all miles traveled by jurisdiction quarterly in order to apportion diesel taxes and registration fees based on actual mileage traveled in each jurisdiction. These schemes are known as the International Fuel Tax Agreement (IFTA) and International Registration Plan (IRP), respectively.





**BRIEFING BOOK FOR TAC MEETING #2**

**Many other road charging studies and proposals have not resulted in implementation to date; as much or more can be learned from these examples as from implemented programs**

**International**

- ▶ **United Kingdom.** Dating back half a century, the UK has studied various forms of national road pricing but not yet implemented any outside the London Congestion Charge. Today it is considering a proposal for national truck charging.
- ▶ **Netherlands.** Over a period of two decades, the Netherlands considered a variety of approaches to simplify its many vehicle- and driver-based taxes into a single distance-based charge. To date, none of these proposals has been implemented.
- ▶ **Australia.** Beginning with the Henry Tax Review, published in 2010 and continuing through the present day, Australia has examined the possibility of transforming transportation funding by implementing road charging and simplifying or eliminating a host of other taxes and fees.

**Domestic**

- ▶ **University of Iowa (2009-2010)** tested user experience with GPS technology for tracking and road usage charging.
- ▶ **Nevada DOT (2009-2012)** studied public views of various road charging concepts.
- ▶ **I-95 Corridor Coalition (2012)** developed a Concept of Operations for multi-state charging.
- ▶ **Minnesota (2010-2011)** studied, developed concepts, conducted outreach, and pilot tested road charging using onboard vehicle technology and smartphones.
- ▶ **Washington State (2012-2015)** formed a Steering Committee to develop operational concepts and examine the business case for road charging. The Legislature is now weighing next steps, which include examining proposed methods through a pilot test.

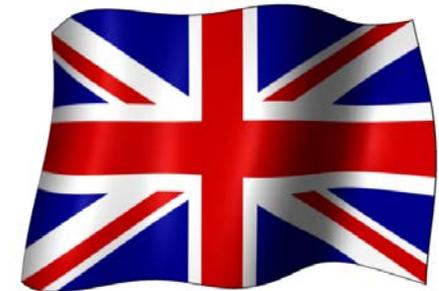




**BRIEFING BOOK FOR TAC MEETING #2**

## **United Kingdom: Over half a century of study, but no road charging implementation outside of London's congestion charge**

**1964: Smeed Report.** The UK Ministry of Transport's study of road revenue alternatives was among the earliest to recommend national zone charging, with prices varying by location, time, and vehicle type. Prices would reflect road costs, congestion, and environmental impacts, along with in-vehicle meters and payment devices. Proposals were abandoned in 1970 with a change in government.



**Mid 1990s-Present: Lorry charging.** In the mid-1990s, the Conservative government endorsed road charging, but since then, nothing has been implemented due to objections of stakeholder groups, changes in policy direction, and bundling truck charges with other transport policies.

**2004: Road pricing feasibility study.** In 2004, a national steering committee produced a report providing guidelines for studying, designing, and proposing road pricing schemes, following the successful imposition of congestion charging in 2003 in Central London.

**2005: Lorry Road Charging merged with National Road Pricing.** This resulted from some of the recommendations of the feasibility study.

**2007-2008: Efforts abandoned:** Owing in part to a petition, the government abandoned the national lorry charging proposal. Critics questioned privacy and cost aspects of the plan, which envisioned "time-distance-place" pricing involving complicated algorithms and GPS devices in every truck.

**2010-Present:** Lorry charging re-emerges. The political acceptability of lorry charging recently resurged. Truckers now favor the scheme as a method of leveling the playing field with foreign trucks that purchase lesser-taxed fuel in Europe and use UK roads. A scheme must comply with EU vignette rules.





**BRIEFING BOOK FOR TAC MEETING #2**

## **The Netherlands: Many road charging program experiments, but no implementation to date**

The Netherlands funds its roads from sales taxes, fuel taxes, and annual operating taxes based on vehicle weight and fuel consumption. Road pricing and road usage charging proposals have been made six times since 1988, but none of them were ultimately implemented.

**1988: Rekening Rijden I.** Proposed distance-based road charge system.

**1992: Spitsvignet.** Proposed peak period charges in urban areas.

**1994: Rekening Rijden II.** Proposed AM peak period cordon charges around four cities: Amsterdam, Rotterdam, The Hague, and Utrecht.

**1999: Spitstarief.** Proposed cordon pricing with access point tollbooths in the Randstad conurbation.

**2001: Kilometerheffing.** Proposed a distance-based road charge system.

**2005: Anders Betalen voor Mobiliteit (ABvM).** “Paying Differently for Mobility” was proposed to simplify the many taxes paid by motorists into a single distance-based charge. Secondary objectives included reducing travel times, improving reliability, and supporting efficient distribution of economic activity. The government’s Mobility Policy Document to 2020, published in September 2005, stated: “The cabinet considers the introduction of a kilometer fee in combination with a reduction in road taxes to be a workable alternative... The state will take all steps needed to introduce a system for levying a ‘fast-track fee’. The proceeds will be used to expedite the resolution of existing bottlenecks.”



**The Netherlands did not implement any of these programs.**



**BRIEFING BOOK FOR TAC MEETING #2**

## **The Netherlands: Progress on implementing road charging programs stalled primarily due to conflicting policy objectives**

The core purpose of the Netherlands' road charge proposals was to reorganize an existing hodgepodge of taxes to be simpler and more cost-effective. However, the stated objectives included all of the following:

- ▶ Replacing the current tax regime to be simpler for users while maintaining the same net revenues
- ▶ Reducing congestion
- ▶ Improving air quality
- ▶ Addressing climate change
- ▶ Sustaining economic growth

In a post-mortem review, the Dutch government cited reasons for the failure of the proposals:

- ▶ KISS – “Keep It Simple Stupid.” Despite the objective of simplicity, the road charging policy had too many objectives, making it a target for opposition. Proponents lost focus on the primary objectives as originally stated, which included the following:
  - ▶ Pay for roads in a direct way based on usage rather than ownership
  - ▶ Keep net revenues neutral with the existing tax regime
  - ▶ Dedicate revenues to the transportation sector
- ▶ Detractors exploited weaknesses in the complex proposals to damage public relations.
- ▶ A technology-centric approach led to reliance solely on GPS-based measurement alternatives as the only option for deployment because of the multi-faceted objectives sought by the program.



**BRIEFING BOOK FOR TAC MEETING #2****Australia: nearly a decade of analysis and policy development moving toward road charging for light vehicles**

Australia has been addressing road charging for the past decade, but recent years have seen growing momentum. Like the U.S., Australia collects federal fuel taxes, a portion of which is returned to the states. States supplement federal funds with local sources of transportation revenue such as vehicle registration fees, tolling, and parking revenues.



The possible transition to a road charge system is marked by the following major recent milestones:

- ▶ In 2008, a federal commission headed by the Treasury studied all Australian taxes in an effort to simplify the nation's tax policies. The commission recommended transportation taxes be reformed to “[give] individuals a clear signal about the cost of infrastructure, [so] they will have an incentive to use it efficiently.”
- ▶ The commission, known as the Henry Tax Review, published a report in 2010 identifying the consolidation of all motor vehicle related taxes into a single, unified road charge using distance traveled as the most promising policy.
- ▶ In 2014, the Australian Productivity Commission identified decline in fuel tax revenue alongside growth in road use and costs of construction as a further impetus for policy reform. Their report calls on governments to undertake pilot studies of road charging for light vehicles, using telematics, with revenues dedicated to road spending.



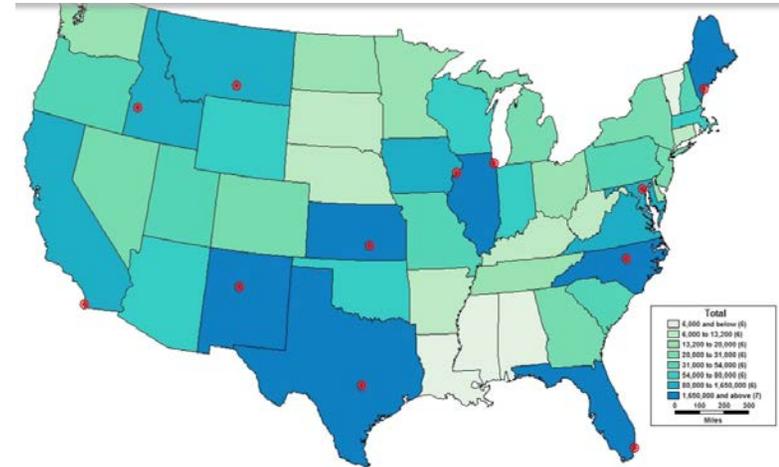


**BRIEFING BOOK FOR TAC MEETING #2**

**University of Iowa: Nationwide field trials (2008-2010)**

Professors David Forkenbrock and Paul Hanley at the University of Iowa published groundbreaking road charge policy studies in the early 2000s. Later the University received a federal grant to run a major field trial of a road usage charge.

- ▶ 2 years (2008-2010)
- ▶ 2,650 participants from 12 different regions
- ▶ GPS-based on-board unit, recorded total miles driven in each state by participants
- ▶ Per-mile charges varied by state / municipality and vehicle class as follows:
  - ▶ There were 20 vehicle classes. Differences between classes were based on EPA fuel consumption and emissions data.
  - ▶ Charges ranged from 0.33 cents to 2.19 cents per mile (\$0.0033-0.0219).



Throughout the trial, researchers surveyed participants on their opinions of the system. They found that participants’ opinion of the system improved over time. In general, those who were initially undecided or neutral towards the system became favorably disposed towards it.

TIME OF SURVEY	OPINION OF ROAD USAGE CHARGING		
	FAVORABLE	NEUTRAL	UNFAVORABLE
Pre-trial	42%	41%	17%
Post-trial	70%	11%	19%





**BRIEFING BOOK FOR TAC MEETING #2**

## **Nevada: Vehicle Miles Traveled Fee Study (2009-2012)**

Since 2009, the Nevada Department of Transportation (DOT) has investigated road charges as a possible way to shore up sinking gas tax revenues. In the first phase of the trial, Nevada DOT performed a policy study and held two large public meetings. The meetings showed that there was great public interest in the program, but concerns about privacy were very strong.

The Phase 1 report included an extensive policy discussion on:

- ▶ The privacy issue. They felt that privacy was not an insurmountable issue, but that legal privacy protections were vital. For example, they proposed that a good model for privacy protection legislation was the Federal government’s Health Insurance Portability and Accountability Act of 1996 (HIPAA).
- ▶ How to set the per-mile rates, and determine what per-mile rates should be in various localities, based on theoretical economic modeling.





**BRIEFING BOOK FOR TAC MEETING #2**

**I-95 Corridor Coalition: Road Charging Study and ConOps (2012)**

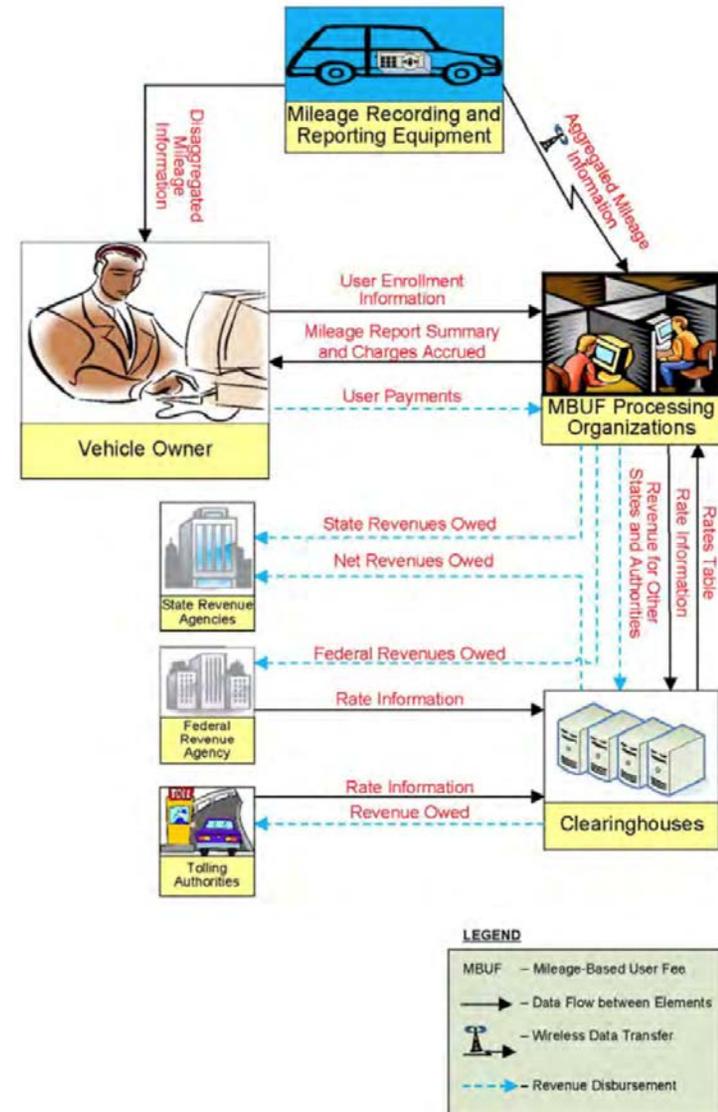
The I-95 Corridor Coalition is an organization of toll authorities, state DOTs, and other transportation agencies from Florida to Maine. In 2009, the Coalition launched a study of multi-jurisdictional road charging. Given the smaller areas of East Coast states and the higher frequencies of cross-border travel relative to Western states, it is likely that road charging will develop as a regional effort there.

The study resulted in a high-level concept of operations (ConOps) for multistate road charge, concluding:

- ▶ Multi-jurisdictional road charges are feasible.
- ▶ There are significant institutional issues that are present in a multi-jurisdictional context that must be handled through a centralized back office.

The proposed high-level system architecture is pictured at right. The architecture features:

- ▶ MBUF (Mileage-Based User Fee, another term for road charges) Processing Organizations, which run the road charge program directly with clients
- ▶ Clearinghouses, which distribute the mileage rates and clear revenues between jurisdictions





**BRIEFING BOOK FOR TAC MEETING #2**

## **Minnesota: Research, outreach, and trials (2004-2012)**

In 2004, Minnesota DOT (MnDOT) began studying road charges through a trial of pay-as-you-drive insurance and car leasing with 100 participants, demonstrating that per-mile charging is feasible as a concept, and that popularity increases if the public perceives its benefits. In 2009, MnDOT concluding the following based on surveys and focus groups:

- ▶ Public understanding of transportation funding in Minnesota is low.
- ▶ Initially, the public tends to favor non-technology options for road charge payment.
- ▶ Agencies should anticipate initial reservations from the public, as a natural reaction to change.
- ▶ Agencies should emphasize that road usage charging is similar to the gas tax as a “user pays” fee.
- ▶ Uncertainty breeds apprehension. Agencies should wait until they have a substantially developed model to create communications to the public.
- ▶ A staged implementation plan is preferable to full system to launch at once – the “big bang.”
- ▶ The public needs to have the opportunity to learn about details at their own pace.



In 2011, the Mileage-Based User Fee Task Force found road charging to be financially sustainability, equitable to various driver groups, and technically feasible. The Task Force oversaw a Road Fee Test with 500 participants paying charges with rates varying by zone and time of day through a smartphone app that communicated with the vehicle through a device installed in the onboard data port.

Some of the participants reported billing errors, missed mileage, and technical glitches with the smartphone app. Simultaneously, a minority report from the Task Force was critical of road charges. Reliance on a single approach to measuring, reporting, and paying road charges was one of the key factors leading to these issues. Minnesota’s legislature has not authorized further study of road charges.

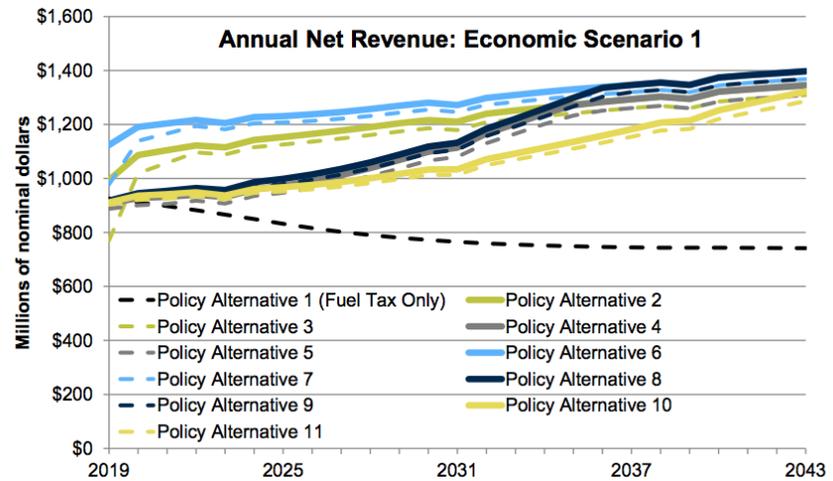




BRIEFING BOOK FOR TAC MEETING #2

# Washington State: A legislatively-created steering committee has examined road charging since 2012; this year, the committee recommended moving forward with a pilot test

The Washington State legislature established a Steering Committee to examine road charges in 2012. In each year from 2012-2014, the Committee successively determined the following: road charging is feasible, there is a business case to pursue road charging, and a combined pilot test and outreach effort should be undertaken to fine tune the Committee’s working policy assumptions and recommendations. The Steering Committee endorsed the following four operational concepts for further testing and refinement in combination:



- ▶ **Time Permit:** unlimited driving for a specified time period (e.g., one year) for a flat fee
- ▶ **Odometer Charge:** prepayment of road charge for one year based on estimated or assumed miles to be driven, with reconciliation at year’s end based on actual odometer reading
- ▶ **Automated Distance Charge:** payment of road charges based on actual miles driven as measured by an in-vehicle device
- ▶ **Smartphone App:** payment of road charges based on actual miles driven as measured by a smartphone app that connects to the vehicle’s onboard computer and/or using certified photos of the vehicle odometer





# **SECTION 4**

# **KEY COMMUNICATIONS ISSUES**

(To be discussed with Item 9 on February agenda)





**BRIEFING BOOK FOR TAC MEETING #2**

**Communications is important. It should be used to build understanding by opening two-way dialogues with the public and stakeholders**

This dialogue relies on developing general messaging and providing information to a range of groups:

- ▶ Stakeholders and key decision-makers (e.g., legislators) at all levels (e.g., state, regional, and local)
- ▶ Relevant agencies
- ▶ Industry groups
- ▶ Media
- ▶ Demonstration test participants
- ▶ General public





**BRIEFING BOOK FOR TAC MEETING #2**

**As the TAC prepares to launch its communications and outreach effort for road charging, it is useful to learn from previous experiences in California and elsewhere**

Transportation agencies, universities, think tanks, and media outlets regularly conduct surveys of public attitudes on general transportation topics, including funding and policy proposals such as road charging. As the TAC prepares to engage with the public, we have compiled some of the findings from previous survey and outreach efforts, including the following:

- ▶ Surveys and focus groups from Southern California on transportation funding and road revenue alternatives, including road charging
- ▶ Statewide surveys on transportation attitudes
- ▶ Regional, state, national, and international surveys and focus groups on transportation funding and road charging



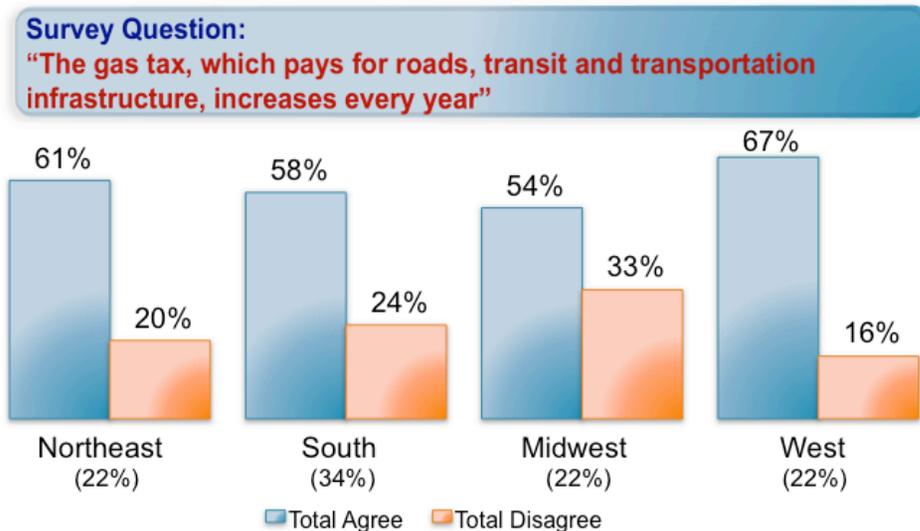


BRIEFING BOOK FOR TAC MEETING #2

# Surveys and focus groups, both nationally and in California, consistently reveal misconceptions about transportation funding

National and regional survey data suggest that most people do not understand the complex issues around transportation funding. The examples below are just two illustrations of this trend—one from a national survey and one from a California outreach effort. The consultants recommend baseline surveys about road charging to better understand what Californians already know and believe about funding.

- ▶ The figure at right reflects national survey results, including regional results for Western states, indicating that a large majority of respondents believe that the gas tax increases every year.
- ▶ Southern California Association of Governments (SCAG) surveys and focus groups conducted in 2012 indicated that, “few are aware that the gas tax exists in the first place and how much it is,” and that many believe “gas usage and associated gas tax revenues are increasing.”<sup>2</sup>



Source: Building America’s Future, Public Opinion Strategies – Greenberg / Quinlan / Rosner Research

<sup>2</sup> 2012. Southern California Association of Governments (SCAG). *Express Travel Choices Study Final Report*.





**BRIEFING BOOK FOR TAC MEETING #2**

## **In a Southern California study, focus group participants made logical assumptions, but few were aware of key subtleties about transportation funding**

The aforementioned focus groups conducted by SCAG also found the following:

- ▶ Focus group participants speculated about a number of sources of transportation funding. However, very few—generally no more than one in each group—could name the gas tax specifically.
- ▶ Participants mentioned the following as sources they believed funded transportation:
  - ▶ Vehicle registration
  - ▶ Money from traffic citations
  - ▶ Federal, state, and city taxes
  - ▶ Stimulus funds
  - ▶ Property and income taxes
  - ▶ Cigarette taxes
  - ▶ Taxi and shuttle fees
  - ▶ Mello-Roos Act (Orange County only)
- ▶ Many participants believed that sufficient funds were available for transportation projects on the basis of perceiving road construction in their communities and regions.





**BRIEFING BOOK FOR TAC MEETING #2**

## **Most focus group participants in Southern California were unaware of road charging; when introduced to the concept, they made assumptions and raised questions**

After speculating about the meaning of the term, focus group participants were shown a one-sentence description that read, “a fee that is charged based on the number of miles a vehicle has traveled.”

This led to some immediate questions that emerged in nearly every focus group:

- ▶ How much is the fee?
- ▶ How much are we paying now?
- ▶ How will they calculate the fee? How will “they know how many miles I’ve driven?”
- ▶ How will they collect it?
- ▶ Will it replace the gas tax (This was asked after a detailed discussion about the gas tax prior to which most could not recall the gas tax)?
- ▶ Who charges it?
- ▶ Where will the money go?
- ▶ How will it be administered?
- ▶ Does everyone pay it?

By more than a 3-to-1 margin, the most mentioned reason for opposing road charging in these Southern California surveys and focus groups was the perceived invasion of privacy and opposition to being “tracked” by the government, based on participant assumption of a GPS device requirement.





**BRIEFING BOOK FOR TAC MEETING #2**

## **National survey data on road charging are consistent with the results from Southern California: most respondents react negatively to road charging, largely because it is unknown**

San Jose State University's Mineta Institute conducts an annual survey of the public's attitudes toward transportation funding. In 2014, survey respondents opposed mileage-based charges by a 4-1 margin. When broken down by region, this margin does not vary significantly. Support improves when assuming that the per-mile rate varies based on vehicle emissions, to 43% nationally and 46% in the West.<sup>3</sup>

Indiana University's School of Policy and Environmental Affairs recently published results of a national survey, finding that the majority of respondents opposed the concept of road charging. The authors of the study speculate that opposition has to do with concerns about privacy and cost.<sup>4</sup>

Based on focus groups conducted in the Washington DC metropolitan area, study authors concluded, "people are generally uninformed about gas taxes." Participants opposed road charging by wide margins based largely on the presumption that it would require all motorists to provide GPS location data.<sup>5</sup>

Colorado DOT observed that focus group participants were unaware that the gas tax rate had not increased in 20 years, nor were they aware of how transportation is funded. Participants were averse to the notion of road charging, preferring to address perceived inefficiencies in transportation spending.<sup>6</sup>

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<sup>3</sup> 2014. Mineta Transportation Institute. Report 12-36: *What do Americans Think About Federal Tax Options to Support Public Transit, Highways, and Local Streets and Roads? Results from Year Five of a National Survey.*

<sup>4</sup> 2014. *SPEA Insights*. "Mileage-Based User Fees: Do Americans Support or Oppose Them?"

<sup>5</sup> 2013. National Capital Region Transportation Planning Board. *What do People Think about Congestion Pricing?*

<sup>6</sup> 2013. Colorado DOT. *Colorado Mileage-Based User Fee Study.*





BRIEFING BOOK FOR TAC MEETING #2

# Oregon offers interesting results based on its mature road charging program and corresponding long-term communications and outreach effort, with opposition sorted into four categories

## What Oregonians said about road charging

### Lack of trust in government

- Belief that Oregon government is irresponsible with budgets
- Lack of belief that Oregon government will credit gas taxes against road charges



- ▶ I feel a little nervous. I am unsure our government will take off the taxes on gasoline and just add a new tax.
- ▶ I don't like it at all, like I'm being scammed. I pay taxes for road repair and everything else; stop funding wars or come up with a better plan than taxes—I see it as big brother putting more on our shoulders

### Worry about negative repercussions

- Disincentive for Oregonians to purchase fuel efficient vehicles
- Damage to Oregon's commerce/tourism
- Charges will not apply to out-of-staters



- ▶ This will be punishing those who drive more efficient cars while helping those with gas-guzzlers like Suburban's and Humvees, etc.
- ▶ It limits travel and hurts commerce and tourism; budgets are unchecked and misappropriated—no oversight; wasn't consented to
- ▶ Not practical—what about out of state drivers? Drivers who live outside of our state or those who are just visiting?

### Road charging is unfair and inequitable

- Penalizes Oregonians who drive long distances
- All road users should pay (bicycles, etc.)



- ▶ It's not fair—doesn't even come close. You need to include public transportation and bikes—motor and non-motor and anything else used to get from one place to another
- ▶ I'm angry I will be charged for mileage I drive in and out of state. I will be charged mileage outside of state. I travel outside the state often, so I will pay taxes on usage of roads out of state. It's not fair

### Road charging program is ill conceived

- Doubts in ODOT's ability to implement a large and complex program
- Many unknowns and lack of understanding



- ▶ Confused—need more information. I would like to see a comparison of fuel taxes vs. 1.5 cents per mile— a study
- ▶ It needs more planning to cover all the different kinds of transportation — electric cars to motorcycles



**BRIEFING BOOK FOR TAC MEETING #2****New Zealand and Europe also offer important insights into the importance of outreach and communications**

Like Oregon years later, New Zealand saw great success in the adoption of road charging in part because of the reduction and ultimate elimination of fuel taxes for road charge payers.

- ▶ New Zealand directed an Independent Review Group to evaluate its road user charges through technical analysis, surveys, and public outreach in 2008-2009.<sup>7</sup>
- ▶ The review included a survey of road user charge payers, the results of which “revealed a surprisingly high overall satisfaction level with the current system among those who pay [road charges].”
- ▶ The review also included deeper case studies with individual users to highlight issues and concerns.
- ▶ Based on the Independent Review Group report and feedback received, the New Zealand government enacted major reforms in 2012, currently being implemented, aimed at addressing the key concerns and issues identified.

In the UK, the idea of road charging is not new as it has been investigated and studied for decades. The 2006 *RAC Report on Motoring* revealed the experience of motoring in the UK to be more painful than gainful, but also found the following:

- ▶ 63% would back road charging if all the money raised was spent on improving the roads.
- ▶ 69% would back road charging if it replaced the excise fuels taxes (gas tax).
- ▶ 80% to 87% suggest that in-vehicle telematics with value-added services could constitute a useful bargaining chip in a positive reception for telematics-enabled road charging.

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<sup>7</sup> 2009. New Zealand Road User Charges Review Group. An Independent Review of the New Zealand Road User Charging System.





**BRIEFING BOOK FOR TAC MEETING #2**

**Based on these experiences, we believe that sound public opinion research is the foundation of an effective outreach and communications strategy**

Public opinion research informs communications strategies:

- ▶ It defines the public’s baseline understanding and feelings regarding transportation funding and road charging.
- ▶ Good information leads to good decision-making.

Examples of activities that are performed to achieve an understanding of baseline public opinion include the following:

- ▶ Examining distinctions in needs, attitudes, and understanding between urban and rural residents and residents in various regions of the state
- ▶ Conducting a statewide phone survey of residents to determine acceptance and awareness of road charging
- ▶ Conducting focus groups with members of the public who consider themselves opposed to road charging to better understanding their concerns
- ▶ Hosting a statewide listening tour to gather insights and answer questions about road charging
- ▶ Interviewing key stakeholders and holding in-depth conversations about road charging with them

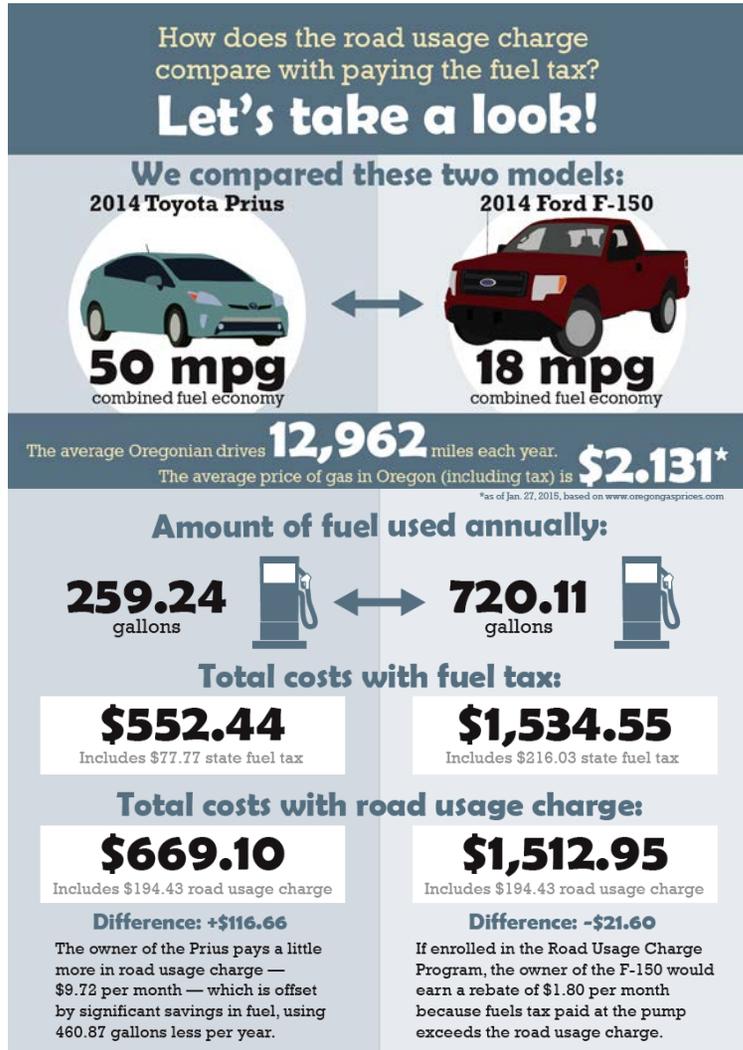
***This type of baseline research is planned to take place in California this spring.***





BRIEFING BOOK FOR TAC MEETING #2

# Relating road charges to fuel taxes is a useful tactic for public communications



Despite the confusion around fuel taxes noted elsewhere, people generally understand the purpose and function of fuel taxes. Given that road charges are intended as a policy substitute for fuel taxes, it is useful to present any facts and figures about road charging in conjunction with information about fuel taxes.

At left is an example used in Oregon. By presenting this juxtaposition of road charges and fuel taxes, it is hoped that residents will have a better understanding of the relationship between these two approaches to road funding.





**BRIEFING BOOK FOR TAC MEETING #2**

## **Another useful tactic is to correct myths with accurate, timely information**

Media conversations with people about road charging around the U.S. have revealed many misconceptions. People who are not informed about road charging may see risk in unknown ideas or be negative to change—they tend to expect the worst outcomes.

We have observed that some people hold the following initial beliefs about road charging, for example:

- ▶ *Road charging is unfair (to rural residents, farmers, ranchers, low-income drivers, cross-state drivers, etc.).* Research in other states shows that this is not generally the case. For example, Washington State research in 2014 found that on average, a rural driver will pay approximately \$2 less per month and an urban driver will pay approximately \$4 more per month.<sup>8</sup>
- ▶ *Road charging is an invasion of privacy.* 62% of Oregon media stories about that state’s road charging program and legislation used the word “tracking.” Tracking conjures images and thoughts of privacy violations and location awareness, but Oregon policy does not require location information and forbids state access to such information.
- ▶ *Road charging is double taxation.* People often think they will be charged both a fuel tax and a road charge. It will be important to clarify this in California.



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<sup>8</sup> 2015. Washington State Transportation Commission. Road Usage Charge Assessment: Financial & Equity Implications for Urban & Rural Drivers.





**BRIEFING BOOK FOR TAC MEETING #2**

**Based on experiences elsewhere and California's road charging program needs, we offer several recommendations for the program communications effort**

- ▶ Provide the facts, publish a “Road Charging Facts” brochure, and provide this early to get ahead of any misunderstandings and misinformation.
- ▶ As information about the pilot program is decided, or becomes firmer, refresh and update the public.
- ▶ Leverage private partners' and vendors' advertising methods to correct misconceptions about road charging.
- ▶ Associate road charging with trusted California brands through partnerships such as technology companies, major employers, and educational institutions that may be involved in the pilot program.
- ▶ Look for endorsements of the careful approach being taken in California of studying and testing multiple concepts from a wide range of transportation and other industry groups.
- ▶ Use grassroots outreach for two-way conversations, and recruit those grassroots leaders to participate in the pilot.
- ▶ Develop a users' forum to answer questions and have two-way conversations, allowing people to feel good about their decision to participate by valuing their input.





**BRIEFING BOOK FOR TAC MEETING #2**

## **Communications activities planned in advance of the pilot program**

**1. Telephone surveys will be conducted to gather more complete information on what Californians currently think about road charging and road conditions. We will use telephone survey results to do the following:**

- ▶ Analyze how the public understand the problem of funding our roads
- ▶ Get an updated sense of Californians' understanding of the gas tax
- ▶ Try to determine level of understanding and acceptability of a road charge

**2. Focus groups will be convened to gain more detailed insights to Californians' understanding of road charging. We intend to use focus groups to do the following:**

- ▶ Test for sensitivities to the information that needs to be emphasized
- ▶ Attempt to understand the right messaging in California
- ▶ Try to understand what terminology should be used

**3. Results of the surveys and focus groups will be used to create accurate, comprehensible road charging messages that can be used before and during the pilot.**

**4. An evaluation plan will be designed to test public acceptance of various road charge methods when they are demonstrated during the pilot.**

