FINAL REPORT - APPENDICES A-E

Contract UCD 08-312

Potential Design, Implementation, and Benefits of a Feebate Program for New Passenger Vehicles in California

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APPENDICES

A. SURVEY INSTRUMENT

California Feebates Survey

Version FINAL

"We are with the Institute of Transportation Studies at the University of California and we are studying transportation issues in the state. Your responses are very important to us, so we can get an accurate picture of what Californians are thinking. We are NOT selling anything, and we would really appreciate your help with our research. Please understand that all of your responses will remain confidential. The survey will take no more than 15 minutes. We are interested in speaking with someone from your household that is involved with vehicle-purchasing decisions for the household or for themselves. Are you interested in participating? If not, is there another member of your household that might be interested in speaking with us? We can also call back at another time. Thank you."

Screener Criteria

Screen in:

S.1 "Are you 18 years or older?"

☐ Yes
☐ No

S.2 Do you live in California more than 9 months out of the year?

☐ Yes
☐ No

S.3 "Do you expect to purchase or lease a personal vehicle such as a car, sport utility vehicle, or truck anytime within the next 10 or 15 years?"

☐ Yes
☐ No

Note to Interviewer: Make sure it is a personal vehicle such as a car, SUV, van, or truck not a vehicle provided by a business for business use.

All responses must be "Yes" to proceed.

Great, let's get started.

Vehicle Holdings

1. First, we have a few questions about the vehicles belonging to you and other household members. For our purposes, a household is a group of people such as family members who live together and share income. Please tell me the make, model, and year of each vehicle in your household, starting with the vehicle that you drive most.

Note to Interviewer: If the respondent needs clarification on what qualifies as a household, explain to them that we are looking for people who live together and earn income to support the household as opposed to just themselves. We are trying to avoid "roommates" being considered as a household. Roommates are people who share costs, but they do not share income. If the respondent is living with others as a roommate, then we consider that person to be a single person household, and we only want to know about them as individuals (e.g., their own vehicle, their own next purchase of a vehicle, etc.).

	Model Year	Make	Model
Vehicle #1			
Vehicle #2			
Vehicle #3			
Vehicle #4			
Vehicle #5			

2. How many miles per year are put on the first vehicle you mentioned?

   Miles per Year:_____
   ☐ Don't Know <do not offer, but accept>

3. When you purchase the next vehicle for you or your household, do you think that you will probably:

   ☐ Buy a new vehicle
   ☐ Lease a new vehicle
   ☐ Buy a used vehicle
   ☐ Don't know yet <do not offer, but accept>

Interviewer: This is the individual's personal vehicle, if you are talking with a household of unrelated adults (not a roommate's vehicle).

4. As of today, what type of vehicle best describes the one you expect to buy next? Please select one response.

   ☐ Passenger car
   ☐ SUV, crossover vehicle, or minivan
   ☐ Full-sized van or truck
   ☐ Sports car or coupe
   ☐ Other (e.g., motorcycle, scooter): _____

[IF Answer.4 = Passenger car, THEN NEXT]

Note to Interviewer: For the following sub-categorical questions, do not offer, but accept a "don't know" response.

5. Do you think the next vehicle you will buy will be a:

   ☐ Subcompact car
   ☐ Compact car
   ☐ Mid-size car
   ☐ Full-size car
   ☐ Don't know <do not offer, but accept>

[IF Answer.4 = SUV, Crossover, or Minivan, THEN NEXT]

6. Do you think the next vehicle you will buy will be a:

   ☐ Crossover vehicle
   ☐ Compact SUV
   ☐ Mid-size SUV
   ☐ Full-size SUV
   ☐ Minivan
   ☐ Don't know <do not offer, but accept>

[IF Answer.4 = Van or Truck, THEN NEXT]

7. Do you think the next vehicle you will buy will be a:

   ☐ Compact pick-up truck
   ☐ Large pick-up truck
   ☐ Full-size van
   ☐ Don't know <do not offer, but accept>

8. Do you think the fuel system of the vehicle you buy will likely be a:

   ☐ Typical gasoline vehicle

☐ Hybrid-electric vehicle
☐ Diesel fuel vehicle
☐ Other (e.g., natural gas, battery electric vehicle, fuel cell) please specify:__ _____
☐ Don't know <do not offer, but accept>

9. Approximately how much do you expect to spend on your next vehicle in terms of sticker price? Please select from the following categories:

☐ $0 to $5,000
☐ $5,000 to $10,000
☐ $10,000 to $15,000
☐ $15,000 to $20,000
☐ $20,000 to $25,000
☐ $25,000 to $30,000
☐ $30,000 to $40,000
☐ $40,000 to $50,000
☐ More than $50,000
☐ Don't know <do not offer, but accept>

Note to Interviewer: If clarification is needed, we mean "sticker price." We are not interested in charges from vehicle financing.

Feebate Policy Questions

Introduction: (Interviewer reads)

Now, I would like to get your opinion on a number of transportation topics starting with vehicle **emissions**. Some emissions may cause smog, while other emissions include "greenhouse gases." Greenhouse gases may contribute to climate change or what some people call "global warming." Greenhouse gases are closely related to the miles per gallon a vehicle gets. If a vehicle gets higher miles per gallon (for ex. 25, instead of 20), then there are fewer greenhouse gas emissions per mile.

10. Before this survey, were you familiar with what the term "greenhouse gases" means?

☐ Yes
☐ No
☐ Have heard the term but not too familiar

11. Were you familiar with the term “climate change” before the survey?

☐ Yes
☐ No
☐ Have heard the term but not too familiar

For the purposes of this survey, we are using the following definition for greenhouse gases: “Greenhouse gases trap heat in the atmosphere, and are released by burning fuels such as gasoline. Some believe the build-up of greenhouse gases is contributing to a gradual warming, which is changing the Earth's climate."

Now I would like to describe a transportation program for NEW vehicle buyers. Under this program, when a new vehicle is FIRST purchased, it could be subject to either a one-time fee or a one-time rebate. The program sets a target for vehicle emissions. If you buy a vehicle with emissions higher than the target you have to pay a fee. If you buy a vehicle with emissions lower than the target you get a rebate. The amount of the fee or rebate depends on the vehicle’s greenhouse gas emissions. Vehicles with the lowest emissions—and highest MPG—get the biggest rebates. Vehicles with the highest emissions—and lowest MPG—get the biggest fees. The program is designed to help reduce California’s greenhouse gas emissions.

Note to Interviewers: Be sure that the respondent understands that the policy involves greenhouse gases. You may have a tendency to try and read the above description QUICKLY. It would be better to go through the description carefully—in a conversational style. Ultimately, this will aid in the respondent’s understanding and should help in retaining respondent interest in the question.

12. Do you understand this description?

☐ Yes
☐ No

[IF Answer is No, THEN try to clarify what the respondent does not understand. The interviewer should try to note what the respondent needs to clarify. Also, you can use this example to try and clarify, but ONLY if you need to clarify.

EXAMPLE: So, for example, if the program sets a target corresponding to 25 miles per gallon, then a 30 MPG vehicle would get a rebate because it has lower emissions. A 20 MPG vehicle would pay a fee because it has higher emissions. A 25 MPG vehicle

would not have a fee or rebate. The amount of the fees and rebates would depend on the vehicle's emissions. So a 35 MPG vehicle would get a higher rebate than a 30 MPG vehicle. These numbers are just examples but show how this kind of program might work.]

Please tell me how much you agree or disagree with the following statements.

Note to Interviewer: Do not offer a "Don't know" response, but if the respondent cannot come to a conclusion, then take it.

13. This type of program is a good way to send a signal to the auto industry to make vehicles that produce fewer greenhouse gas emissions. Do you,

    ☐ Strongly agree
    ☐ Agree
    ☐ Disagree
    ☐ Strongly disagree?

14. It makes sense for public policy to reward people for buying vehicles that produce fewer greenhouse gas emissions. Do you,

    ☐ Strongly agree
    ☐ Agree
    ☐ Disagree
    ☐ Strongly disagree?

15. This program is fair because the people who choose to buy higher-emitting vehicles would pay more for those emissions. Do you,

    ☐ Strongly agree
    ☐ Agree
    ☐ Disagree
    ☐ Strongly disagree?

16. This program is unfair because people should be able to buy any vehicle they want without paying emission fees. Do you,

    ☐ Strongly agree
    ☐ Agree
    ☐ Disagree

☐ Strongly disagree?

17. I would generally be supportive of this kind of program to help slow the rate of climate change. Do you,

☐ Strongly agree
☐ Agree
☐ Disagree
☐ Strongly disagree

18. Aside from the issue of climate change, I would be supportive of this program because it encourages energy conservation. Do you,

☐ Strongly agree
☐ Agree
☐ Disagree
☐ Strongly disagree?

In the next few questions, we are going to ask about how a program like this one might affect vehicle purchasing. Please select one response for each question.

19. Suppose you were shopping for a new vehicle, and one that you were considering had a $1,000 EMISSION FEE on the window sticker. The vehicle costs more and also has higher emissions. With that in mind, tell me how much you agree or disagree with the following statement. "The increased cost of the vehicle will influence my decision more than the increased emissions impact." Do you,

☐ Strongly agree
☐ Agree
☐ Disagree
☐ Strongly disagree?
☐ Both are equally important <do not offer, but accept>
☐ Don't know <do not offer, but accept>

Note to Interviewer: If they say "both," ask them in follow-up which one they think is more influential. We would prefer not to accept a "both" answer, but take it if they independently conclude its "both"

20. Suppose you were shopping for a new vehicle, and one that you were considering had a $1,000 EMISSION REBATE on the window sticker. The vehicle costs less and also has lower emissions. With that in mind, tell me how much you agree or disagree with the following statement. "The reduced cost of the vehicle will influence my decision more than the reduced emissions impact." Do you,

☐ Strongly agree
☐ Agree
☐ Disagree
☐ Strongly disagree?
☐ Both are equally important <do not offer, but accept>
☐ Don't know <do not offer, but accept>

Note to Interviewer: If they say "both," ask them in follow-up which one they think is more influential. We would prefer not to accept a "both" answer, but take it if they independently conclude its "both" .

21. If a new vehicle that you were planning to purchase increased in price by $2,000 due to an emission fee, what do you think you would do? Please select one response.

☐ Buy the vehicle anyway
☐ Buy a different new vehicle
☐ Buy a used vehicle
☐ Save money to buy the same vehicle later
☐ I would never consider a vehicle with an emissions fee <do not offer, but accept>
☐ This situation is irrelevant to me for other reasons <do not offer, but accept>
☐ Don't know <do not offer, but accept>

[IF Answer.21 = Save, THEN NEXT, ELSE GOTO Q.23

22. By how many months might you delay the vehicle purchase? Please select one response.

☐ 1 to 3 months

☐ 3 to 6 months
☐ 6 to 12 months
☐ More than a year

Environmental Views

Now we'd like to ask you a few questions about your views on the environment and energy use.

Please answer the following questions in the form of Strongly Agree, Agree, Disagree, Strongly Disagree.

23. The earth is currently experiencing climate change. Do you,

☐ Strongly Agree
☐ Agree
☐ Disagree
☐ Strongly Disagree?

24. Human activity contributes to climate change. Do you,

☐ Strongly Agree
☐ Agree
☐ Disagree
☐ Strongly Disagree?

25. Dependence on foreign oil is a serious problem facing the United States. Do you,

☐ Strongly Agree
☐ Agree
☐ Disagree
☐ Strongly Disagree?

26. Government programs should encourage consumers to purchase vehicles that have lower greenhouse gas emissions. Do you,

☐ Strongly Agree
☐ Agree
☐ Disagree
☐ Strongly Disagree?

27. Government programs should encourage automakers to manufacture vehicles that produce fewer greenhouse gas emissions. Do you,

☐ Strongly Agree
☐ Agree
☐ Disagree
☐ Strongly Disagree?

28. Which issue do you think is more important: climate change or improved energy security for the United States? Please select one response.

☐ Climate change
☐ Improved energy security for the United States
☐ Both equally important
☐ Neither is very important <do not offer, but accept>
☐ Don't know <do not offer, but accept>

Politics

29. Which of the following best describes your usual position on political issues? Please select one response.

☐ Very liberal
☐ Liberal
☐ Moderate
☐ Conservative
☐ Very conservative
☐ Other
☐ Not sure <do not offer, but accept>

Demographics

We have a few final questions that we ask for statistical purposes only. Just as a reminder, this is a University of California research study, and all responses are confidential.

30. In what year were you born?

    Year: _____
    ☐ Refused

31. Not counting yourself, how many other household members fall into the following age categories.

    Under 5 years old: _____
    Between 5 and 14 years old: _____
    Between 15 to 18 years old (not including yourself): _____
    Between 19 to 30 years old (not including yourself): _____
    Between 31 to 45 years old (not including yourself): _____
    Between 46 to 60 years old (not including yourself): _____
    Between 61 to 80 years old (not including yourself): _____
    Older than 80 years old (not including yourself): _____

Note to Interviewer: For this question, please consider only household members that the respondent considers family. That is, people with whom they share income (i.e., we don't want roommates).

I would like to ask you a few questions about your annual household income. Remember that for our purposes, a household is a group of people such as family members who live together and share income. Is your total household income before taxes below $50,000?

☐ Yes
☐ No

Note to Interviewer: If there is any confusion on the household definition, we consider a household to be a set of people who share income as a collective. That is, any dollar earned by the respondent could be spent by another set of family members. This set of family members is the household. Normally, this is everyone who lives in the household, but it should not include roommates who just share expenses.

[IF Answer.0 = Yes THEN NEXT, ELSE GOTO Q.33]

32. Which category contains your total household income before taxes?

☐ Less than $10,000
☐ $10,000 to $25,000
☐ $25,000 to $35,000
☐ $35,000 to $50,000

[IF Answer.0 = No THEN NEXT, ELSE GOTO Q.34]

33. Which category contains your total household income before taxes?

☐ $50,000 to $75,000
☐ $75,000 to $100,000
☐ $100,000 to $150,000
☐ More than $150,000

34. What is your education level among the following choices?

☐ Did not complete high school
☐ High school graduate
☐ Some college
☐ 2-year college Degree
☐ Technical or Vocational Degree

☐ 4-year college Degree
☐ Graduate Degree (Masters, PhD, MBA, JD, etc.)
☐ Other: _____

35. Please indicate your race among the following choices.

☐ Caucasian
☐ Hispanic
☐ African-American
☐ Asian
☐ Native American or Alaskan Native
☐ Hawaiian or Pacific Islander
☐ Mixed Race (two or more)
☐ Other: _____

36. What is your zip code?

Zip code: _____

Note to Interviewer: If unsure ask for gender, but if sure then please indicate respondent gender based on your judgment.

37. What is your gender?

☐ *Male*
☐ *Female*

Thank you very much; we appreciate your time in completing this survey.

B. FOCUS GROUP SUMMARIES AND PROTOCOLS

B.1. Individual Focus Group Summaries

Focus Group #1 Summary: Conducted in Sacramento, CA, July 28 2009

Overview

The purpose of the focus group was for researchers to gain knowledge of potential consumer perceptions and response to feebates, a proposed policy that would charge a fee for the purchase of vehicles with higher greenhouse gas (GHG) emissions and provide a rebate for the purchase of vehicles with lower GHG emissions. Participant responses were explored in a focus group conducted on Tuesday, July 28, 2009 (6 PM to 8 PM) at the UC Davis Graduate School of

Management, in Sacramento, CA. The focus group participants included twelve Sacramento residents who intended to purchase a car within the next five years or have purchased a new car in the past five years. A researcher with the Transportation Sustainability Research Center (TSRC) of the University of California, Berkeley facilitated the focus group discussion with researchers assisting and taking notes. This summary begins with the findings from the pre-focus group survey and continues with a summary of the focus group discussion.

Background Survey Results

At the beginning of the focus group, TSRC researchers administered a survey that explored the demographic attributes of focus group participants, general travel behaviors, and vehicle make/model information.

The following were the demographic attributes of focus group participants:

Table B 1 Demographic Attributes of Focus Group Participants (Group 1)

Gender	Marital Status	Age	Educational Level	Household Pre-tax Income
F	Single	18-25	Some College	$50K-$79.9K
M	Married	41-55	Master's degree	More than $110K
F	Married	41-55	Associate's degree	More than $110K
F	Single	26-30	Associate's degree	$20K-$49.9K
M	Married	56 or older	Some College	$20K-$49.9K
M	Single	41-55	Ph.D or higher	$50K-$79.9K
F	Married	41-55	Bachelor's degree	$50K-$79.9K
F	Single	31-35	Some College	$20K-$49.9K
F	Divorced	56 or older	Some College	$80K-$109.9K
M	Single	31-35	Some College	$20K-$49.9K
F	Single	18-25	Some College	Under $10K
M	Single	18-25	Some College	$10K-$19.9K

Participants were also asked to provide their ethnicity.

- Five participants were White/Caucasian;
- Three were Black/African American;
- Two were Asian;
- One was Southeast Asian; and
- One was Hispanic.

Participants were asked how many vehicles they had in their household.

- Three reported having one vehicle in their household;
- Five reported two vehicles in their household; and
- Three participants indicated three cars in their household.

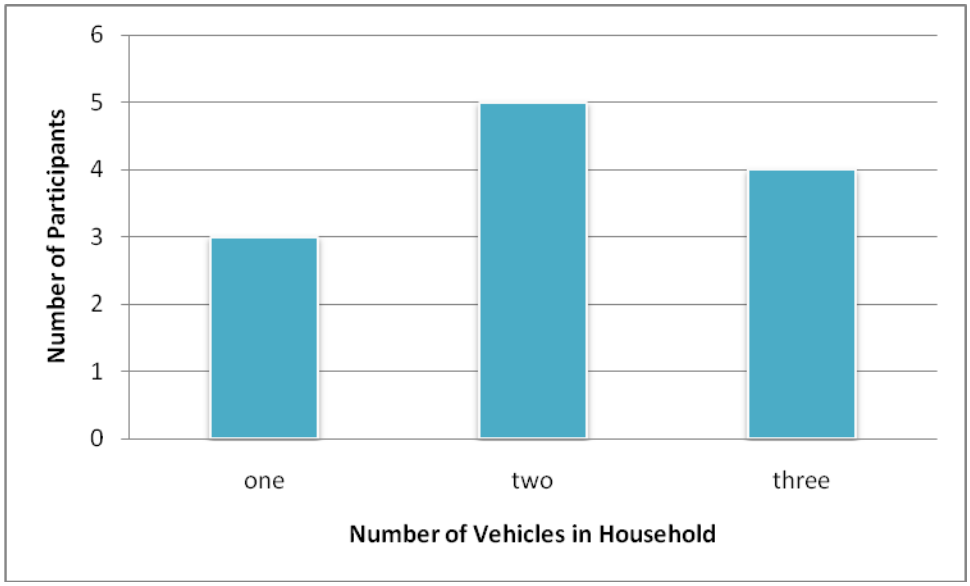


Figure B 1 Number of Vehicles in Participant Households (Group 1)

Participants were then asked if they anticipate purchasing a new car in the next five years.

- Eleven participants indicated that they plan to purchase a new car; and
- One participant indicated that she does not plan to purchase a new car.

The survey asked for an estimate of how many miles they drive annually.

- Two participants drive under 5,000 miles/year;
- Four participants drive between 10,000-15,000 miles/year;
- Two participants drive between 20,000-25,000 miles/year; and
- Four participants drive between 30,000-40,000 miles/year.

The survey also probed participants for their average miles per gallon per vehicle.

- Five vehicles were reported as 11-20 MPG;
- Four vehicles were reported as 21-30 MPG;
- One vehicle was reported as 31-40 MPG;
- One participant noted an average of 16 MPG for three vehicles; and
- One participant noted an average of 17-18 MPG for two vehicles; and
- One participant noted an average of 21-24 MPG for three vehicles;
- One participant noted an average of 25 MPG for four vehicles;
- One participant noted an average of 27 MPG for two vehicles; and
- MPG for one vehicle was not reported.

Next, the survey sought to find information on the types of vehicles the participants own.

Table B 2 Vehicles Owned by Focus Group Participants (Group 1)

Number of Vehicles in Household	Participant 1 Vehicle Make/Model	Participant 2 Vehicle Make/Model	Participant 3 Vehicle Make/Model	Participant 4 Vehicle Make/Model	
3	Infiniti FX35 '07 Used Toyota Tacoma '06 Used Toyota Camry '05 New	Toyota Camry '07 New Chevrolet Ventura '99 New Nissan Sentra '98 Used	Subaru Impreza '02 used Dodge Ram '06 new Toyota Cressida '88 used	Scion XB '08 New Honda Civic '05 Used Ford Windstar '99 Used	
Number of Vehicles in Household	**Participant 5 Vehicle Make/Model**	**Participant 6 Vehicle Make/Model**	**Participant 7 Vehicle Make/Model**	**Participant 8 Vehicle Make/Model**	**Participant 9 Vehicle Make/Model**
2	Chrysler 300 '07 Mercedes ML320 '02	Dodge Dakota '00 Used Chevrolet Malibu '07 new	Dodge Neon '02 Used Kia Optima '04 Used	Saturn SL '98 Used Hyundai Elantra '97 (Did not state new or used)	Mazda Millennia '95 Used Chevy Chevelle '67 Used
Number of Vehicles in Household	**Participant 10 Vehicle Make/Model**	**Participant 11 Vehicle Make/Model**	**Participant 12 Vehicle Make/Model**		
1	Honda Civic '97 Used	Toyota pick-up truck '96 used	Nissan Altima '01 Used		

Focus Group Discussion

After completing the pre-focus group survey, the moderator provided participants with a brief study overview and initiated the focus group discussion. The discussion began with general questions on vehicle purchase decision-making processes, and the role of fuel economy and environmental awareness in vehicle purchase decisions. Next the moderator provided an introduction to the feebates program, including design possibilities, and transaction options. The focus group concluded with ideas to implement the vehicle incentive program in the fairest and easiest way.

Vehicle Purchase Decision-Making Process

Participants were asked how they gathered information about their new vehicle purchase (e.g., showroom, internet, other exposure).

Participants reported several sources of information:

- Three reported going to a showroom to compare and test drive cars.
- Two stated that they gather information from friends and associates;
- Two mentioned magazines such as *Car and Driver* and *Consumer Reports;*
- One explained that he talks to his personal mechanic to determine which cars he should avoid; and
- One mentioned the internet and received nods of agreement from other participants.

Next, participants were asked about their last method of vehicle purchase and what they expect their next method of vehicle purchase will be (e.g., dealer, broker, web).

- Two participants mentioned looking on the internet before going to the dealership to find dealer specials;
- Two stated that they found advertisements in the newspaper for the type of car they wanted which encouraged them to make a purchase at a dealership;
- One reported buying her car from a lease after doing the research; and
- One stated that he test drove several cars before finding the car he wanted to purchase.

Participants were then asked what the most important vehicle characteristics were for them when purchasing a new vehicle. A variety of responses were given.

- Four participants answered that comfort is a priority;
- Two participants addressed vehicle features that are necessary for occupational purposes;
- Two stressed that gas mileage was a number one priority;
- Two reported durability in terms of maintenance;
- Two commented that aesthetics were important;
- Two reported safety of the vehicle;
- One reported size of the vehicle as important;
- One considered the resale value of the vehicle; and
- One reported price of the vehicle.

Next, participants were asked if they had any experience with financial incentives, tax credits, or dealer incentives when purchasing a new vehicle.

- Two participants reported that the vehicle was marked down from the manufacturer's suggested retail price (MSRP); and
- One participant recalled that a good interest rate was a financial incentive.

Participants were then asked if they considered any environmental issues when purchasing a car.

- One participant expressed his concern about the potential environmental impacts of the manufacturing process, stating that it could be a "hidden cost;" and
- One participant noted fuel consumption.

Role of Fuel Economy and Environmental Awareness

Focus groups participants were also asked about their familiarity with climate change, also known as global warming. By a show of hands, all participants were familiar with the concept of climate

change and one participant explained the connections between emissions, trapping carbon dioxide in the atmosphere, and global temperature increase.

A brief explanation of climate change was provided by the moderator to ensure all have the same understanding of climate change.

Next, participants were asked what they believe are the primary contributors to greenhouse gas emissions and climate change.

- One participant answered cars and received nods of agreement from the group;
- One responded aerosols and received nods from two other participants;
- One reported power plants;
- Another participant answered cows; and
- One explained that the manufacturing and refinement process leads to high emissions.

Next, participants were asked to share what they heard about what the government is doing with regard to emissions and energy use in vehicles.

- Two participants reported that the government encourages people to drive less by choosing to rideshare, take public transportation, or live in more compact areas;
- One mentioned that a standard for miles per gallon efficiency has been in place for a number of years;
- One noted that the government did not sign the first Kyoto treaty and is currently trying to negotiate credits for cap and trade;
- Another answered that a monetary incentive program called "Cash for Clunkers" is being offered for individuals who turn in their old vehicle for a new one;
- One explained that there are tax credits offered on alternative fuel vehicles;
- Another stated that the government is funding research studies on climate change to gather data; and
- One mentioned a government fuel cell partnership. (*Note: The California Fuel Cell Partnership is based in West Sacramento, but is not government-based.*)

Focus groups participants were also asked about their familiarity with the Cash for Clunkers program. All participants were familiar with the Cash for Clunkers and had heard about the program through television news reports.

Next, focus group members were asked for their opinions on vehicle efficiency standards.

- Three participants agreed that the efficiency standards are a good effort;
- One participant was concerned that the topic is highly political; and
- Another expressed skepticism of the government's ability to regulate the market in the best interest of the American people.

Participants were asked about what they thought about tax incentives as a method to reduce greenhouse gas emissions. Three participants agreed that taxes are not the best solution for this matter and did not think a tax incentive makes a difference in purchasing decisions.

Next, participants were asked to for their ideas on what else the government might do to reduce greenhouse gas emissions.

- One participant suggested that the government fund more effective mass transit;
- One suggested solar power alternatives; and
- One explained that the government could help fund research in private companies with grants to encourage the development of alternative fuel technology.

Feebates Introduction

The participants were presented a description of a potential program that the government might put in place to encourage the reduction of GHG emissions from vehicles and asked for their opinion on this type of program.

- Three participants were extremely concerned with the viability of achieving revenue neutrality and expressed their distrust of government management over this program;
- Two who liked the program agreed that it gives car buyers an incentive to do something socially responsible and a disincentive in the form of taxes; and
- Two thought the program could have a positive impact on car manufacturers because it would encourage them to spend more money on research to make vehicles with lower GHG emissions.

Participants were then asked if a program like this would impact them when purchasing a new vehicle.

- One participant expressed concern that a more efficient car would cost more and have reduced performance standards;
- One stated that a rebate would not affect his decision to buy the vehicle he wants;
- Another participant considered her purchasing budget saying that a rebate of a few hundred dollars would not impact her decision; and
- One considered that extremely high fees would definitely encourage him to choose a more efficient car.

Participants were asked to provide an amount of the fee/rebate that would impact them.

- Three participants felt that a percentage of the vehicle price would be more appropriate naming 10-40% or $2,000-$5,000; and
- One participant offered a value of at least $1,000 would affect her.

Next, participants were asked for their opinion on the name "feebates" for this type of program.

- By a show of hands, three participants thought the program involved a fee, seven participants thought the program involved a rebate, and a few did not think of it one way or another; and
- Two participants agreed that the name was "catchy."
- One participant reported that he could not distinguish whether it was a penalty or a rebate after hearing the name;

Feebate Design

The participants were then introduced to three different types of feebate designs: step, continuous, and class-based. Several charts were presented to give the participants a visual aid to understanding the different designs and the impact on fees and/or rebates.

STEP DESIGN:

After the moderator explained the step design, using the visual aids, all participants confirmed that they understood the step function design.

Next, participants were asked for their opinion on the step function design for a feebate system.

- Two participants stated that this system is unfair, suggesting that more expensive cars should get more back for the same global warming score as a less expensive car;
- One reported that the concept sounded nice, but he did not think that all cars were the same base price;
- One commented on the size of the steps saying that they are too small to make a difference in purchasing decision; and
- Another participant commented that the price of the car should not matter since this program's purpose is to reduce climate change impact.

CONTINUOUS DESIGN:

After detailing examples through the charts to explain the continuous design, participants were asked if they had any clarification questions.

- Participants asked about the absence of the global warming score in this design to determine the fee or rebate.

Next, participants were asked for their opinion on the continuous function design for a feebate system.

- Two participants found this design fairer than the step design since it is more specific to actual emissions: the lower the MPG, the lower the rebate. They liked that cars were not locked into individual steps.

CLASS-BASED DESIGN:

After the moderator explained the class-based design using the visual aids, all participants confirmed that they understood the class-based design.

Next, participants were asked for their opinion on the class-based design for a feebate system. A majority of the participants preferred the continuous based design rather than the class-based design.

- Four participants agree that all classes of cars should be compared to each other such as under the continuous system since a majority trucks are now being driven for the same purposes as cars;
- Three did not like the class-based system because they were concerned that the program would punish people who require a vehicle to perform their job, and it seems fairer to

compare similar type cars. *(Note: These participants appear not to have understood class-based system.)*
- One participant immediately responded negatively to the design;
- Another liked that the class-based system compared similar vehicle types with each other, but seeing the two vehicles with the same global warming score where one is getting a fee and the other getting a rebate does not look fair; and
- One felt that the class-based system does not fairly account for the tailpipe emissions as well as the continuous based system does.

A debate regarding whether the gap between fees and rebates should be large or small ensued and participants agreed that the gap should be bigger to discourage people from buying higher emissions vehicles.

Next, participants were asked what categories they think might be helpful if the vehicles in the class-based system were divided into categories.

- Three participants reacted against the idea of categorizing the vehicles since they all create emissions; and
- One participant suggested separating the vehicles into more weight classes.

Overall Discussion

Participants were then asked to summarize the advantages and disadvantages of each system.

- One participant reported that the step function design gives the most incentive for both the manufacturer and the car buyer; and
- One participant suggested creating penalties for the manufacturer if they don't meet the fleet average efficiency requirements.

Comparative Discussion

Next, participants were asked to consider all three systems and decide which one would work best for them.

Of the 12 participants, 2 chose the step system, 8 chose the continuous system, and 1 chose class-based. One participant decided that the class-based system was best for his more efficient car and the step system was best for his sports car.

- Those who preferred the step system indicated the following reasons: it provides incentives for manufacturers to create more fuel efficient vehicles and more information is provided in the step system;
- Those who preferred the continuous system indicated the following reasons: it makes more sense to calculate fees and rebates by miles per gallon, a wider range of values exists, and miles per gallon is the first thing they look at; and
- Those who preferred the class-based system indicated the following reasons: it is best for low emissions, high gas mileage vehicles. *(Note: This participant did not appear not to have understood class-based system.)*

Visibility of Feebate Transaction

When the participants were asked whether they prefer to receive a rebate directly at the time of purchase or have it sent later within 60 days, all agreed that they would rather have the rebate directly at the time of purchase.

Next, participants were asked if they would buy a slightly more expensive car or spend less if they received a rebate at the time of purchase.

- One participant indicated that his decision would depend on how much the rebate is. If the rebate is only $250, he would not be willing to go up a class size; and
- One participant said that he would add extra options to the car if the rebate was more than $250.

When the participants were asked whether or not they would choose the same vehicle if they received the rebate separately, all agree that this factor will not impact their vehicle choice.

Closing

Participants were asked for other ideas for how this type of vehicle incentive program might be implemented in the fairest and easiest way.

- Three participants were concerned about the integrity of the program if dealers were involved in the transaction and preferred that a third party organization, such as the Air Resources Board handle the transaction;
- One suggested using percentage of the car price instead of flat dollar amounts to more effectively sway the consumer's purchase towards lower emissions vehicles; and
- Another suggested lowering vehicle registration for individuals who purchase lower emissions vehicles.

EXPLORING RESPONSE TO FEEBATE SCHEMES IN CALIFORNIA:
FOCUS GROUP STUDY

Focus Group #2: Conducted in Fresno, CA, July 30, 2009

FOCUS GROUP SUMMARY

Overview

The purpose of the focus group was for researchers to gain knowledge of potential consumer perceptions and response to feebates, a proposed policy that would charge a fee for the purchase of vehicles with higher greenhouse (GHG) emissions and provide a rebate for the purchase of vehicles with lower GHG emissions. Participant responses were explored in a focus group conducted on Thursday, July 30, 2009 (6 PM to 8 PM) at the Woodward Branch Regional Library, in Fresno, CA. The focus group participants included eleven Fresno residents who intended to purchase a car within the next five years or have purchased a new car in the past five years. A researcher with the Transportation Sustainability Research Center (TSRC) of the University of California, Berkeley facilitated the focus group discussion with researchers assisting and taking notes. This summary begins with the findings from the pre-focus group survey and continues with a summary of the focus group discussion.

Background Survey Results

At the beginning of the focus group, TSRC researchers administered a survey that explored the demographic attributes of focus group participants, general travel behaviors, and vehicle make/model information.

The following were the demographic attributes of focus group participants (*one participant did not complete the pre-focus group survey, although gender and ethnic background are reported for this individual based on observation*):

Table B 3 Demographic Attributes of Focus Group Participants (Group 2)

Gender	Marital Status	Age	Educational Level	Household Pre-tax Income
M	Married	36-40	High School Degree	$20-$49.9K
M	Single	18-25	Some High School	$20-$49.9K
M	Married	41-55	Some College	$20-$49.9K
F	Divorced	41-55	Vocational/Licensed	$10-$19.9K
M	Single	18-25	Some College	$20-$49.9K
F	Married	36-40	Some College	$50-$79.9K
F	Single	26-30	Master's Degree	Decline to respond
M	Married	56+	Associate's Degree	$20-$49.9K
M	Married	41-55	Some College	$110K+
F	Single	26-30	Associate's Degree	$10K-$19.9K
F	Decline to respond	Decline to respond	Decline to respond	Decline to respond

Participants were also asked to provide their ethnicity.

- Four participants were White/Caucasian;
- Four were Hispanic;
- One was Black/African American;
- One was Asian; and
- One was Asian and White/Caucasian.

Participants were asked how many vehicles they had in their household.

- Two reported having one vehicle in their household;
- Four reported two vehicles in their household; and
- Four participants indicated three cars in their household.

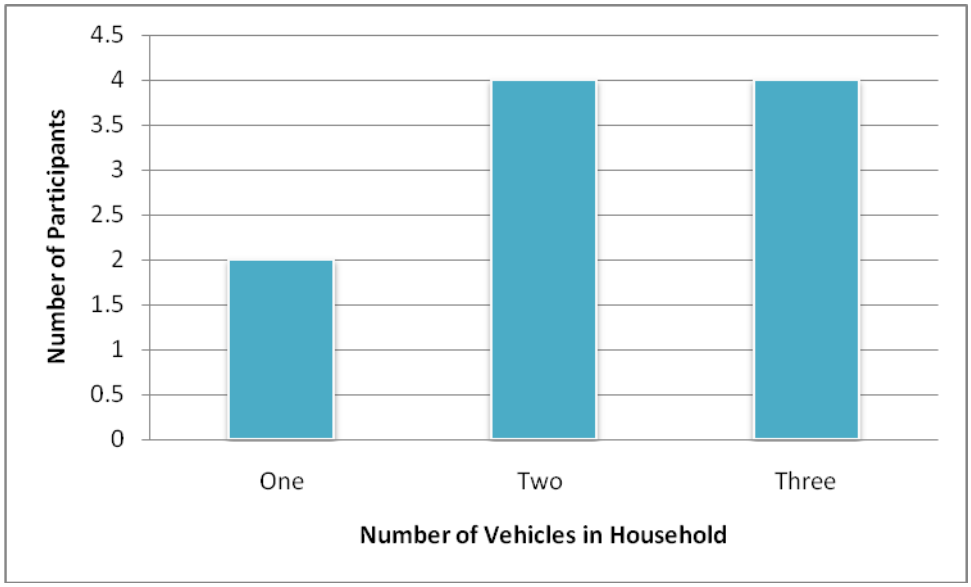


Figure B 2 Number of Vehicles in Participant Households (Group2)

Participants were then asked if they anticipate purchasing a new car in the next five years.

- Seven participants indicated that they plan to purchase a new car;
- One indicated that she may be planning to purchase a new car; and
- Two reported that they do not plan to purchase a new car.

The survey asked for an estimate of how many miles they drive annually.

- One participant drives under 5,000 miles/year;
- One drives between 5,000-10,000 miles/year;
- Five participants drive between 10,000-15,000 miles/year;
- One drives between 20,000-25,000 miles/year;
- One participant drives between 45,000-50,000 miles/year; and
- One did not report her annual miles driven.

The survey also probed participants for their average miles per gallon per vehicle.

- Nine vehicles were reported as 11-20 MPG;
- Five vehicles were reported as 21-30 MPG;
- One vehicle was reported as 41-50 MPG;
- One participant noted an average of 18 MPG for two vehicles; and
- MPG for one vehicle was not reported.

Next, researchers sought to find information on the vehicle types that the participants own.

Table B 4 Vehicles Owned by Focus Group Participants (Group2)

Number of Vehicles in Household	Participant 1 Vehicle Make/Model	Participant 2 Vehicle Make/Model	Participant 3 Vehicle Make/Model	Participant 4 Vehicle Make/Model	
3	Ford Explorer '02 Used	Mazda 929 '95 Used	Dodge Intrepid (date not reported) Used	Toyota Avalon '98 New	
	Chevy Malibu '02 Used	Chevy El Camino '70 Used	Hyundai (model and date not reported) New	Volkswagon Jetta '03 Used	
	Mazda B2000 Pickup '84 Used	MG MGBGT '70 Used	Chrysler (truck) (model and date not reported) Used	GMC Denali Pick-up '08 New	
Number of Vehicles in Household	**Participant 5 Vehicle Make/Model**	**Participant 6 Vehicle Make/Model**	**Participant 7 Vehicle Make/Model**	**Participant 8 Vehicle Make/Model**	
2	Chevy El Camino '72 Used	Volkswagon Golf '01 Used	Chrysler Concorde '99 Used	Chevrolet Colorado Pickup '04 Used	
	Kia Sephia '02 Used	Cadillac Sedan Deville '92 Used	Hyundai Elantra '00 Used	HHR SUV '07 Used	
Number of Vehicles in Household	**Participant 9 Vehicle Make/Model**	**Participant 10 Vehicle Make/Model**			
1	Ford Mustang '96 Used	Saturn SL2 '96 Used			

Focus Group Discussion

After completing the pre-focus group survey, the moderator provided participants with a brief study overview and initiated the focus group discussion. The discussion began with general questions on vehicle purchase decision-making processes, and the role of fuel economy and environmental awareness in vehicle purchase decisions. Next, the moderator provided an introduction to the feebates program, including design possibilities, and transaction options. The focus group concluded with ideas to implement the vehicle incentive program in the fairest and easiest way.

Vehicle Purchase Decision-Making Process

Participants were asked how they gathered information about their new vehicle purchase (e.g., showroom, Internet, other exposure). One participant reported having purchased a new vehicle from a dealer. For the rest of the participants, the discussion focused on how they purchased their used vehicle and how they might gather information for a new vehicle purchase.

- The participant that purchased a new car relied on the Internet to research and narrow his selection of vehicle manufacturers and models;

- Three who have not purchased a new car also mentioned using the Internet;
- One stated that he would consult a dealer;
- One mentioned asking questions to people who currently own the vehicle he intends to purchase;
- One answered that she would refer to her driving experience from rental cars; and
- One reported subscribing to consumer reports and magazines.

Next, participants were asked about their last method of vehicle purchase and what they expect their next method of vehicle purchase will be (e.g., dealer, broker, web).

- Two participants answered that they went straight to the dealer;
- One participant mentioned buying and repairing a salvaged vehicle;
- One stated that she found the best deals at rental agencies because the vehicles are well maintained;
- One reported that he hired a broker to buy a vehicle at an auction;
- Another stated that he bought his last vehicle from a tow yard; and
- One participant mentioned that he bought his last vehicle via the Internet.

Participants were then asked what the most important vehicle characteristics were for them when purchasing a new vehicle. A variety of responses were given.

- Four participants answered that comfort is a priority;
- Two emphasized that engine power is important;
- Two stressed that gas mileage is a priority;
- Two reported size of the vehicle as important;
- Two mentioned that extras such as GPS, satellite radio, and sound systems are important features;
- One considered the resale price of the car; and
- One mentioned cost and speed of vehicle maintenance.

Next, participants were asked if they had any experience with financial incentives, tax credits, or dealer incentives when purchasing a new vehicle.

- Four participants explained their distrust in manufacturer rebates;
- One reported a positive experience with a broker when he saved $4,000;
- One mentioned the Cash for Clunkers program rebate;
- One stated that she received a year of free gas with her purchase; and
- One received a free oil change for the life of his vehicle.

Next, participants were asked if they considered any environmental issues when purchasing a car.

- Three participants answered that they do not consider environmental issues since the government requires smog checks;
- Three participants reported that lower emission, hybrid vehicles were not appealing because the difference in the cost of gas saved was not worth the extra upfront, insurance, and maintenance costs of the hybrid;
- One explained that he would be more concerned about the environment if other people cared about it more;

- One mentioned Corporate Average Fuel Economy (CAFE) standards as a way that the government ensures that cars are safe to the environment; and
- Another considered alternative fuels like methanol and diesel.

Next, participants were asked if they considered any energy or security factors or issues when purchasing a car. Participants did not address the question directly, but instead focused on the safety of alternative fueled vehicles.

- The majority of participants agreed that electric cars have a lower safety rating than big sedans; and
- One participant explained that car makers have government standards to ensure that the vehicles they manufacture meet acceptable crash safety requirements.

Role of Fuel Economy and Environmental Awareness

Focus groups participants were asked about their familiarity with climate change, also known as global warming. All participants were familiar with the concept of climate change. However, three participants expressed skepticism regarding human activity as a cause of global warming. One participant believed that carbon dioxide levels were rising, not global temperatures.

A brief explanation of climate change was provided by the moderator to ensure all participants had the same basic understanding of climate change.

Next, participants were asked what they believe are the primary contributors to greenhouse gas emissions and climate change.

- Two participants mentioned decomposition of terrestrial biomass;
- Two answered vehicles;
- Two responded aerosols and chloroflurocarbons (or CFCs) from air conditioning;
- One mentioned energy generation;
- One reported manufacturing factories; and
- Another answered cows.

Next, participants were asked to share what they heard about what the government is doing with regard to emissions and energy use in vehicles.

- One participant mentioned the CAFE standard for miles per gallon efficiency;
- One answered cap and trade;
- One noted an extra tax for consumers who purchase bigger vehicles;
- One explained that the government is not drilling for oil as an energy solution. Instead, the government emphasizes wind and solar;
- One suggested that the government is offering financial incentives for researching alternative fuels for cars;
- One answered tax credits for green cars;
- One mentioned allowing cleaner cars to drive in high occupancy vehicle (HOV) lanes; and
- Another answered that a monetary incentive program called “Cash for Clunkers” is being offered for individuals who turn in their old vehicle for a new, more efficient one.

Next, participants were asked for their ideas on what else the government might do to reduce greenhouse gas emissions.

- One participant suggested that the politics should be removed from efforts to solve climate change;
- One suggested that the government could encourage a competition to design a car that runs on alternative fuels and two participants agreed that this was a good idea; and
- Another encouraged more oil drilling.

The moderator then introduced the Air Resource Board's Environmental Performance Label as one thing the government is doing to educate the public about emissions from current vehicles. Participants were asked for their feedback about the label.

- Three participant reacted negatively towards the label saying that it is pointless, "just another sticker," and it will not influence their purchasing decisions;
- Two answered that the sticker serves a more informative purpose, but it will not be effective if all cars are not on the same standard;
- Two participants agreed that this will be another unnecessary costly government program;
- One noted that this would be similar to the energy efficiency labels on dryers;
- Another mentioned that the label would be better received in specific regions like Berkeley or Seattle as opposed to Los Angeles or Fresno; and
- One nicknamed the label a "guilt sticker."

Feebates Introduction

The participants were presented with a description of a potential program that the government might put in place to encourage the reduction of GHG emissions from vehicles and asked for their opinion on this type of program.

- Two participants disliked the program since it punished the consumer rather than the manufacturer;
- One suggested that the government instead impose a restriction on manufacturers to forbid making cars with a global warming score less than five;
- One likened this program as a penalty-award system that will achieve lower emissions as well as increase gas mileage of cars;
- One thought the program would encourage people to buy used cars; and
- Another considered the negative impacts on individuals who require larger vehicles for their job.

Participants were then asked if a program like this would impact them when purchasing a new vehicle.

- One participant answered that he would not buy a car that received a penalty;
- One stated that the program would impact her, but it would depend on how large the rebate is;
- One explained that he would buy his vehicle out of state to avoid the penalty; and
- One answered that he would buy a used vehicle instead.

Participants were asked to provide an amount of the fee/rebate that would impact them. Overall, participants were reluctant to respond to this question.

- Two participants stated that any fee is unfair since it punishes the consumer for their preference of car type.

Next, participants were asked for their opinion on the name "feebates" for this type of program.

- Two participants thought the program involved a fee and reacted negatively;
- Two found the word confusing since it involves two opposite concepts: fee and rebate;
- One confused the word with "freebate;" and
- One thought the name was "catchy."

Feebate Design

The participants were then introduced to three different types of feebate designs: step, continuous, and class-based. Several charts were presented to give the participants a visual aid to understanding the different designs and the impact on fees and/or rebates.

STEP DESIGN:

After the moderator explained the step design, using the visual aids, all participants confirmed that they understood the step function design.

Next, participants were asked for their opinion of the step function design for a feebate system.

- One participant felt that this design would be easier to understand if the information about the emission scores were presented together for all of the vehicles made by each manufacturer;
- One suggested that a vehicle class comparison would be more effective;
- One stated that this design would destroy a certain class of vehicles; and
- One suggested a program with a positive incentive would be a more effective method to encourage consumers to buy green.

CONTINUOUS DESIGN:

After the moderator explained the class-based design using the visual aids, the participants were asked if they had any questions.

- Participants inquired as to why there are so many different fees and suggested that there just be one fee.

Next, participants were asked for their opinion on the continuous function design for a feebate system. Participants did not provide a lot of feedback regarding the continuous design, but they did mention concerns about how the feebate transaction would occur such as where the fee or rebate information will be displayed at the time of purchase.

- One participant felt that the continuous system was more convoluted than the step.

CLASS-BASED DESIGN:

After the moderator explained the class-based design using the visual aids, all participants confirmed that they understood the class-based design.

Next, participants were asked for their opinion on the class-based design for a feebate system.

- One participant reacted saying this system was more complicated;
- One felt that it was unfair that two vehicles with the same global warming score would be treated differently regarding the fee or rebate; and
- Another felt that a distinction should be made when defining SUVs in a category.

Overall Discussion

Participants were then asked to summarize the advantages and disadvantages of each system.

- One participant reported that the step function design gives the most incentive for both the manufacturer and the car buyer; and
- One suggested creating penalties for the manufacturer if they do not meet the fleet average efficiency requirements.

Comparative Discussion

Next, participants were asked to consider all three systems and decide which one would work best for them.

- All participants chose the step system.

Next, participants were asked to consider all three systems and decide which one would be the fairest for the largest number of consumers.

- Two participants mentioned the step system.

Visibility of Feebate Transaction

When the participants were asked whether they prefer to receive a rebate directly at the time of purchase or have it sent later (within 60 days), all agreed they would rather have the rebate immediately at the time of purchase.

Next, participants were asked if they would buy a slightly more expensive car or spend less if they received a rebate at the time of purchase.

- One participant decided that this would not affect his decision to get the car he wants; and
- Another said that he would add extra options to the car if the rebate was more than $250.

Next, participants were asked whether or not they would still choose the same vehicle if they received the rebate later.

- Two participants stated that it would not make a difference if the rebate was as small as $200.

Participants were asked what dollar amount of fee or rebate would make a difference in their purchasing decisions.

- Three participants answered $1,000 or more for a $30,000 vehicle;
- One participant answered 25% of the vehicle cost; and
- Another answered that it depends on the vehicle price. Fees should be different because a fee will have a greater impact on people who choose the less costly vehicle.

Closing

Participants were asked for other ideas for how this type of vehicle incentive program might be implemented in the fairest and easiest way.

- Most participants agreed that an incentive only program (without fees) would be ideal; and
- One participant suggested a yearly tax incentive for purchasing lower emission vehicles.

Finally, participants were asked for their closing thoughts on a program name.

- Two participants suggested that the name contain the word "car" or "vehicle;"
- One participant answered "Rebate or Bust;"
- One answered "Ecobates;" and
- One answered "Green bates."

EXPLORING RESPONSE TO FEEBATE SCHEMES IN CALIFORNIA:
FOCUS GROUP STUDY

Focus Group #3: Conducted in Irvine, CA, August 4, 2009

FOCUS GROUP SUMMARY

Overview

The purpose of the focus group was for researchers to gain knowledge of potential consumer perceptions and response to feebates, a proposed policy that would charge a fee for the purchase of vehicles with higher greenhouse (GHG) emissions and provide a rebate for the purchase of vehicles with lower GHG emissions. Participant responses were explored in a focus group conducted on Tuesday, August 4, 2009 (6 PM to 8 PM) at the Katie Wheeler Library, in Irvine, CA. The focus group participants included eight Orange County residents who intended to purchase a car within the next five years or have purchased a new car in the past five years. A researcher with the Transportation Sustainability Research Center (TSRC) of the University of California, Berkeley facilitated the focus group discussion with researchers assisting and taking notes. This summary begins with the findings from the pre-focus group survey and continues with a summary of the focus group discussion.

Background Survey Results

At the beginning of the focus group, TSRC researchers administered a survey that explored the demographic attributes of focus group participants, general travel behaviors, and vehicle make/model information.

The following were the demographic attributes of focus group participants:

Table B 5 Demographic Attributes of Focus Group Participants (Group3)

Gender	Marital Status	Age	Educational Level	Household Pre-tax Income
F	Single	18-25	Some grad school	$50-$79.9K
M	Single	41-55	Bachelor's Degree	$50-$79.9K
F	Divorced	56+	Ph.D or higher	$80-$109.9K
M	Married	31-35	Some college	$20-$49.9K
F	Married	41-55	Bachelor's Degree	$50-$79.9K
M	Married	41-55	Some college	$50-$79.9K
M	Divorced	56+	Master's degree	$110K+
M	Single	18-25	Some college	$80-$109.9K

Participants were also asked to provide their ethnicity.

- Seven participants were White/Caucasian; and
- One was Black/African American.

Participants were asked how many vehicles they had in their household:

- Two reported having one vehicle in their household;
- Three reported two vehicles in their household;
- One participants indicated three cars in their household; and
- Two participants reported having four vehicles in their household.

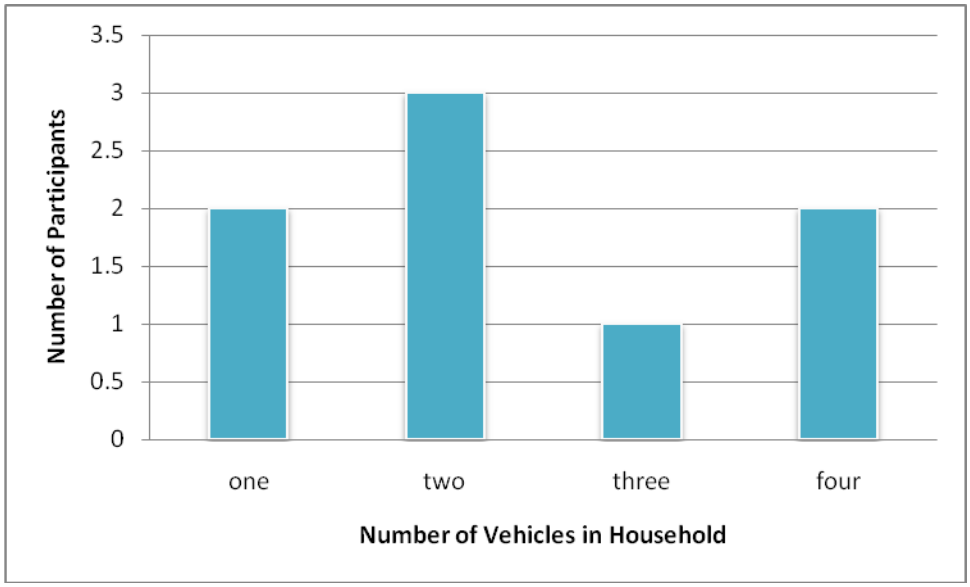


Figure B 3 Number of Vehicles in Participant Households (Group 3)

Participants were then asked if they anticipate purchasing a new car in the next five years.

- Six participants indicated that they plan to purchase a new car;
- One indicated that he does not plan to purchase a new car; and
- One indicated that she does not know if she will purchase a new car.

The survey asked for an estimate of how many miles they drive annually.

- Two participants drive under 5,000 miles/year;
- Five drive between 10,000-15,000 miles/year; and
- One drives between 15,000-20,000 miles/year.

The survey also probed participants for their average miles per gallon per vehicle.

- Seven vehicles were reported as 11-20 MPG;
- Six vehicles were reported as 21-30 MPG;
- One participant noted an average of 18 MPG for two vehicles;

- One participant noted an average of 20 MPG for three vehicles; and
- MPG for one vehicle was not reported.

Next, the survey sought to find information on the types of vehicles the participants own.

Table B 6 Vehicles Owned by Focus Group Participants (Group 3)

Number of Vehicles in Household	Participant 1 Vehicle Make/Model	Participant 2 Vehicle Make/Model	
4	Acura MDX '05 New Toyota Rav 4 '04 New Mercedes 400SL '93 Used Nissan Pickup '88 Used	BMW 5 Series '04 Used Chevy Suburban '02 Used Volkswagon Jetta '00 Used BMW 3 Series '90 Used	
Number of Vehicles in Household	**Participant 3 Vehicle Make/Model**		
3	Toyota Sienna '00 New Toyota Camry '05 Used Toyota Camry '09 New		
Number of Vehicles in Household	**Participant 4 Vehicle Make/Model**	**Participant 5 Vehicle Make/Model**	**Participant 6 Vehicle Make/Model**
2	Honda Ridgeline '06 New Nissan Quest '94 Used	Hyundai Sonata '04 New Ford F150 '02 Used	Audi TT '07 New Saab 9.9 '05 Used
Number of Vehicles in Household	**Participant 7 Vehicle Make/Model**	**Participant 8 Vehicle Make/Model**	
1	Honda CRV '07 New	Honda Civic '06 New	

Focus Group Discussion

After completing the pre-focus group survey, the moderator provided participants with a brief study overview and initiated the focus group discussion. The discussion began with general questions on vehicle purchase decision-making processes, and the role of fuel economy and environmental awareness in vehicle purchase decisions. Next, the moderator provided an introduction to the feebates program, including design possibilities, and transaction options. The focus group concluded with ideas to implement the vehicle incentive program in the fairest and easiest way.

Vehicle Purchase Decision-Making Process

Participants were asked how they make vehicle purchase decisions including why they purchased their most recent vehicle and what steps they followed in making that purchase (e.g., Internet research).

Participants reported several reasons for purchasing their vehicles:

- Four reported better gas mileage;
- Three stated space and vehicle comfort;
- Three mentioned reliability of the vehicle in terms of no unexpected mechanical break downs;
- Three considered safety ratings;
- Two addressed the vehicle's purpose for occupational needs;
- One stated the aesthetic appeal of the vehicle;
- One mentioned a good deal on purchase price;
- One reported vehicle extras and add-ons; and
- One considered resale price.

Next, participants were probed about their fuel economy considerations in their vehicle purchase decisions.

- Two participants stated that they were not as concerned about emissions as much as vehicle safety;
- One participant responded that she would purchase a more fuel efficient car because she believed in resource conservation; and
- One participant reported the uncertainty regarding higher hybrid vehicle prices.

Although not a vehicle purchase consideration, one participant expressed his concern about the potential environmental impacts of the hybrid manufacturing process, stating that it could be a hidden environmental cost.

Next, participants were asked if they had any experience with financial incentives when purchasing a new vehicle.

- One participant recalled receiving a manufacturer's rebate for his vehicle purchase in the 1990s;
- One mentioned the Cash for Clunkers program;
- One noted the HOV lane sticker incentive program for hybrids; and
- One recalled receiving a gas card from her credit union.

Role of Fuel Economy and Environmental Awareness

Focus group participants were also asked about their familiarity with climate change, GHG emissions, or global warming. All participants were familiar with these concepts. All participants expressed skepticism saying it is a way for someone to make money and a lot of conflicting scientific data exists about the topic.

A brief explanation of climate change was provided by the moderator to ensure all have the same understanding of climate change.

Next, participants were asked to share what they heard about what the government is doing with regard to emissions and energy use in vehicles.

- Two participants mentioned that the California government has strict emission standards for vehicles;
- Two explained that the government is setting unrealistic mileage standards;
- One reported that the government encourages people to take public transportation; and
- One explained that the government is experimenting with alternative fuel vehicles.

Next, the participants were introduced to the Air Resources Board Environmental Performance Label as a tool that the government is using to educate the public about emissions. All participants agreed that the label provided good information that will factor into their purchasing decisions.

Participants were then asked if a program offering an incentive or rebate for a higher scoring car would impact them when purchasing a new vehicle.

- One participant stated that he would place more consideration on a car with a rebate; and
- One argued that a rebate may give an unfair advantage to certain models or brands.

Feebates Introduction

The participants were presented with a description of a potential program that the government might put in place to encourage the reduction of GHG emissions from vehicles and asked for their opinion on this type of program.

- Two participants explained that they do not like that the government will be involved with influencing their vehicle purchase decisions and preferred a market-based approach;
- One thought the feebates program might end when the government ran out of money, similar to the Cash for Clunkers program;
- One questioned where the fees were coming from saying that the program is a redistribution of wealth;
- One expressed concern for the program's small business impacts;
- One stated that he would work to buy a vehicle with a rebate;
- One reported concern about low safety ratings for the lower emissions cars;
- One was concerned for the administrative costs of establishing the program; and
- One stated that this program would encourage him to buy a used vehicle to avoid fees.

Feebate Design

The participants were then introduced to three different types of feebate designs: step, continuous, and class-based. Several charts were presented to give the participants a visual aid to understanding the different designs and the impact on fees and/or rebates.

STEP DESIGN:

After the moderator explained the step design, using the visual aids, all participants confirmed that they understood the step function design.

Next, participants were asked for their opinion of the step function design for a feebate system.

- Two participants reacted negatively towards the step design;
- Two argued that a rebate is worthless since they will still need to make vehicle payments;
- One commented that this design is unfair since it uses a flat fee and is not based on the cost of the car; and
- One stated that this program would impact car manufacturer sales.

CONTINUOUS DESIGN:

After the moderator explained the continuous design, using the visual aids, all participants confirmed that they understood the continuous design.

- One participant questioned the method of transaction for fees and rebates.

Next, participants were asked for their opinion on the continuous design for a feebate system.

- One participant was concerned about the integrity of the dealers when pricing vehicles with rebates;
- One stated that the continuous is more confusing than the step design;
- One explained that this design favors foreign cars;
- One argued that car buyers will buy from another state to avoid this program.

CLASS-BASED DESIGN:

After the moderator explained the class-based design, using the visual aids, all participants confirmed that they understood the class-based design.

Next, participants were asked for their opinion on the class-based design for a feebate system. A majority of the participants preferred the continuous based design rather than the class-based design.

- One participant preferred the class-based system since it compares similar vehicle types with each other;
- One reacted to the visual aids explaining that they would likely confuse the public; and
- One suggested that fees should be charged every year for high emission cars.

Comparative Discussion

Next, participants were asked to consider all three systems and decide which one would work best for them.

Of the eight participants, three chose class-based while five did not note a preference.

- Those who preferred the class-based system thought that it provides a fair comparison for vehicle types.

Closing

Participants were asked for other ideas for how this type of vehicle incentive program might be implemented in the fairest and easiest way.

- Two participants suggested extending the program for HOV lane passes for hybrids;
- One suggested a federal program since emissions and global warming are not only California's responsibility;
- One recommended that scientists have a conversation to determine whether or not global warming is occurring; and
- Another suggested making mass transit more accessible.

Participants were then asked to suggest a name for the program.

- One participant suggested "decreebate," and
- Another participant suggested "flex week."

EXPLORING RESPONSE TO FEEBATE SCHEMES IN CALIFORNIA:
FOCUS GROUP STUDY

Focus Group #4: Conducted in El Monte, CA, August 5, 2009

FOCUS GROUP SUMMARY

Overview

The purpose of the focus group was for researchers to gain knowledge of potential consumer perceptions and response to feebates, a proposed policy that would charge a fee for the purchase of vehicles with higher greenhouse (GHG) emissions and provide a rebate for the purchase of vehicles with lower GHG emissions. Participant responses were explored in a focus group conducted on Wednesday, August 5, 2009 (6 PM to 8 PM) at the El Monte Community Center in El Monte, CA. The focus group participants included eight Spanish speaking Los Angeles County residents who intended to purchase a car within the next five years or have purchased a new car in the past five years. A researcher with the Transportation Sustainability Research Center (TSRC) of the University of California, Berkeley facilitated the focus group discussion with researchers assisting and taking notes. This summary begins with the findings from the pre-focus group survey and continues with a summary of the focus group discussion.

Background Survey Results

At the beginning of the focus group, TSRC researchers administered a survey that explored the demographic attributes of focus group participants, general travel behaviors, and vehicle make/model information.

The following table shows the demographic attributes of focus group participants.

Table B 7 Demographic Attributes of Focus Group Participants (Group 4)

Gender	Marital Status	Age	Educational Level	Household Pre-tax Income
M	Single	41-55	High school	$50-79.9K
M	Single	31-35	Some college	$20-49.9K
M	Separated	41-55	Associate's Degree	$20-49.9K
F	Married	31-35	Some college	$50-79.9K
F	Divorced	26-30	Bachelor's Degree	$20-49.9K
M	Single	31-35	Associate's Degree	$20-49.9K
F	Married	26-30	Master's Degree	$50-79.9K
M	Single	18-25	Bachelor's Degree	$20-49.9K

Participants were also asked to provide their ethnicity.

- All participants were Hispanic.

Participants were asked how many vehicles they had in their household:

- Two reported having one vehicle in their household;
- Three noted having two vehicles in their household;
- One participant indicated three cars in their household; and
- Two participants reported having four vehicles in their household.

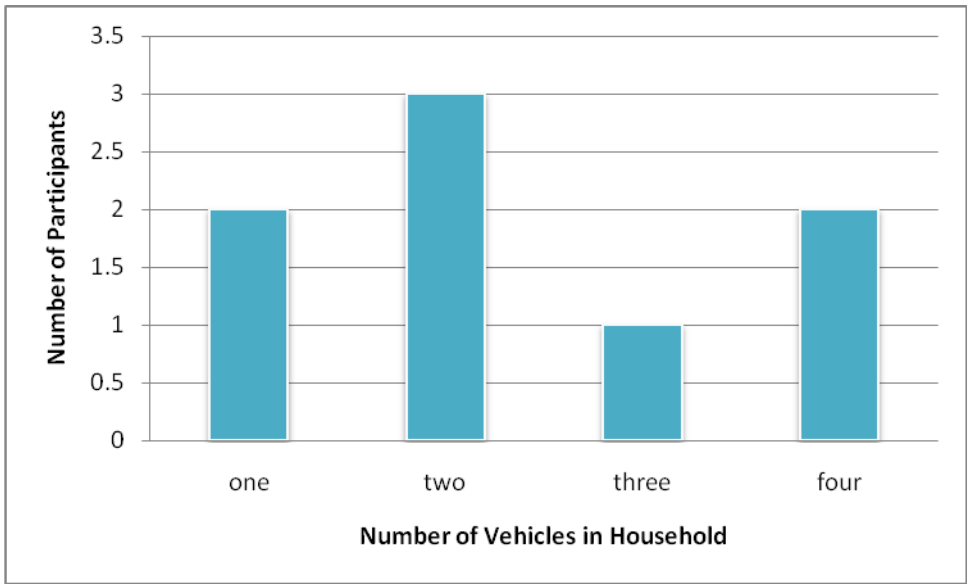


Figure B 4 Number of Vehicles in Participant Households (Group 4)

Next, the survey sought to find information on the types of vehicles the participants own.

Table B 8 Vehicles Owned by Focus Group Participants (Group 4)

Number of Vehicles in Household	Participant 1 Vehicle Make/Model	Participant 2 Vehicle Make/Model	
4	Acura MDX '05 New Toyota Rav 4 '04 New Mercedes 400SL '93 Used Nissan Pickup '88 Used	BMW 5 Series '04 Used Chevy Suburban '02 Used Volkswagen Jetta '00 Used BMW 3 Series '90 Used	
Number of Vehicles in Household	**Participant 3 Vehicle Make/Model**		
3	Toyota Sienna '00 New Toyota Camry '05 Used Toyota Camry '09 New		
Number of Vehicles in Household	**Participant 4 Vehicle Make/Model**	**Participant 5 Vehicle Make/Model**	**Participant 6 Vehicle Make/Model**
2	Honda Ridgeline '06 New Nissan Quest '94 Used	Hyundai Sonata '04 New Ford F150 '02 Used	Audi TT '07 New Saab 9.9 '05 Used
Number of Vehicles in Household	**Participant 7 Vehicle Make/Model**	**Participant 8 Vehicle Make/Model**	
1	Honda CRV '07 New	Honda Civic '06 New	

Participants were then asked if they anticipate purchasing a new car in the next five years.

- Six participants indicated that they plan to purchase a new car;
- One indicated that he does not plan to purchase a new car; and
- One indicated that she does not know if she will purchase a new car.

The survey asked for an estimate of how many miles they drive annually.

- Two participants drive under 5,000 miles/year;
- Five drive between 10,000-15,000 miles/year; and
- One drives between 15,000-20,000 miles/year.

The survey also probed participants for their average miles per gallon per vehicle.

- One vehicle was reported as 11-20 MPG;
- Three vehicles were reported as 21-30 MPG;

- Three vehicle was reported as 31-40 MPG;
- One participant noted an average of 12 MPG for four vehicles;
- One noted an average of 16 MPG for four vehicles; and
- One noted an average of 20 MPG for five vehicles.

Focus Group Discussion

After completing the pre-focus group survey, the moderator provided participants with a brief study overview and initiated the focus group discussion. The discussion began with general questions on vehicle purchase decision-making processes and the role of fuel economy and environmental awareness in vehicle purchase decisions. Next the moderator provided an introduction to the feebates program, including design possibilities, and transaction options. The focus group concluded with ideas to implement the vehicle incentive program in the fairest and easiest way.

Vehicle Purchase Decision-Making Process

Participants were asked how they make vehicle purchase decisions including why they purchased their most recent vehicle and what steps they followed.

Participants reported several reasons for purchasing their vehicles:

- Four participants wanted better gas mileage;
- Three stated space and vehicle comfort;
- Three mentioned mechanical reliability of the vehicle;
- Three considered safety ratings;
- Two addressed the vehicle's purpose for occupational needs;
- One stated the aesthetic appeal of the vehicle;
- One mentioned a good deal on purchase price;
- One reported vehicle extras and add-ons; and
- One considered resale price.

Next, participants were asked how they gathered information about their new vehicle purchase (e.g., showroom, Internet, other exposure). A general question was asked to the group about whether or not they use the Internet to gather information. All participants used the Internet.

- Two participants used the Internet and mentioned helpful websites, such as JDPower and Blue Book;
- One takes vehicles for test drives;
- One recalled that he returned to the dealership where he brought his previous vehicle; and
- One gained information from consumer reports, magazines, friends, and family.

Next, participants were asked if they had any experience with financial incentives when purchasing a new vehicle.

- One participant mentioned easy financing;
- Another noted low monthly payments and interest rates as important; and
- One received a student discount and zero down payment from the dealership.

Next, participants were asked if they considered any additional issues or factors when purchasing a vehicle.

- Three participants mentioned incentives related to vehicle maintenance including free oil change, maintenance costs covered for a year, or extended warranties; and
- Another participant mentioned the importance of vehicle safety.

Role of Fuel Economy and Environmental Awareness

Focus groups participants were also asked about their familiarity with climate change, GHG emissions, or global warming. All participants were familiar with these concepts and recognized the connection between GHGs and global warming. All participants agreed that actions should be taken to preserve the earth for future generations.

A brief explanation of climate change was provided by the moderator to ensure all have the same understanding of climate change.

Next, participants were asked to share what they heard about what the government is doing with regard to GHG emissions and energy use in vehicles.

- One participant was skeptical of GHG taxes because of the impact on working class people;
- One mentioned the inaction of the government to purchase vehicles that reduce GHGs from government fleets;
- Another suggested that the United States government model programs after countries that have been successful and urged better dissemination of information about climate change issues; and
- One participant mentioned the Cash for Clunkers program as a government attempt to reduce GHGs from vehicles.

Participants were then probed about their feelings towards the fairness of the Cash for Clunkers program.

- Four participants did not address Cash for Clunkers directly but suggested that the poor dissemination of clean technologies is the result of political barriers and affordability;
- Two agreed that Cash for Clunkers has too many requirements, which excludes people from qualifying for the incentive;
- Two mentioned that the program was a way for the government to bail out struggling car companies; and
- Two argued that the program was effective in providing assistance to the automobile manufacturers while at the same time moving the industry to produce more efficient vehicles.

Next, the participants were introduced to the California Air Resources Board Environmental Performance Label as a tool that the government is using to educate the public about emissions.

- Three participants thought better education surrounding climate change issues would allow people to make personal decisions to change their behavior more effectively than reading the information on a sticker;

- Two argued that the sticker will not be effective since most people are not interested in switching their current vehicle choice to one with lower emissions;
- Two encouraged creating a cash incentive for buying a lower emission vehicle;
- One believed that the incentive for buying a lower emission vehicle is the long term benefit of living longer; and
- One suggested it would be better to spend government money on promoting alternatives to driving.

Participants were then asked if they thought the Environmental Performance Label would influence them when deciding between two similar vehicles with different scores.

- Two participants would also weigh vehicle costs in the decision making process;
- One stated that she felt the different scores would make a difference in her purchase decision; and
- One saw the score as additional information for the buyer.

Feebates Introduction

The participants were presented a description of a potential program that the government might put in place to encourage the reduction of GHG emissions from vehicles and asked for their opinion on this type of program.

- Two participants mentioned the problem that American-made cars are less efficient than foreign cars; and
- One initially related the program to a Ponzi scheme.

Participants were then asked if a program like this would impact them when purchasing a new vehicle. A majority of participants answered that the program would affect their purchase, and no participants disagreed.

- One participant reasoned that with time, the price of technology would decrease encouraging him to delay his purchase depending on pricing prospects;
- One stated that he would not buy another car if this program were in place; and
- One commented that given the rebate opportunity, he would choose the more beneficial vehicle among the cars that he is considering. Other participants agreed with this statement.

Participants were asked to provide an amount of the fee/rebate that would impact them.

- Three participants offered values between $2,000-$5,000;
- Another mentioned $7,000-$10,000 as an influential price range;
- One mentioned a 10 percent value off the vehicle cost;
- Another offered 15-20 percent value off the vehicle cost; and
- One stated 25 percent or $5,000-$10,000 as values that would impact him.

Feebate Design

The participants were then introduced to three different types of feebate designs: step, continuous, and class-based. Several charts were presented to give the participants a visual aid to understanding the different designs and the impact on fees and/or rebates.

STEP DESIGN:

After the moderator explained the step design, using the visual aids, all participants confirmed that they understood the step function design.

Next, participants were asked for their opinion on the step function design for a feebate system.

- One participant questioned the method of transaction for the fees and rebates. He suggested that a more effective approach to reducing GHG emissions would be to stop making vehicles entirely since manufacturers will not make cleaner cars;
- One reasoned that this program would have the greatest negative impact on large families that require bigger vehicles;
- One disliked the fact that the program takes money from the working class instead of the government; and
- Another stated that the program would be better without the fees.

CONTINUOUS DESIGN:

After the moderator explained the continuous design, using the visual aids, all participants confirmed that they understood the continuous design.

Next, participants were asked for their opinion on the continuous function design for a feebate system.

- Two participants preferred this system to the step system since it is based on miles per gallon.

CLASS-BASED DESIGN:

After the moderator explained the class-based design using the visual aids, one participant questioned whether this particular system involved fees.

Next, participants were asked for their opinion on the class-based design for a feebate system.

- Two participants preferred this design because it appeared to provide more options for the buyer; and
- Another argued that this program does not address the fact that emissions from cars will continue to damage the environment.

Comparative Discussion

Next, participants were asked to consider all three systems and decide which one would work best for them.

Of the eight participants, one chose the continuous system and seven chose the class-based system.

- The participant that preferred the continuous system believed a vehicle with higher miles per gallon would be better for the environment.

- Those who preferred the class-based system thought the concept was easier to understand, and it provides better information for decision making.

A discussion began regarding whether or not the feebates program would improve the environment. Participants discussed the effectiveness of the economic principles of supply and demand behind balancing the fee and rebate cash flow.

Visibility of Feebate Transaction

When the participants were asked whether they prefer to receive a rebate directly at the time of purchase or have it sent later (within 60 days), all agreed that they would rather have the rebate directly at the time of purchase.

Participants were asked if they would buy a slightly more expensive car or spend less if they received a rebate at the time of purchase. None of the participants expressed an opinion in response to this question.

EXPLORING RESPONSE TO FEEBATE SCHEMES IN CALIFORNIA:
FOCUS GROUP STUDY

Focus Group #5: Conducted in Oakland, CA, August 11, 2009

FOCUS GROUP SUMMARY

Overview

The purpose of the focus group was for researchers to gain knowledge of potential consumer perceptions and response to feebates, a proposed policy that would charge a fee for the purchase of vehicles with higher greenhouse (GHG) emissions and provide a rebate for the purchase of vehicles with lower GHG emissions. Participant responses were explored in a focus group conducted on Tuesday, August 11, 2009 (5:30 PM to 7:30 PM) at the Golden Gate Branch Library in Oakland, CA. The focus group participants included seven Bay Area residents who intended to purchase a car within the next five years or have purchased a new car in the past five years. A researcher with the Transportation Sustainability Research Center (TSRC) of the University of California, Berkeley facilitated the focus group discussion with researchers assisting and taking notes. This summary begins with the findings from the pre-focus group survey and continues with a summary of the focus group discussion.

Background Survey Results

At the beginning of the focus group, TSRC researchers administered a survey that explored the demographic attributes of focus group participants, general travel behaviors, and vehicle make/model information.

The following were the demographic attributes of focus group participants:

Table B 9 Demographic Attributes of Focus Group Participants (Group 5)

Gender	Marital Status	Age	Educational Level	Household Pre-tax Income
M	Married	26-30	Ph.D. or higher	$110K+
M	Single	26-30	Decline to respond	Decline to respond
M	Single	36-40	Master's Degree	$110K+
M	Divorced	41-55	Associate's Degree	$20-49.9K
F	Divorced	56+	Some college/trade school	$20-49.9K
F	Divorced	36-40	Decline to respond	Decline to respond
F	Single	41-55	Some college	$80-109.9K

Participants were also asked to provide their ethnicity.

- Three participants were White/Caucasian;
- Two were Asian/Asian-American;
- One was Black/African American; and
- One participant was Asian and African American.

Participants were asked how many vehicles they had in their household:

- One participant reported having one vehicle in their household; and
- Six participants reported having two vehicles in their household.

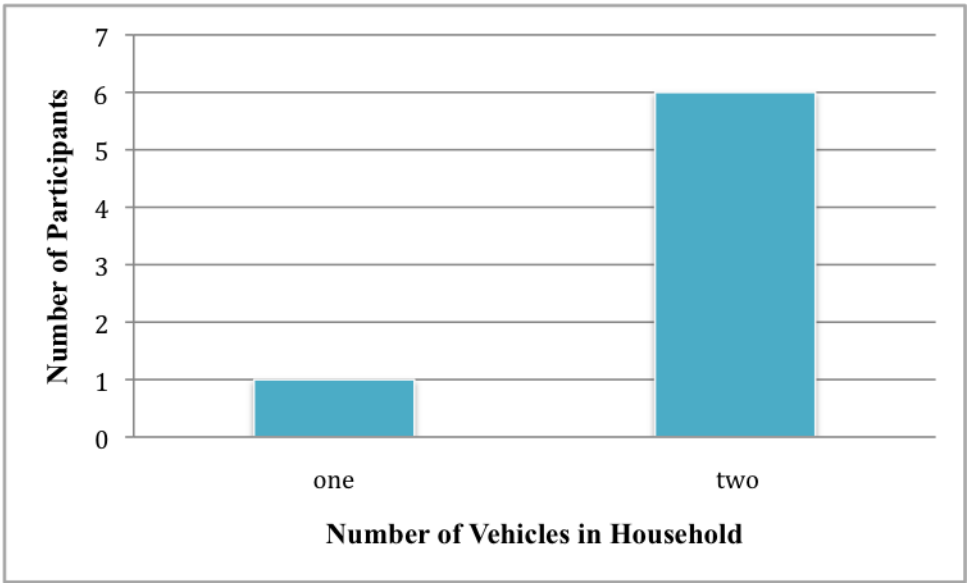


Figure B 5 Number of Vehicles in Participant Households (Group 5)

Next, the survey sought to collect information on the types of vehicles the participants own.

Table B 10 Vehicles Owned by Focus Group Participants (Group 5)

Number of Vehicles in Household	Participant 1 Vehicle Make/Model	Participant 2 Vehicle Make/Model	Participant 3 Vehicle Make/Model	Participant 4 Vehicle Make/Model	Participant 5 Vehicle Make/Model
2	Toyota Avalon '02 Used Honda Odyssey '07 New	Honda Accord '96 New Mercedes E55 '07 New	Lexus GS400 '04 New GMC Yukon '07 Used	Honda Accord '09 New Toyota Camry '93 Used	Ford F350 '91 Used Yamaha Seca '82 Used
Number of Vehicles in Household	**Participant 6 Vehicle Make/Model**	**Participant 7 Vehicle Make/Model**			
1	Chrysler Sebring '07 Used	Toyota 4Runner '03 Used			

Participants were then asked if they anticipated purchasing a new car in the next five years.

- Seven participants indicated that they plan to purchase a new car in the next five years.

The survey asked for an estimate of how many miles they drive annually.

- One participant drives under 5,000 mile/year;
- Four drive between 5,000-15,000 miles/year; and
- Two drive between 20,000-35,000 miles/year.

The survey also probed participants for their average miles per gallon per vehicle.

- Six vehicles were reported as 11-20 MPG;
- Four vehicles were reported as 21-30 MPG; and
- Three vehicles were reported as 31-40 MPG.

Focus Group Discussion

After completing the pre-focus group survey, the moderator provided participants with a brief study overview and initiated the focus group discussion. The discussion began with general questions on vehicle purchase decision-making processes and the role of fuel economy and environmental awareness in vehicle purchase decisions. Next, the moderator provided an introduction to the feebates program, including design possibilities and transaction options. The focus group concluded with ideas to implement the vehicle incentive program in the fairest and easiest way.

Vehicle Purchase Decision-Making Process

Participants were asked what the most important vehicle characteristics were for them when purchasing a new vehicle. A variety of responses were given.

- Three participants reported the vehicle style;
- Three mentioned good gas mileage;
- Two stated low maintenance costs;
- One noted his large family's need for greater space;
- One indicated the price; and
- One was concerned with safety.

Participants were also asked how long they kept their cars on average. Most participants agreed that they liked to keep their cars a long time.

- Two participants responded that they kept their cars for 15-16 years; and
- One felt the usefulness of her car was a priority over the appearance.

Role of Fuel Economy and Environmental Awareness

Focus group participants were also asked about their familiarity with GHG emissions, climate change, or global warming.

- Three participants responded that older vehicles are harmful to the environment because they are less efficient;
- Two agreed that there are obvious signs suggesting climate change;
- Two stated that global warming is a highly popular and controversial topic in the media;
- One felt that the only solution to climate change is to have people stop driving;
- Another replied that developing countries are beginning to drive, creating more factories and vehicles that further damage the environment; and
- One answered that creating fuel for electric cars might not be as beneficial as the general population thinks, because the electricity might be generated from burning coal.

A brief explanation of climate change was provided by the moderator to ensure all have the same understanding of climate change.

Next, participants were asked to share what they heard about what the government is doing with regard to emissions and energy use in vehicles, particularly about their familiarity with the Cash for Clunkers program.

- Four participants approved of the Cash for Clunkers Program, believing that the rebate is a great incentive; and
- One, although familiar with the term "Cash for Clunkers," did not understand the program.

Participants were also asked their opinion of the High Occupancy Vehicle (HOV) Program.

- One participant uses the lane and feels it is efficient;
- Another approved of the HOV lane but expressed regret that many fuel-efficient cars do not qualify for the lane; and
- One considered buying a vehicle to qualify for the HOV to reach his destination faster.

Participants were then questioned about what other government programs they have heard of regarding emissions and energy use in vehicles and their opinions on these programs.

- Three participants felt that fuel taxes penalized people who need large vehicles for business or towing purposes;
- One heard of a program that buys back vehicles that do not pass the smog test;
- Another heard of a program that offers around $1,000 for fuel efficient cars with low emissions; and
- One liked the Gas Guzzler tax program in which cars with low mileage pay an additional tax, believing this benefited the environment by deterring people from buying cars with high emissions.

Next, the participants were introduced to the California Air Resources Board Environmental Performance Label as a tool that the government is using to educate the public about emissions. They were then invited to state their opinions of the Environmental Performance Label.

- Two participants thought the Label is attractive because people will seek a better score to feel they are conscious of the environment;
- One felt the Label would be appealing to consumers because of its visual quality;
- Another stated that the Label is informative because consumers can clearly relate the scores to the vehicle efficiency; and
- One felt that the Label should only be displayed in dealerships.

Participants were then asked what they thought was the most effective way to educate people on global warming.

- Four participants suggested a monetary incentive, such as a lower registration fee or getting one driving ticket waived per year;
- One said programs that provided convenience, such as the HOV lane; and
- One suggested that automakers adopt a more environmentally conscious image in their marketing strategy.

Feebates Introduction

The participants were presented a description of a potential program that the government might put in place to encourage the reduction of GHG emissions from vehicles and asked for their opinion on this type of program.

- Two participants expressed concern that the program was unfair to certain vehicle purchasers, such as larger families that require bigger vehicles;
- One liked that the program rewarded people for aiding the environment;
- Another felt the program was not revolutionary because it merely combined the Gas Guzzler Tax with an existing program that gives rebates for energy efficient cars but felt the name “feebates” would perhaps give these programs more exposure; and
- One was concerned that if the program was successful in encouraging people to buy fuel efficient cars, funds would run out due to the program’s inability to generate enough money from fees for less efficient cars.

The discussion gradually leaned towards the fairness of the program for certain groups. Participants were asked to consider the fairness of the program when applied to businesses that use vehicles.

- Four participants felt the feebates program was unfair towards businesses because they would be forced to pay fees for purchasing the large trucks they needed;
- Two suggested that purchasers of larger vehicles be exempt from the fees if they could provide proof the vehicle was for work purposes; and
- One suggested that vehicles purchased for business purposes could pay a lower fee as opposed to vehicles purchased for luxury.

Participants were then asked if a program like this would impact them when purchasing a new vehicle.

- One participant felt the program would cause her to purchase a vehicle with a higher global warming score (GWS) because she could receive a rebate and also help the environment.

Participants were asked to provide an amount of the fee/rebate that would impact them.

- Four participants reported a 10-15% difference in the purchase price;
- Another added that a 10-15% rebate could cover the cost of registration and tax for a vehicle purchase;
- One stated that an amount about $2,000 would make a difference; and
- One questioned whether the percentage would be static or operate on a sliding scale.

Feebate Design

The participants were then introduced to three different types of feebate designs: step, continuous, and class-based. Several charts were presented to give the participants a visual aid to understand the different designs and the impact on fees and/or rebates.

STEP DESIGN:

After the moderator explained the step design, using the visual aids, all participants confirmed that they understood the step function design.

Next, participants were asked for their opinion on the step function design for a feebate system.

- Two participants indicated that the program would influence their decision if the cost difference between each step were greater than shown in the visual aids;
- One stated that the program would cause confusion because some might question why certain vehicles are being charged the same fee despite having different emissions; and
- Another responded that consumers are familiar with their tastes and budget, so the step design would make no difference to their purchase decision.

CONTINUOUS DESIGN:

After the moderator explained the continuous design, using the visual aids, all participants confirmed that they understood the continuous design.

Next participants were asked for their opinion on the continuous function design for a feebate system.

- Four participants felt that the system is more fair compared to the step system because the fees and rebates are based on actual emissions;
- Two replied that this system rendered the GWS obsolete;
- One felt that the step system was easier to understand; and
- Another raised concerns that since the GWS is not used in the continuous design, people would not be educated on the connection between global warming and vehicle emissions.

CLASS-BASED DESIGN:

After the moderator explained the class-based design using the visual aids, all participants confirmed that they understood the class-based design.

Next, participants were asked for their opinion on the class-based design for a feebate system.

- Two participants stated that larger vehicles should only receive a rebate when they are proven to be used for work reasons;
- Two responded that vehicle costs should be more tied to the GWS because it would educate people about their actions in relation to global warming; and
- One suggested that he would like to see the class-based system applied to the step design.

Overall Discussion

Participants were then asked to summarize the advantages and disadvantages of each system.

- Four participants stated that the continuous design was reasonable because costs are based on actual emissions;
- Two indicated that the step design had the most association with climate change because of the GWS and that the continuous and class-based designs would not alert consumers on how emissions from their vehicle relate to global warming;
- Two participant felt that the simplicity of the step design would make it attractive to consumers; and
- One felt that the class-based design was unfair because it allowed larger vehicles to obtain rebates.

Comparative Discussion

Next, participants were asked to consider all three systems and decide which one would work best for them.

Of the seven participants, three chose the step system, two chose the continuous system, and one chose the class-based system applied to the step design. One participant stated she favored the step system with the continuous system. (*Note: This participant appears not to have understood both systems.*)

- Those who preferred the step system liked it because it is the easiest to understand, and it visibly connects vehicle cost to climate change with the GWS;
- Those who preferred the continuous system thought it is the fairest system because fees and rebates depend on exact emissions; and

- The person that preferred the class-based system thought it is fairer to those who need larger vehicles for business purposes, and it provides consumers with more choice.

Visibility of Feebate Transaction

Participants were then asked whether they prefer to receive a rebate directly at the time of purchase or have it sent later (within 60 days).

- Five participants indicated that they wanted the rebate on the spot;
- Four stated that the rebate should be directly applied to the vehicle to reduce the price; and
- One participant replied that she is willing to complete paperwork to receive a rebate 90 days later but not a fee.

Closing

Participants were asked for other ideas for how this type of vehicle incentive program might be implemented in the fairest and easiest way. Participants raised questions as to who would administer the feebate transactions.

- One participant stated that he believed education is crucial to the success of the feebate program; and
- Another suggested that a Committee of the Environmental Protection Agency administer the feebates program.

EXPLORING RESPONSE TO FEEBATE SCHEMES IN CALIFORNIA:
FOCUS GROUP STUDY

Focus Group #6: Conducted in San Diego, CA, August 12, 2009

FOCUS GROUP SUMMARY

Overview

The purpose of the focus group was for researchers to gain knowledge of potential consumer perceptions and response to feebates, a proposed policy that would charge a fee for the purchase of vehicles with higher greenhouse (GHG) emissions and provide a rebate for the purchase of vehicles with lower GHG emissions. Participant responses were explored in a focus group conducted on Wednesday, August 12, 2009 (6 PM to 8 PM) at UC San Diego in La Jolla, CA. The focus group participants included eight San Diego residents who intended to purchase a car within the next five years or have purchased a new car in the past five years. A researcher with the Transportation Sustainability Research Center (TSRC) of the University of California, Berkeley facilitated the focus group discussion with researchers assisting and taking notes. This summary begins with the findings from the pre-focus group survey and continues with a summary of the focus group discussion.

Background Survey Results

At the beginning of the focus group, TSRC researchers administered a survey that explored the demographic attributes of focus group participants, general travel behaviors, and vehicle make/model information.

The following were the demographic attributes of focus group participants:

Table B 11 Demographic Attributes of Focus Group Participants (Group 6)

Gender	Marital Status	Age	Educational Level	Household Pre-tax Income
M	Married	18-25	High School Degree	$50-79.9K
M	Married	41-55	Ph.D. or higher	$110K+
M	Single	18-25	Associate's Degree	$50-79.9K
F	Married	26-30	Some college	$50-79.9K
F	Married	36-40	Some college	$50-79.9K
F	Married	41-55	Bachelor's Degree	$50-79.9K
F	Married	31-35	Bachelor's Degree	$20-49.9K
F	Single	41-55	Bachelor's Degree	$20-49.9K

Participants were also asked to provide their ethnicity.

- Four participants were Hispanic;
- Three participants were White/Caucasian; and
- One participant was Asian.

Participants were asked how many vehicles they had in their household:

- Two participants reported having one vehicle in their household;
- Five noted having two vehicles in their household; and
- One reported having four vehicles in their household.

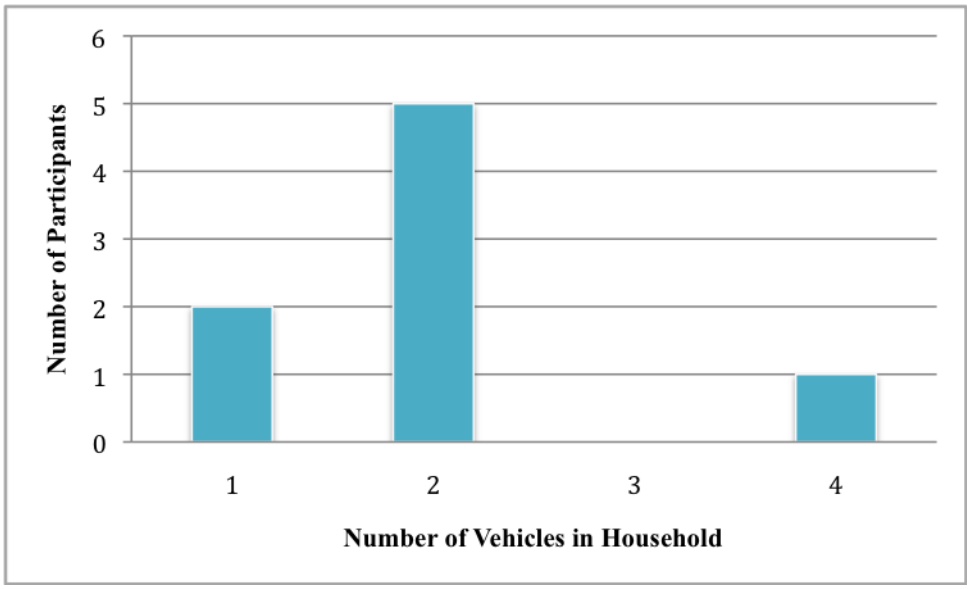


Figure B 6 Number of Vehicles in Participant Households (Group 6)

Participants were then asked if they anticipated purchasing a new car in the next five years.

- All participants indicated that they plan to purchase a new car in the next five years.

The survey asked for an estimate of how many miles they drive annually.

- One participant drives under 10,000 miles/year;
- Three drive between 10,000-15,000 miles/year;
- Three drive between 25,000-50,000 miles/year; and
- One participant was not sure.

The survey also probed participants for their average miles per gallon per vehicle.

- Four vehicles were reported as 11-20 MPG;
- Seven vehicles were reported as 21-30 MPG;

- Two vehicles were reported as 31-40 MPG; and
- MPG for three vehicles was not reported.

Next, the survey sought to find information on the types of vehicles the participants own.

Table B 12 Vehicles Owned by Focus Group Participants (Group 6)

Number of Vehicles in Household	Participant 1 Vehicle Make/Model				
4	Toyota Prius '07 Used Acura MDX '05 New Acura TSX '04 Used Chevrolet Avalanche '03 New				
Number of Vehicles in Household	**Participant 2 Vehicle Make/Model**	**Participant 3 Vehicle Make/Model**	**Participant 4 Vehicle Make/Model**	**Participant 5 Vehicle Make/Model**	**Participant 6 Vehicle Make/Model**
2	Ford Explorer '06 New Nissan Senica '97 Used	Honda Accord '98 New Honda CRV '04 New	GMC Sonoma '03 New Ford Econoline '93 Used	Toyota Corolla '07 New Declined to state	Honda Civic '05 Used Toyota Camry '08 New
Number of Vehicles in Household	**Participant 7 Vehicle Make/Model**	**Participant 8 Vehicle Make/Model**			
1	Saturn Ion '07 New	Nissan Maxima '91 Used			

Focus Group Discussion

After completing the pre-focus group survey, the moderator provided participants with a brief study overview and initiated the focus group discussion. The discussion began with general questions on vehicle purchase decision-making processes and the role of fuel economy and environmental awareness in vehicle purchase decisions. Next, the moderator provided an introduction to the feebates program, including design possibilities and transaction options. The focus group concluded with ideas to implement the vehicle incentive program in the fairest and easiest way.

Vehicle Purchase Decision-Making Process

Participants were asked what factors contributed to their decisions in purchasing their last vehicle.

- Four participants reported excellent vehicle fuel efficiency/gas mileage;

- Three mentioned vehicle appearance;
- Three noted vehicle price;
- Three were concerned with the longevity of the car; and
- Two participants took into consideration their decision to have more kids, which compelled them to search for a larger vehicle.

Participants were asked how they gathered information about their new vehicle purchase.

- One participant went to a number of dealers to obtain the best deal; and
- Another participant mentioned doing extended research.

Next, participants were probed on how they felt financial incentives affected their decisions when purchasing a vehicle.

- One participant had just purchased a new car and reported that there was no realistic financial incentive that interested her at the moment; however, when asked to name an incentive that would make a difference, she indicated a large cash incentive of $10,000 off the sticker price; and
- Another noted that it would be helpful to have a car salesperson work with the buyer based on the buyer's finances.

Next, participants were asked to what extent environmental concerns were involved in their vehicle purchase decisions.

- Four participants agreed that the environment had no impact on their past decisions, but they expected to be more environmentally friendly when making future decisions;
- Two stated that the environment had no impact on their decisions and that their purchase was made based on personal convenience;
- One indicated that he made his purchase based on the knowledge that efficient cars saved energy and reduced pollution; however, the appearance of the car was still the primary priority for him, and
- One felt that environmental factors could impact her decisions, but her financial situation was the most important.

Role of fuel Economy and Environmental Awareness

A brief explanation of climate change was provided by the moderator to ensure everyone had the same understanding. Participants were then asked to express their own awareness and thoughts on GHG emissions, climate change, and global warming.

- Three participants believed that global warming was affecting consumers because environmentally-friendly products were more expensive;
- Two were skeptical about global warming, believing there was no proof;
- Two were aware of global warming, but they did not feel that it was an urgent issue; and
- One was aware that global warming negatively affected the health of human beings.

Next, participants were questioned as to what they heard and how they felt about the government's actions regarding GHG emissions and vehicle energy use.

- One participant heard of the Cash for Clunkers program and liked the idea because it would help her purchase the car she wanted, which was also more fuel efficient;
- Another had also heard of Cash for Clunkers and agreed on the importance of fuel efficiency but was undecided on how she felt about the program because the "clunkers" were being destroyed instead of donated;
- One participant had heard that hybrid vehicles initially had tax incentives;
- Another had heard of a new government rule requiring maufacturers to produce cars that meet a certain MPG; and
- Another participant also heard of the program known as Corporate Average Fuel Economy (CAFE) and believed the government was raising the mileage requirement under this program.

Participants were then asked how they felt these government programs would affect them.

- Three participants were extremely concerned that consumers would have to pay more for vehicles because of government imposed standards, and their statements were supported by many who nodded their heads; and
- One participant thought the market is more important in determining standards due to consumer purchase decisions.

Next, the participants were introduced to the California Air Resources Board Environmental Performance Label as a tool that the government is using to educate the public about emissions. They were then invited to state their opinions of the Environmental Performance Label.

- Two participants replied that cars were already progressing towards cleaner models, so most scores would ultimately be high;
- Another thought that having two scores, smog and a global warming, was unnecessary;
- Another participant questioned whether the scores would be helpful to consumer purchase decisions;
- Another thought it would be possible to compare the scores between similar class vehicles and choose the one with the highest score; and
- One distrusted the labels, feeling that they were just an incentive to raise prices.

Participants were then questioned as to what extent they expect the Environmental Performance Label would have on their vehicle purchase decisions.

- Three participants felt that it would make no difference to their decisions;
- One stated that it would affect her decision to some extent;
- One responded that he would definitely purchase a car with a higher score;
- Another considered the labels to be very informative because the smog score would aid her in knowing when she would need to repair her vehicle; and
- One believed that everyone would be more satisfied if they could purchase a big car with the highest score.

Feebates Introduction

The participants were presented a description of a potential program that the government might put in place to encourage the reduction of GHG emissions from vehicles and asked for their opinion on this type of program.

- Three participants disliked the program because they felt it would punish families that require larger, higher emission cars;
- Three stated they ultimately wanted a good deal, and they were wary that the program could potentially mislead them on the actual value of the cars;
- Three felt the automakers should be paying the fees, not the consumers;
- Three replied that if automakers were paying the fees, it would force them to make more fuel efficient cars; and
- One suggested that a rewards-based program would be better than a reward and punishment program because the punishment aspect would not gain support.

Next, participants were asked how much of a fee or rebate would make a difference to them.

- One participant said the value would have to be large;
- One reported $5,000; and
- Another mentioned that incentives could never be too high because a self-sustaining program would need to balance the amount of the incentives and fees.

Feebate Design

The participants were then introduced to three different types of feebate designs: step, continuous, and class-based. Several charts were presented to give the participants a visual aid to understand the different designs and the impact on fees and/or rebates.

STEP DESIGN:

After the moderator explained the step design, using the visual aids, all participants were asked for questions or comments on the design.

- Two participants thought the program would successfully encourage manufactures to produce more environmentally-friendly cars, and they would not place too much pressure on consumers because the program would only apply to those purchasing new cars;
- Two felt the system was unfair to the persons that would pay a fee; and
- Two did not like the program, as they felt the fees punished consumers, particularly large families who require bigger cars with higher emissions.

CONTINUOUS DESIGN:

After detailing examples through the charts to explain the continuous design, participants were asked if they had any clarification questions.

- One participant wanted clarification on how the fees would be calculated; and
- Another asked if the program would only apply to California.

Participants were then asked about their opinion on the continuous function design for a feebate system.

- Three participants replied that the design made sense, but it would be more complicated than the step design;

- Two raised the possibility of people going out of California to purchase a vehicle to avoid the fees;
- One responded that the program may be contradictory if it influences families to buy multiple small cars to avoid the fee associated with one large car;
- One preferred the step design; and
- Another believed the rebates would be greater than the fees, causing the program to run out of money.

CLASS-BASED DESIGN

After, the moderator explained the class-based design using the visual aids, all participants confirmed that they understood the class-based design.

Next, participants were asked for their opinion on the class-based design for a feebate system.

- Three participants thought this design was more fair for people who want to purchase larger cars since they could opt for the cleanest car in a class and obtain a rebate
- Two felt the class-based design made more sense but believed that it could potentially confuse car buyers; and
- One stated the design would make the purchase of light trucks such as SUVs popular, because unlike the first two designs, some SUVs could now receive rebates.

Overall Discussion:

Participants were then asked to summarize the advantages and disadvantages they saw with each system.

- Three participant believed the class-based system was fair but agreed that for certain higher emission vehicles, which are not charged a fee, a rebate should be withheld and given to the purchasers of more efficient cars; and
- One participant felt that the fees and rebates in the class-based system would not be equal, causing taxes to increase to sustain the program.

Comparative Discussion:

Next, participants were asked to consider all three systems and decide which one would work best for them.

Of the eight participants, five chose the class-based system, two of the five chose a combination of the class-based system and the step system, and one chose the step system.

- Those who preferred the class-based system indicated that this system was family-friendly, allowing people who want to purchase larger vehicles a chance to choose the cleanest car of its class and obtain a rebate;
- Those who preferred the step system stated that this system would balance the cashflow of rebates and fees best; and
- Those who preferred the class-based system in parallel with the step system indicated that the class-based system was the fairest design, and the step system would more effectively achieve a balance between fees and rebates without increasing taxes.

A general question arose as to whether people would ultimately purchase more fuel efficient cars.

- One participant indicated that if gas prices rise, people would buy more fuel efficient cars and everyone will receive a rebate, causing problems for the feebate systems;
- Two believed the rebates would encourage everyone to buy fuel efficient cars; and
- Two mentioned that not everyone can drive a fuel-efficient car, such as contractors.

An exemption for people who needed to purchase vehicles for business purposes was suggested.

- Four participants liked the idea; and
- Two disapproved, responding that an exemption would be taken advantage of and abused.

Visibility of Feebate Transaction:

Participants were then asked whether they preferred to receive a rebate directly at the time of purchase or have it sent to them later (within 60 days).

- Five participants answered that they preferred to receive the rebates directly, agreeing that it would be the most hassle-free method; and
- Two suggested that since the fees would be incorporated into the loans towards their total vehicle cost, rebates should also be deducted from the payments themselves, similar to a coupon.

Next, participants were asked how their spending would be impacted if they received their rebates directly at the time of purchase.

- Four participants stated that if they received the rebate when they purchased the vehicle, they would put the cash towards the down payment.

Closing:
Finally, participants were asked whether they approved of the name "feebates" for this type of program. Three participants disapproved of the name and two approved.

- One participant felt that the name was clever because it covered both aspects: fees and rebates;
- One liked the name but felt it needed explanation; and
- One did not like the name, feeling it would not be used by the general public.

EXPLORING RESPONSE TO FEEBATE SCHEMES IN CALIFORNIA:
FOCUS GROUP STUDY

Focus Group #7: Conducted in Sacramento, CA, August 25, 2009

FOCUS GROUP SUMMARY

Overview

The purpose of the focus group was for researchers to gain knowledge of potential consumer perceptions and response to feebates, a proposed policy that would charge a fee for the purchase of vehicles with higher greenhouse (GHG) emissions and provide a rebate for the purchase of vehicles with lower GHG emissions. Participant responses were explored in a focus group conducted on Tuesday, August 25, 2009 (6 PM to 8 PM) at the UC Davis Graduate School of Management in Sacramento, CA. The focus group participants included eight Sacramento residents who intended to purchase a car within the next five years or have purchased a new car in the past five years. A researcher with the Transportation Sustainability Research Center (TSRC) of the University of California, Berkeley facilitated the focus group discussion with researchers assisting and taking notes. This summary begins with the findings from the pre-focus group survey and continues with a summary of the focus group discussion.

Background Survey Results

At the beginning of the focus group, TSRC researchers administered a survey that explored the demographic attributes of focus group participants, general travel behaviors, and vehicle make/model information.

The following were the demographic attributes of focus group participants:

Table B 13: Demographic Attributes of Focus Group Participants (Group 7)

Gender	Marital Status	Age	Educational Level	Household Pre-tax Income
M	Married	41-55	Some College	$110K+
M	Married	41-55	Master's degree	$110K+
F	Widowed	56+	Master's degree	Decline to respond
M	Married	36-40	Some College	$50-$79.9K
F	Married	18-25	Decline to respond	Decline to respond
F	Single	41-55	Some graduate school	$110K+
F	Married	36-40	Some College	$50-$79.9K
M	Single	36-40	Master's degree	$50-$79.9K

Participants were also asked to provide their ethnicity.

- Four participants were White/Caucasian;
- Two were Asian;
- One was Black/African American; and
- One was Hispanic.

Participants were asked how many vehicles they had in their household.

- Four participants reported having one vehicle in their household;
- Three reported two vehicles in their household; and
- One indicated four cars in their household.

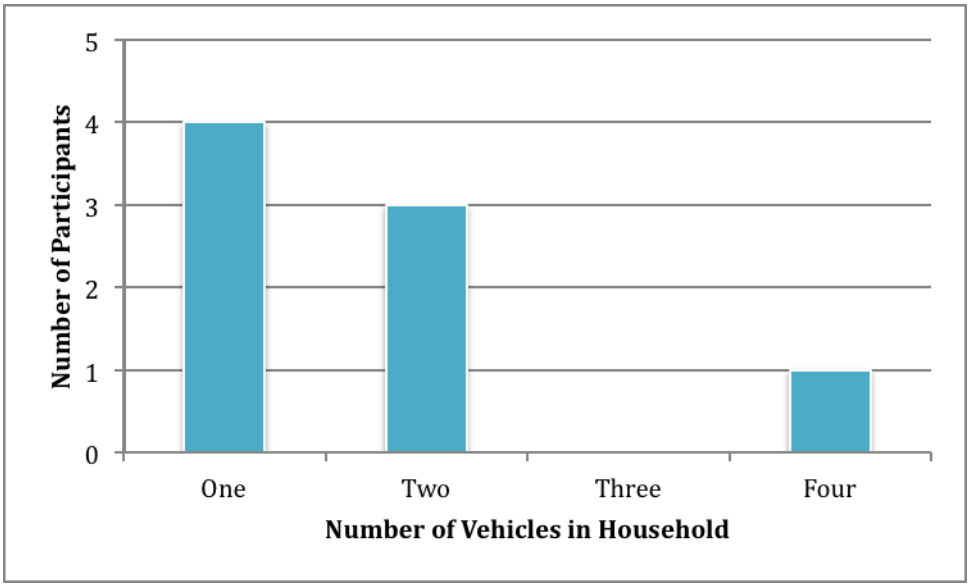


Figure B 7: Number of Vehicles in Participant Households (Group 7)

Participants were then asked if they anticipated purchasing a new car in the next five years.

- Seven participants indicated that they plan to purchase a new car; and
- One participant indicated that he does not plan to purchase a new car.

The survey also probed for an estimate of how many miles they drive annually.

- Five drive between 10,000-15,000 miles/year;
- Two drive between 20,000-25,000 miles/year; and
- One drives between 30,000-40,000 miles/year.

Participants also reported the average miles per gallon (MPG) for their vehicles.

- Seven vehicles were reported as under 20 MPG;
- Four vehicles were reported as 20-30 MPG;
- Two vehicle was reported as above 30 MPG; and
- One vehicle did not have its MPGs reported.

Next, the survey sought to find information on the types of vehicles the participants own.

Table B 14: Vehicles Owned by Focus Group Participants (Group 7)

Number of Vehicles in Household	Participant 1 Vehicle Make/Model			
4	Jeep Wrangler 1988 Used Harley Roadking 1996 New Harley Sporty 1997 Used Seabreau Motorhome 1999 Used			
Number of Vehicles in Household	**Participant 2 Vehicle Make/Model**	**Participant 3Vehicle Make/Model**	**Participant 4 Vehicle Make/Model**	
2	Ford F150 2009 New Jeep Grand Cherokee 2001 New	Toyota Matrix 2005 New Vehicle not specified	Dodge Magnum 2006 Used Dodge 1500 RAM 2005 Used	
Number of Vehicles in Household	**Participant 5 Vehicle Make/Model**	**Participant 6 Vehicle Make/Model**	**Participant 7 Vehicle Make/Model**	**Participant 8 Vehicle Make/Model**
1	Honda Pilot 2003 Used	Toyota Corolla 1995 Used	Dodge Caravan 2006 New	Nissan Altima 1999 New

Focus Group Discussion

After completing the pre-focus group survey, the moderator provided participants with a brief study overview and initiated the focus group discussion. The discussion began with a focus on vehicle purchase decision-making processes. Next, the moderator provided an introduction to the

Clean Car Incentive program including transaction and administration options. The moderator then prompted participants for their opinions on the concept of revenue neutrality, the program implementation schedule, and environmental perceptions. The focus group concluded with ideas for outreach to inform the public about the vehicle incentive program.

Car Purchasing

Participants were asked about their most recent vehicle purchase experience including how and why they purchased it.

Participants reported their top three considerations when purchasing a vehicle:

- Five participants considered vehicle body style;
- Five mentioned a good deal on purchase price or car payments;
- Three noted vehicle gas mileage;
- Three reported lifestyle considerations;
- Three stated space and vehicle comfort;
- Two mentioned mechanical vehicle reliability;
- Two noted powerful engine power;
- One preferred American cars; and
- One mentioned a desire to fix and modify vehicles as a hobby.

Next, participants were asked why they were considering purchasing a new car.

- Two participants desired a vehicle with better fuel economy;
- Two mentioned purchasing vehicles for family members;
- One was considering a vehicle that better fit her personal lifestyle;
- Another required a new vehicle for business purposes; and
- One was considering a vehicle with more options.

Next, participants were asked if they were aware of any government incentive programs.

- Two participants mentioned the Cash for Clunkers program. When asked for their opinion on the program, a majority of participants agreed that it was a method to stimulate the car industry and not specifically directed towards improving vehicle efficiency. Program flaws that were noted included: unclear definition of what cars are considered "clunkers," uninformed car dealers, administrative mismanagement for reimbursement distribution, and a too small financial incentive for the vehicle; and
- One participant noted the High Occupancy Vehicle (HOV) lane incentive for flexible fuel vehicles.

'Clean Car Incentive Program' Definition and Discussion

The participants were presented with a description of a potential program called the "Clean Car Incentive Program" and asked if they had any questions. All participants confirmed that they understood the program description.

Next, participants were asked for their opinions on the clean car incentive program.

- One participant saw this program as a monetary incentive to buy green;
- One stated that it will have adverse effects on the car industry;
- One mentioned that the program will discourage the purchase of new vehicles, while encouraging the purchase of used vehicles that do not have penalties;
- One disagreed with statement that GHG emissions come from vehicles and suggested that the government provide incentives for fuel producers; and
- One suggested that the program should address differences in vehicle type by classifying them.

Next, participants were asked whether they would prefer a single target value for all vehicles or different target values for different vehicle classes.

- One participant preferred the system of different target values for different vehicle classes but suggested that the government or manufacturers pay the fee rather than consumers;
- One reported that use of the different target values for different vehicle classes makes the program hypocritical because a truck with higher emissions might receive the same rebate as a car with lower emissions;
- One mentioned that he will likely be punished by this program since he requires a more powerful vehicle;
- One commented that this program will likely hurt American manufacturers since they make power vehicles; and
- One participant suggested having higher fees for luxury vehicles.

Next, participants were asked whether or not they believe this program is helpful to incentivize the purchase of cleaner new vehicle. None of the participants thought the program would be helpful.

- One participant responded that people with specific vehicle requirements will ignore the fees and people that don't have specific vehicle requirements will likely have an exemption (such as for low income). He added that the government should allow market forces, specifically high gas prices, drive demand for cleaner vehicles.

A discussion regarding the politics of the Cash for Clunkers program ensued and one participant stated that it was a clever way to transfer money to manufacturers without calling it a bailout and another believed that Toyota lobbyists encouraged the program since they would benefit the most.

The participants were then introduced to two different types of feebate designs: step and continuous. Several charts were presented to give the participants a visual aid to understand the different designs and the impact on fees and/or rebates.

After the moderator explained the step and continuous designs, all participants confirmed that they understood the designs.

Next, participants were asked for their opinion regarding the two designs for the feebate program.

- One participant was concerned that the designs do not take into account owner maintenance and home mechanic modifications to vehicles;
- Another preferred the step system over the continuous since it provides a range of mile per gallons (mpg) ratings, making it fairest to a wider consumer demographic; and
- One preferred the continuous system noting that the fees and rebates are more predictable than that of the step system.

Next, participants were asked how they felt if the transaction for the fee occurred between the government and the manufacturer (rather than the consumer and the manufacturer).

- One participant responded that it makes her less comfortable;
- Another responded that it makes him more comfortable; and
- One noted that consumers may still be paying for the fees without their knowledge.

Participants were then asked for their reactions to the system of fee and rebates.

- One participant explained that it seems that the government is incentivizing cleaner cars among manufacturers and consumers by simulating what naturally occurs when gas prices go up;
- One disagreed with the government implementing such a program without all the facts about greenhouse gases and global warming; and
- One mentioned that fuel options should also be considered since some fuels are cleaner than others.

Participants were asked what dollar amount of fee or rebate would make a difference in their purchasing decisions.

- One participant answered $1,000 or more;
- One answered 50% of the vehicle price;
- Another answered 75% of the down payment or $2,000; and
- One answered that the fee or rebate should be based on monthly payments, not the vehicle sticker price.

Three participants added a closing thought that it would be helpful to enhance public education regarding environmental issues to achieve a more effective program.

Administration and Transaction

Next, the moderator introduced a possible method of administering fees and rebates, including two options available for consumers to receive their rebates and one option to charge fees. Participants were then asked for their opinion on the proposed transaction methods. Overall, participants agreed that the administration and transaction process needs to be very transparent.

- Two participants preferred to sign a form that would reduce the price of the vehicle since this option does not involve paperwork;
- Two suggested a new option to receive the rebate savings through their income taxes;
- Two were skeptical of car dealer integrity saying that dealers may raise the price of the vehicle to offset the rebate;

- One did not think the dealers would raise the vehicle price because the program is government run and therefore would not affect the dealership. This participant preferred to incorporate the rebate into the vehicle price;
- One suggested a new option to sign a form and have the car buyer receive a check in the mail; and
- Another noted high government administrative costs for mailing checks and preferred to settle the rebates at the dealership.

Next, participants were asked how their spending would be impacted if they received a rebate.

- Two participants reported that they would apply a rebate towards vehicle payments instead of getting more options; and
- One participant stated that he would purchase the vehicle he desires and save the rebate money in the bank.

Revenue Neutrality

The participants were asked for their opinion on the idea of revenue neutrality where fees collected by the program would be used to pay for the rebates.

- Three participants explained that revenue neutrality is impossible since there will likely be more persons purchasing vehicles with a rebate. This would result in an increase in the fees, further reducing the purchase of dirtier vehicles and increasing the imbalance between fees and rebates;
- One noted that revenue neutrality seems like a fair concept; and
- One commented that this program will fund a clean vehicle manufacturer, likely Toyota, creating a monopoly.

A general question arose as to whether the program will inspire manufacturers to produce more efficient vehicles.

- One participant agreed that the program will inspire the production of cleaner vehicles; and
- One suggested that the government simply increase taxes on manufacturers that do not produce cleaner vehicles.

Next, participants were asked for their thoughts regarding the administration costs of the program.

- One participant commented that a revenue neutral program will have monitoring costs; and
- One mentioned that administrative costs will likely be covered by taxpayer dollars since revenue neutrality is impossible to achieve.

Participants were then prompted for their opinion regarding the Air Resources Board as the administrative agent for the program. Two participants agreed that the Air Resources Board is not an objective agency since it is influenced by lobbyists.

Implementation Schedule

Participants were then asked for their opinion on the frequency of public announcements regarding the program.

- Three mentioned the importance of program education to maintain an informed public; and
- One participant reported that in order to maintain revenue neutrality, the program should be announced at least once each year.

Next, participants were asked to consider how much time in advance they would want to know about program implementation.

- One participant stated six months to a year would be ideal;
- One mentioned a minimum of five years would allow for an optimal transition; and
- One stated two years considering automobile manufacturer transition time.

Environmental Perceptions

A general discussion regarding the impact of GHGs on the environment ensued. Given uncertainty about GHGs and climate change, all participants felt that the government should regulate fuel prices rather than consumer behavior.

Next, participants were asked whether they believe the government should allow automakers to sell "dirty vehicles." Participants expressed skepticism about the criteria defining "dirty."

Participants were asked whether or not they purchase items where they consider the impact on the environment.

- Two participants stated that they do not inconvenience themselves by considering the environment when purchasing products; and
- One participant mentioned that he recycles computer parts.

Information and Outreach

The participants were asked for their opinion on which entity or group (dealer, government, or other) they find most trustworthy for disseminating information about the fee or rebate for different vehicles

- The majority of participants preferred universities as a trustworthy agent; and
- One participant felt that people should formulate their own opinions based on the information they obtain on their own.

Next, participants were asked for their ideas to provide information about the program to the public.

- One participant felt that the Internet is the best means of disseminating information; and
- Another suggested creating an informational video or class with a reduction in the vehicle purchase price as an incentive for those who watch it.

Participants were then asked whether they approved of the name "clean car incentive program" for this type of program.

- Two participants mentioned that the term "clean car" is an ambiguous term that will likely not be understood by the general public.

Participants were then asked whether they approved of the name "feebates" as an alternative. All participants disapproved of "feebates" noting that the negative aspect, "fee," suggests a punishment.

EXPLORING RESPONSE TO FEEBATE SCHEMES IN CALIFORNIA:
FOCUS GROUP STUDY

Focus Group #8: Conducted in Oakland, CA, August 26, 2009

FOCUS GROUP SUMMARY

Overview

The purpose of the focus group was for researchers to gain knowledge of potential consumer perceptions and response to the Clean Car Incentive Program, a proposed policy that would charge a fee for the purchase of vehicles with higher greenhouse (GHG) emissions and provide a rebate for the purchase of vehicles with lower GHG emissions. Participant responses were explored in a focus group conducted on Wednesday, August 26, 2009 (6:00 PM to 8:00 PM) at the Oakland Main Library in Oakland, CA. The focus group participants included seven Bay Area residents who intended to purchase a car within the next five years or have purchased a new car in the past five years. A researcher with the Transportation Sustainability Research Center (TSRC) of the University of California, Berkeley facilitated the focus group discussion with researchers assisting and taking notes. This summary begins with the findings from the pre-focus group survey and continues with a summary of the focus group discussion.

Background Survey Results

At the beginning of the focus group, TSRC researchers administered a survey that explored the demographic attributes of focus group participants, general travel behaviors, and vehicle make/model information.

The following were the demographic attributes of focus group participants:

Table B 15: Demographic Attributes of Focus Group Participants (Group 8)

Gender	Marital Status	Age	Educational Level	Household Pre-tax Income
M	Single	18-25	Bachelor's degree	$20-$49.9K
M	Single	18-25	Some College	$50-$79.9K
M	Single	26-30	Some College	$20-$49.9K
F	Married	18-25	Associate's degree	$50-$79.9K
F	Married	41-55	Decline to respond	Decline to respond
F	Married	41-55	Bachelor's degree	$80-$109.9K
F	Single	18-25	Some College	$20-$49.9K

Participants were also asked to provide their ethnicity.

- Two participants were Black/African American;
- Two were Asian/Asian American;
- One was Hispanic;
- One was White/Caucasian; and
- One was Filipino.

Participants were asked how many vehicles they had in their household:

- Two participants reported having one vehicle in their household;
- Four noted having two vehicles in their household; and
- One reported having three vehicles in their household.

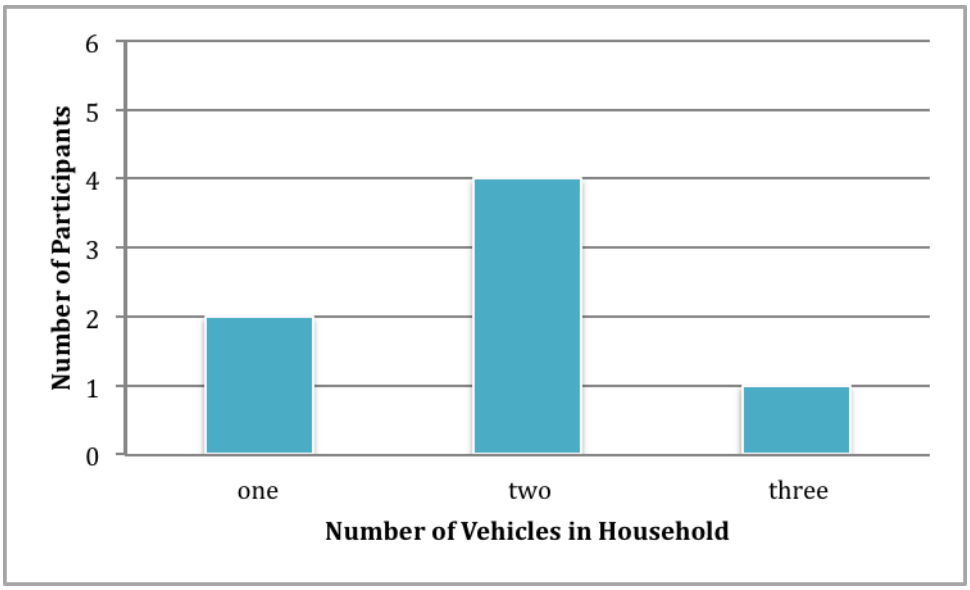


Figure B 8: Number of Vehicles in Participant Households (Group 8)

Participants were then asked if they anticipate purchasing a new car in the next five years.

- Six participants indicated that they plan to purchase a new car in the next five years; and
- One did not plan to purchase a new car in the next five years.

The survey then probed for an estimate of how many miles they drive annually.

- Three participants drive under 10,000 miles/year;
- Three drive between 10,000-15,000 miles/year; and
- One drives over 20,000 miles/year.

Participants also reported the average miles per gallon (MPG) for their vehicles.

- Two vehicles were reported as 11-20 MPG;
- Nine vehicles were reported as 21-30 MPG;
- One vehicle as 31-40 MPG; and
- MPG for one vehicle was not reported.

Next, the survey sought to find information on the types of vehicles the participants own.

Table B 16: Vehicles Owned by Focus Group Participants (Group 8)

Number of Vehicles in Household	Participant 1 Vehicle Make/Model			
3	Nissan Pathfinder '04 New Toyota Tacoma '07 New Toyota Camry '08 New			
Number of Vehicles in Household	**Participant 2 Vehicle Make/Model**	**Participant 3 Vehicle Make/Model**	**Participant 4 Vehicle Make/Model**	**Participant 5 Vehicle Make/Model**
2	Toyota Camry '04 New Honda Odyssey '95 Used	Volkswagen Jetta '97 Used Toyota Celica '95 Used	Honda Element '09 New Chrysler LeBaron Used	Chrysler 300 '04 New Dodge Ram '00 New
Number of Vehicles in Household	**Participant 6 Vehicle Make/Model**	**Participant 7 Vehicle Make/Model**		
1	Buick Century '99 Used	Kia Spectra '07 New		

Focus Group Discussion

After completing the pre-focus group survey, the moderator provided participants with a brief study overview and initiated the focus group discussion. The discussion began with a focus on vehicle purchase decision-making processes. Next, the moderator provided an introduction to the Clean Car Incentive Program, including design possibilities, and transaction options. Participants were then asked to provide their perceptions on the environment. The focus group concluded with thoughts on information and outreach for the vehicle incentive program.

Car Purchasing

Participants were asked about their most recent vehicle purchase experience including how and why they purchased it.

Participants reported their top three considerations when purchasing a vehicle:

- Five participants reported excellent gas mileage;
- Four indicated vehicle size;
- Four considered the vehicle price;
- Four wanted a vehicle that fit their lifestyle;
- Two mentioned vehicle appearance;
- Two answered the vehicle reputation;
- Two desired low maintenance/functionality;
- One indicated safety; and
- One reported performance in terms of the "feel" of the vehicle when it is driven.

Participants were then asked how gas prices affected their vehicle purchase decisions.

- Two participants did not consider gas prices when purchasing their vehicle because they felt gasoline was a necessity;
- Two replied that they were prepared for rising gas prices when they purchased their vehicles;
- One considered rising gas prices in her vehicle purchase decision and sought a vehicle with good mileage;
- One responded that her next vehicle purchase will be a more efficient vehicle than her current vehicle because gas prices are higher now; and
- One indicated that she will wait until the price of gas goes down to purchase a truck.

Next, participants were asked if they were aware of any government incentive programs for vehicle purchases.

- Two participants heard of a program that allows hybrid vehicles in high-occupancy vehicle (HOV) lanes; and
- One indicated that she purchased her last vehicle through the "Cash for Clunkers" program.

'Clean Car Incentive Program' Definition and Discussion

The participants were presented with a description of a potential program called the "Clean Car Incentive Program" and asked if they had any questions.

- Two participants asked whether the fees would be charged at the point of purchase or included in the monthly car payments;
- One inquired if the program was affiliated with a carbon tax;
- Another asked if the program applied to used cars;
- One noted that a hybrid vehicle's battery life deteriorates the vehicle performance and asked whether the program's vehicle rating reflected overall lifecycle performance; and
- One asked whether the city or highway MPG would be used to determine the fee or rebate.

After the moderator explained the concepts of the program, all participants confirmed that they understood the definition of the Clean Car Incentive Program.

Participants were asked for their opinion on this type of program.

- Four participants felt that the fees should be targeted at the manufactures instead of consumers;
- Two did not like that the program penalized people who favored larger vehicles;
- Two liked the program, stating that consumer's desire for rebates will increase the demand for hybrid vehicles and transform the car industry to become more environmentally friendly;
- One stated that the program should extend to all of the United States; and
- Another agreed that the program would alter the demand for hybrid vehicles but believes more radical policies should be implemented to reduce GHG emissions.

Next, participants were asked whether they would prefer a single target value for all vehicles or different target values for different vehicle classes.

- Three participants supported different target values for different vehicle classes because this accommodates various consumer lifestyles;
- One suggested a separate classification for commercial and government-owned vehicles; and
- Another suggested adding a class for motorcycles and off-road vehicles.

Participants were then asked their opinions on businesses receiving an exemption from the program for their vehicles.

- One participant did not like this option, stating that it would be unfair to other consumers if businesses are rewarded for buying larger vehicles used to generate income; and
- Another answered that because fees will be difficult for start-up businesses, small businesses should receive an exemption.

The participants were then introduced to two different types of Clean Car Incentive designs: the step and continuous. Several charts were presented to give the participants a visual aid to understand the different designs and the impact on fees and/or rebates. After the moderator explained the step and continuous designs, all participants confirmed that they understood the designs.

Next, participants were asked for their opinion regarding the two designs for the feebate program.

- Two participants felt that the continuous design was fairer than the step design because costs are based on actual miles per gallon for every vehicle;
- One felt that the fees for the continuous design are too harsh;
- One participant stated that manufacturers will manipulate the step design to qualify their vehicles in a different step than they should rightfully be; and
- One replied that the step design will create a consumer bias that penalizes auto dealers with larger vehicles.

Participants were asked what dollar amount of fee or rebate would make a difference in their purchasing decisions.

- Two participants stated that a rebate over $1,000 would motivate them to purchase a different vehicle;
- One answered that he will purchase a vehicle with a rebate of any amount;
- One reported a fee over $500 would cause her not to purchase that vehicle;
- One stated that a fee over $1,000 would cause her not to purchase that vehicle; and
- One replied that he is willing to pay a fee of any amount for his dream car, but he would not pay a fee for any other vehicle.

Participants were then asked to discuss any other programs they have heard of that either reward or penalize consumers for the purchase of certain vehicles. Participants discussed the "Cash for Clunkers" program.

- One participant stated that her reason for purchasing a new vehicle was because the trade-in value she received through the “Cash for Clunkers” program was greater than the cost of the old vehicle;
- One participant expressed regret that the program was limited to one car per family;
- One felt the program provided good deals which benefited consumers; and
- One stated that the program was beneficial to the auto industry only, and more radical programs are required to make a difference to the environment.

Administration and Transaction

Next, the moderator introduced a possible method of administering fees and rebates, including two options available for consumers to receive their rebates and one option to charge fees. Participants were asked for their opinion on the proposed transaction methods.

- The majority of participants favored having the fee added to their vehicle costs at the time of purchase because there will be additional administrative costs to process a fee charged after the vehicle purchase;
- Two favored receiving a rebate at the time of purchase because they liked gaining an immediate benefit; and
- Two liked the option of receiving a rebate by mail because it will reduce the stress of additional paperwork at the time of purchase, and the check received can be used by the buyers for whatever purpose they choose.

Participants were then asked how they felt about fees and rebates applying to manufacturers instead of consumers.

- One participant liked the idea, stating that such a program will motivate automakers to produce cleaner cars; and
- A consensus was reached when all the participants agreed that the automobile industry will play a role in setting program policies and eventually the consumers will pay more than the automakers.

Participants were also asked what they would do if they received a rebate when they purchased a new purchase.

- Three participants stated that they will spend the rebate on more vehicle options, such as car accessories;
- Two suggested that the money go towards the down payment of the vehicle purchase;
- One suggested that the money would be saved for another vehicle in the future;
- One felt that people will spend the money on vacation or paying other bills; and
- One indicated that she will save the money in the bank.

Revenue Neutrality

The participants were asked for their opinion on the idea of revenue neutrality where fees collected by the program would be used to pay for the rebates.

- Three participants indicated that the program will cause tension among consumers because those who paid fees will feel that they are unfairly providing for those receiving rebates; and
- One felt that this method makes sense but expressed concern that the fees will not be enough to pay for the rebates.

Participants were then asked how they felt about the program possibly adjusting rebate and fee amounts on an annual basis to address any imbalance in rebates and fees.

- Three participants suggested that an independent body, not the government or automobile industry, be established to oversee adjustments to fees and rebates to keep the program revenue neutral;
- Two suggested that automobile manufacturers pay fees to maintain revenue neutrality;
- One indicated that she is uncomfortable with any entity adjusting the fees and rebates to maintain revenue neutrality; and

- One liked a system to adjust the fees and rebates, stating that the program requires administration by persons that are knowledgeable about fuel-efficient technologies and can create a high standard for environmentally-friendly vehicles.

Implementation Schedule

Participants were asked how far in advance they wanted to be made aware of the program if the Clean Car Incentive system was implemented.

- Two participants reported at least one and a half years to allow both consumers and automobile manufacturers to adjust;
- Two stated six to nine months; and
- One indicated three to six months.

Environmental Perceptions

Participants were asked if they believe global warming is real and due to human activity.

- Three participants believe that global warming is real and due to human activity;
- Two believe that global warming is real and due to natural causes, with human activity responsible for an insignificant amount; and
- One has heard about global warming but stated that she needs more information to understand it.

Participants were also asked whether they believe global warming is a threat.

- Three participants stated that global warming is a threat, and humans are responsible for taking care of the planet; and
- One answered that global warming is a threat that cannot be stopped, and humans can only slow down its occurrence.

Participants were then asked whether they believe government should be involved in regulating vehicles and fuels.

- Three participants answered yes;
- Two replied that the government should be involved only if the regulators are not associated with the oil companies; and
- One was unsure.

Participants were asked whether they believe the government should allow automakers to sell “dirty vehicles.”

- Three participants stated that the government should penalize consumers who purchase "dirty cars;"

- Two believe the government should not allow the automobile manufacturers to sell "dirty cars;" and
- One answered that it was too late to make a change because so many "dirty cars" have been sold already.

Next, participants were asked whether or not they purchase items where they consider the impact on the environment.

- Three participants purchase environmental items only when it is convenient; and
- One participant purchases recycled paper over non-recycled because she wants to help reduce deforestation.

Participants were then questioned regarding the price difference between the item they purchase when considering the environment and a similar item they did not to purchase.

- One participant reported a price difference of 10 percent or less;
- Another stated 10-20 percent; and
- One answered less than a dollar.

Information and Outreach

The participants were asked for their opinion on which entity or group (dealer, government, or other) they find most trustworthy for disseminating information about the fee or rebate for different vehicles.

- Two participants trust a group that allows consumers to view information about its members because this allows the consumers to better understand the group's intentions;
- Two stated that they would trust an independent body more than a government agency; and
- Two would trust an entity that includes a variety of researchers and scientists.

Participants were also asked how they thought the public should receive information about the Clean Car Incentive program.

- Five participants noted the Internet as the best way to receive information because it provides large amounts of information along with opinions;
- One added that newspapers should also provide information because some older adults do not access the Internet;
- One suggested an online news site;
- Another proposed mailing;
- One suggested posters; and
- One suggested billboards.

Participants were then asked whether they approved of the name “clean car incentive program” for this type of program.

- Three participants liked the name because it sounds straight forward about the intentions of the program.

Participants were then asked whether they approved of the name “feebates” as an alternative name for the program.

- Three participants reacted negatively to the name, stating that the "fee" in the name sounds like the program will make people pay money.

Participants were asked for any final comments on the discussion.

- Two participants answered that the government should emphasize development of environmentally-friendly technology and use more of the technology to benefit the people; and
- One stated that decisions about the program should be decided by citizens through elections.

EXPLORING RESPONSE TO FEEBATE SCHEMES IN CALIFORNIA:
FOCUS GROUP STUDY

Focus Group #9: Conducted in El Monte, CA, September 1, 2009

FOCUS GROUP SUMMARY

Overview

The purpose of the focus group was for researchers to gain knowledge of potential consumer perceptions and response to the Clean Car Incentive Program, a proposed policy that would charge a fee for the purchase of vehicles with higher greenhouse (GHG) emissions and provide a rebate for the purchase of vehicles with lower GHG emissions. Participant responses were explored in a focus group conducted on Tuesday, September 1, 2009 (6:00 PM to 8:00 PM) at the El Monte Community Center in El Monte, CA. The focus group participants included seven Los Angeles residents who intended to purchase a car within the next five years or have purchased a new car in the past five years. A researcher with the Transportation Sustainability Research Center (TSRC) of the University of California, Berkeley facilitated the focus group discussion with researchers assisting and taking notes. This summary begins with the findings from the pre-focus group survey and continues with a summary of the focus group discussion.

Background Survey Results

At the beginning of the focus group, TSRC researchers administered a survey that explored the demographic attributes of focus group participants, general travel behaviors, and vehicle make/model information.

The following were the demographic attributes of focus group participants.

Table B 17: Demographic Attributes of Focus Group Participants (Group 9)

Gender	Marital Status	Age	Educational Level	Household Pre-tax Income
M	Single	41-55	Bachelor's degree	$50-$79.9K
M	Single	26-30	Decline to respond	Decline to respond
M	Single	31-35	Master's degree	$50-$79.9K
M	Married	56+	Decline to respond	Decline to respond
F	Married	26-30	Bachelor's degree	$50-$79.9K
F	Married	41-55	Master's degree	$110K+
F	Single	18-25	Some College	$20-$49.9K

Participants were also asked to provide their ethnicity.

- Three participants were Black/African American;
- Two were Asian/Asian American;
- One was Southeast Asian; and
- One was Hispanic and White.

Participants were asked how many vehicles they had in their household:

- Two participants reported having one vehicle in their household;
- One noted having two vehicles in their household;
- Three reported having three vehicles in their household; and
- One stated having four vehicles in their household.

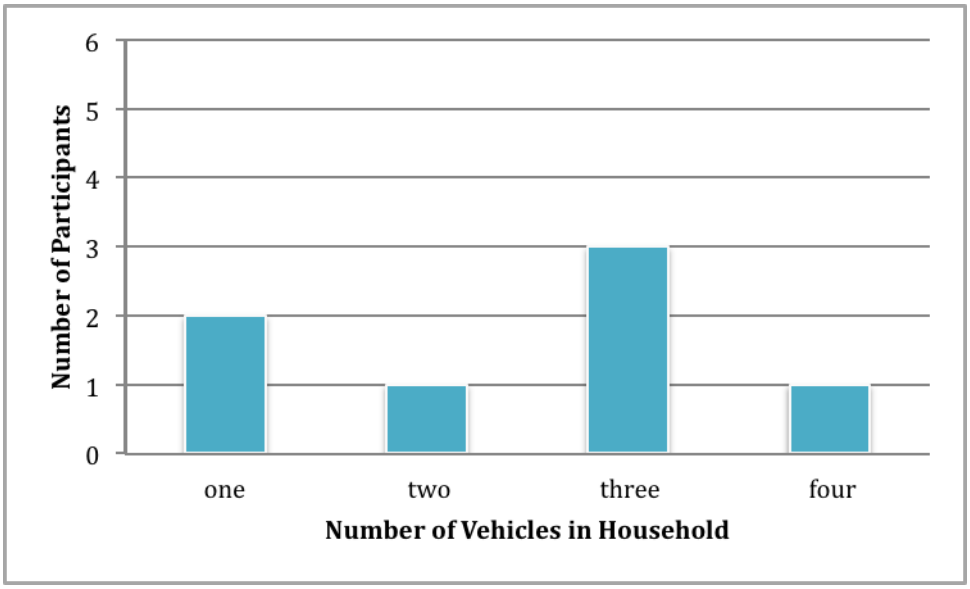


Figure B 9: Number of Vehicles in Participant Households (Group 9)

Participants were then asked if they anticipate purchasing a new car in the next five years.

- All participants plan to purchase a new car in the next five years.

The survey then probed for an estimate of how many miles they drive annually.

- One participant drives under 10,000 miles/year;
- Five drive between 10,000-15,000 miles/year; and
- One drives over 15,000 miles/year.

Participants also reported the average miles per gallon (MPG) for their vehicles.

- Six vehicles were reported as 11-20 MPG;
- Eight vehicles as 21-30 MPG;

- One vehicle was reported as above 41 MPG; and
- MPG for two vehicles was not reported.

Next, the survey sought to find information on the types of vehicles the participants own.

Table B 18: Vehicles Owned by Focus Group Participants (Group 9)

Number of Vehicles in Household	Participant 1 Vehicle Make/Model		
4	Toyota Corolla '09 Used Toyota Camry Hybrid '07 New Toyota Prius '04 New Volvo 240DL '86 New		
Number of Vehicles in Household	**Participant 2 Vehicle Make/Model**	**Participant 3 Vehicle Make/Model**	**Participant 4 Vehicle Make/Model**
3	Toyota 4Runner '04 New Audi A4 '02 New Audi A4 '00 New	Mini Cooper S '07 New BMW 345 Li '02 Used Nissan Maxima '98 New	Acura Integra '95 Used Ford Ranger '95 Used Toyota Tacoma '99 Used
Number of Vehicles in Household	**Participant 5 Vehicle Make/Model**		
2	Ford Mustang '00 New Cadillac CTS '07 New		
Number of Vehicles in Household	**Participant 6 Vehicle Make/Model**	**Participant 7 Vehicle Make/Model**	
1	Mazda 929 '92 Used	Chevrolet Cavalier '04 New	

Focus Group Discussion

After completing the pre-focus group survey, the moderator provided participants with a brief study overview and initiated the focus group discussion. The discussion began with a focus on vehicle purchase decision-making processes. The moderator provided an introduction to the Clean Car Incentive Program, including design possibilities, and transaction options. Participants were then asked to provide their perceptions on the environment. The focus group concluded with thoughts on information and outreach for the vehicle incentive program.

Car Purchasing

Participants were asked about their most recent vehicle purchase experience including how and why they purchased it.

- Five participants reported high gas mileage was important;
- Two answered the size of the vehicle;
- Two mentioned the appearance of the vehicle;
- Two desired low maintenance;
- One considered vehicle price;
- One stated good features in terms of technology;
- One replied the vehicle's reputation; and
- One stated the safety of the vehicle.

Participants were also asked how gas prices affected their vehicle purchase decisions.

- Two participants indicated that they purchased fuel efficient cars to lower their gas costs; and
- Two stated that gas prices had no effect on their vehicle purchase decisions.

Next, participants were questioned on the impact of incentive programs on their vehicle purchase decisions.

- None of the participants were offered incentives when they purchased their vehicles.
- One mentioned that she would have participated in the "Cash for Clunkers" Program if her vehicle had met the qualifications.

'Clean Car Incentive Program' Definition and Discussion

The participants were presented with a description of a potential program called the "Clean Car Incentive Program" and asked if they had any questions. All participants confirmed that they understood the program description.

Next, participants were asked for their opinions on the clean car incentive program.

- Two participants stated that the automobile manufacturers should be held accountable for collecting fees and distributing rebates because they will compete to develop efficient vehicles to attract consumers;

- One felt that the program is unfair to consumers who need to purchase larger, less efficient vehicles;
- One indicated that the program is redundant because the government already establishes a fuel efficiency standard;
- One replied that the program will be unsuccessful in reducing GHG emissions, believing that the amount of GHGs produced by vehicles is not always proportional to miles per gallon;
- One suggested that vehicles that use alternative energy, such as electric or natural gas, receive a rebate;
- Another answered that he will consider purchasing one heavy duty vehicle to meet his business needs and one fuel efficient vehicle; and
- One responded that the program will not make a difference to his vehicle purchase decision unless the fee or rebate is unusually large.

The participants were then introduced to two different types of Clean Car Incentive designs: step and continuous. Several charts were presented to give the participants a visual aid to understand the different designs and the impact on fees and/or rebates.

After the moderator explained the step and continuous designs, all participants confirmed that they understood the designs.

Next, participants were asked for their opinion regarding the two designs for the feebate program.

- Two participants answered that neither of the designs would affect consumer purchase decisions because the monetary incentives and disincentives are too small; and
- One stated that the rebate is insignificant because the dealers and buyers will negotiate the vehicle price to fit their needs in such a way that the total vehicle cost does not reflect its fuel efficiency.

Next, participants were asked how much of a fee or rebate would make a difference to their vehicle purchase.

- Two participants reported $2,000-3,000;
- Two answered $2,000; and
- One stated $5,000.

Participants were also asked whether they thought the program would make cleaner vehicles more affordable.

- One participant did not think so because the monetary incentives for cleaner vehicles are too small; and
- Another did not think so because fuel-efficient vehicles require greater technological development that might raise the vehicle price.

Participants were then asked to discuss any other programs they have heard of that either reward or penalize consumers for the purchase of certain vehicles.

- One participant heard of the "Cash for Clunkers" Program and thought it offered good deals that encouraged ownership of fuel-efficient cars; and

- Another heard of a program in which buyers who purchased certain hybrid vehicles received a tax credit.

Administration and Transaction

Next, the moderator introduced a possible method of administering fees and rebates, including two options available for consumers to receive their rebates and one option to charge fees. Participants were then asked for their opinion on the proposed transaction methods.

- Two participants liked the rebate being taken off the price of the vehicle at the time of purchase.

Participants were then asked how they felt about fees and rebates applying to manufacturers instead of consumers.

- One participant did not like the idea, believing that consumers should be part of the process;
- One answered that the program will be harder to enforce because the manufacturers will attempt to manipulate transactions for their financial benefit;
- Another stated that if the fees and rebates applied to manufacturers, all transactions should be made visible to the consumers; and
- Another replied that the process will cause manufacturers to create more fuel-efficient cars, but the required technology will cause the cars to become more expensive for consumers.

Participants were also asked how they would prefer to receive rebates.

- Three participants agreed that they preferred to receive a reduction in their vehicle price; and
- One suggested that a possible incentive for having the rebate is a reduction in the vehicle cost, resulting in a reduced sales tax.

Next, participants were asked how their spending would be impacted if they received a rebate.

- One participant would put the rebate towards the down payment of the vehicle;
- One would spend the rebate on a need at that time, such as paying a bill;
- Another would upgrade the vehicle they purchase; and
- One would save the rebate money in the bank.

Next, participants were asked if they would still choose the same vehicle if they received the rebate separately.

- Two participants would choose the same vehicle; and
- Two wanted a guarantee that the government would send the rebate in the specified time period.

Revenue Neutrality
Participants were asked for their opinions on the idea of revenue neutrality where fees collected by the program would be used to pay for the rebates.

- Two participants stated that consumers will continue to buy less fuel-efficient cars because the program's incentives are not large enough, resulting in excess revenue; and
- One felt that revenue neutrality is ideal to maintain the program, but the purpose of the program to encourage more fuel-efficient car purchases will be defeated if the fees do not outweigh the rebates.

Participants were then asked how they felt about the program adjusting rebate and fee amounts on an annual basis to maintain revenue neutrality.

- Two participants liked the idea, adding that the program should announce the maximum rebate consumers can receive;
- One stated that she will lose the incentive to purchase a more fuel-efficient vehicle, if the rebate amounts are decreased; and
- One indicated that fees and rebates should apply to manufacturers because manufacturers can adjust the program's treasury by controlling the amount of fuel efficient or less fuel efficient vehicles they produce.

Implementation Schedule

Participants were asked how far in advance they wanted to be alerted to changes in the program's fees or rebates.

- Two participants would like to be made aware at the time of purchase; and
- Two would like a website with daily updates.

Participants were also asked if they would accelerate the timing of their vehicle purchase to take advantage of a limited time rebate.

- One participant would accelerate the timing of a vehicle purchase; and
- One would accelerate the timing of a vehicle purchase if the rebate was about $4,500.

Environmental Perceptions

Participants were asked if they believe global warming is real and due to human activity.

- Three participants believe global warming is real and due to human activity.

Participants were also asked whether they believe global warming is a threat.

- Two participants believe global warming is a threat because they trust the scientists.

Participants were then asked whether they believe government should be involved in regulating vehicles and fuels.

- One participant indicated that more government enforcement for GHG emission standards is needed; and
- One stated that the government should require the automobile manufacturers to create more fuel-efficient vehicles.

Next, participants were asked whether or not they purchase items where they consider the impact on the environment.

- Two participants felt that purchasing environmentally-friendly items on a regular basis has an insignificant impact on the environment and that large, global changes in spending are required to combat global warming; and
- One stated that she will purchase items that have a lower impact on the environment, if the quality remains the same as the less environmentally-friendly item.

Information and Outreach

Next, participants were asked how they thought the public should receive information about the Clean Car Incentive program.

- All participants agreed radio was a reliable source of information;
- Four answered television;
- One mentioned automobile dealers;
- One stated the Internet;
- One indicated newspapers; and
- One replied automobile magazines.

Participants were also asked their opinion on the name "feebates."

- Two participants liked the name because it combines the term "fees" with "rebates;"
- Two felt the name could become part of everyday language; and
- One felt the name generates interest in the program.

Participants were then asked how they felt about the name: "clean car incentive program."

- One participant felt the name was too long;
- One did not like the name, stating that it sounds "governmental," which suggests a hidden agenda; and
- One felt the name is clearer about its intentions than the name "feebates."

Participants were then asked for any final comments regarding information and outreach.

- One participant stated that the government should educate consumers on other environmental topics in addition to the relationship between vehicles and GHGs, because the general public can only be moved to combat global warming if they have more proof that it is occurring.

EXPLORING RESPONSE TO FEEBATE SCHEMES IN CALIFORNIA:
FOCUS GROUP STUDY

Focus Group #10: Conducted in San Diego, CA, September 2, 2009

FOCUS GROUP SUMMARY

Overview

The purpose of the focus group was for researchers to gain knowledge of potential consumer perceptions and response to feebates, a proposed policy that would charge a fee for the purchase of vehicles with higher greenhouse (GHG) emissions and provide a rebate for the purchase of vehicles with lower GHG emissions. Participant responses were explored in a focus group conducted on Wednesday, September 2, 2009 (5:30 PM to 7:30 PM) at the San Diego Central Library in San Diego, CA. The focus group participants included eight San Diego residents who intended to purchase a car within the next five years or have purchased a new car in the past five years. A researcher with the Transportation Sustainability Research Center (TSRC) of the University of California, Berkeley facilitated the focus group discussion with researchers assisting and taking notes. This summary begins with the findings from the pre-focus group survey and continues with a summary of the focus group discussion.

Background Survey Results

At the beginning of the focus group, TSRC researchers administered a survey that explored the demographic attributes of focus group participants, general travel behaviors, and vehicle make/model information.

The following were the demographic attributes of focus group participants:

Table B 19: Demographic Attributes of Focus Group Participants (Group 10)

Gender	Marital Status	Age	Educational Level	Household Pre-tax Income
F	Married	56+	Master's degree	Decline to respond
F	Single	18-25	Decline to respond	Decline to respond
F	Married	41-55	Associate's degree	$110K+
M	Single	36-40	Bachelor's degree	$50-$79.9K
F	Married	26-30	Bachelor's degree	$80-$109.9K
M	Married	41-55	Bachelor's degree	$50-$79.9K
F	Single	31-35	Some College	$20-$49.9K
M	Single	18-25	Bachelor's degree	$50-$79.9K

Participants were also asked to provide their ethnicity.

- Six participants were White/Caucasian;
- One was Hispanic; and
- One was Filipino.

Participants were asked how many vehicles they had in their household.

- Six participants reported having two vehicles in their household;
- One reported one vehicle in their household; and
- One indicated three cars in their household.

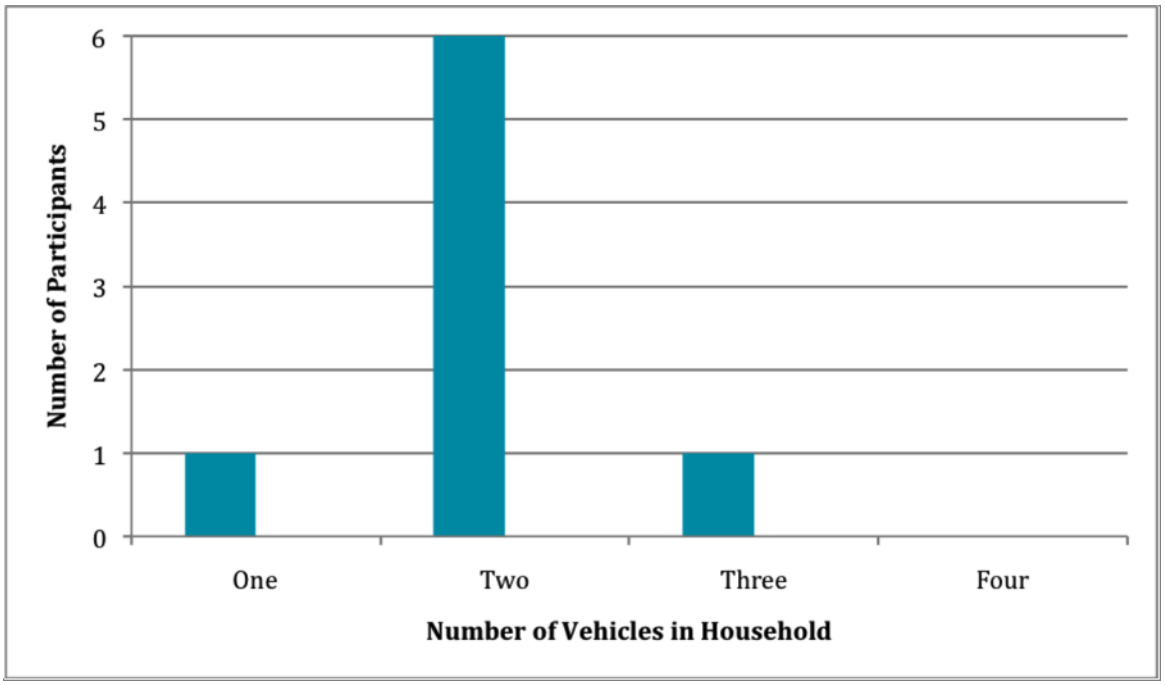


Figure B 10: Number of Vehicles in Participant Households (Group 10)

Participants were then asked if they anticipated purchasing a new car in the next five years.

- Seven participants indicated that they plan to purchase a new car; and
- One participant indicated that she does not plan to purchase a new car.

The survey also probed for an estimate of how many miles they drive annually.

- One drives less than 10,0000 miles/year;
- Four drive between 10,000-15,000 miles/year;
- Two drive between 20,000-25,000 miles/year; and
- One drives between 30,000-40,000 miles/year.

The survey also probed participants for their average miles per gallon (MPG) per vehicle.

- Seven vehicles were reported as 21-30 MPG;
- Six vehicles as 11-20 MPG; and
- Three vehicles did not specify MPG.

Next, the survey sought to find information on the types of vehicles the participants own.

Table B 20: Vehicles Owned by Focus Group Participants (Group 10)

Number of Vehicles in Household	Participant 1 Vehicle Make/Model				
3	Ford Windstar 1998 Used Honda Accord 2003 New Nissan Sentra 1994 New				
Number of Vehicles in Household	**Participant 2 Vehicle Make/Model**	**Participant 3 Vehicle Make/Model**	**Participant 4 Vehicle Make/Model**	**Participant 5 Vehicle Make/Model**	**Participant 6 Vehicle Make/Model**
2	Buick Rendezvous 2002 New Honda Accord 2003 New	Nissan Altima 1998 Used Vehicle not specified	Mercedes C240 2003 Used Ford F-150 2008 New	Volvo X90 2005 Used Chevrolet Tahoe 2000 New	Nissan Maxima 2002 Used Vehicle not specified
	Participant 7 Vehicle Make/Model				
	Honda Civic 2004 New Subaru Impreza WRX 2004 Used				
Number of Vehicles in Household	**Participant 8 Vehicle Make/Model**				
1	Toyota Tacoma 2005 Used				

Focus Group Discussion

After completing the pre-focus group survey, the moderator provided participants with a brief study overview and initiated the focus group discussion. The discussion began with a focus on vehicle purchase decision-making processes. Next, the moderator provided an introduction to the Clean Car Incentive program including transaction and administration options. The moderator then prompted participants for their opinions on the concept of revenue neutrality, the program implementation schedule, and environmental perceptions. The focus group concluded with ideas for outreach to inform the public about the vehicle incentive program.

Car Purchasing

Participants were asked about their most recent vehicle purchase experience including how and why they purchased it.

Participants reported their top three considerations when purchasing a vehicle:

- Four participants noted vehicle gas mileage;
- Four stated space and vehicle size;
- Two considered vehicle safety;
- Two mentioned vehicle reliability;
- One considered vehicle body style;
- One mentioned a good deal on purchase price;
- One reported lifestyle considerations;
- One mentioned vehicle warranty;
- One preferred American cars; and
- One preferred Japanese and German cars.

Next, participants were asked why they were considering purchasing a new car.

- Two participants desired a vehicle with better fuel economy;
- Two mentioned purchasing vehicles for family members;
- One was considering a vehicle that better fit her personal lifestyle;
- Another required a new vehicle for business purposes; and
- One was considering a vehicle with more options.

Next, participants were asked if they considered or were aware of any government incentive programs.

- One mentioned the "Cash for Clunkers" program but noted that he would like the program expanded to include used vehicles;
- One noted a California incentive program that offers $1,000 for vehicles that do not pass the smog test; and
- One noted incentives for purchasing a hybrid vehicle.

Clean Car Incentive Program' Definition and Discussion

The participants were presented with a description of a potential program called the "Clean Car Incentive Program" and asked if they had any questions. Participants asked a few questions.

- One participant was unclear as to when the fees or rebates would be applied;
- One was nclear about who would have to pay a fee; and
- One questioned how much the fee would be.

Next, participants were asked for their opinions on the clean car incentive program.

- Two participants thought imposing fees was unfair. One stated that fees should only be applied t manufacturers not consumers;
- Two thought rebates were a good idea, but fees would be unfair to those who required larger vehicles;
- One mentioned that the fee was unfair to people that like fast vehicles and noted that he would purchase a used vehicle instead of a new one; and
- One suggested that the program was a way for California to implement their own stimulus plan by encouraging consumers to purchase more vehicles.

Participants were then asked what fee or rebate amount would impact their vehicle purchasing decision.

- Two individuals agreed that they would purchase the vehicle they needed to fit their lifestyles, noting that $500 or $1,000 would not be enough to influence their decisions;
- Two noted that the rebate should be $1,000 or more;
- One stated that she would purchase a cleaner vehicle regardless of the fee or rebate;
- One noted that her decision to purchase a cleaner vehicle would be based on long-term savings, not an upfront, one-time incentive. She stated that an incentive might influence the vehicle make and model she chose, but it would not influence whether she would purchase a cleaner vehicle in the first place;
- One noted that a $2,500 rebate would influence his decision; and
- One noted that the rebate had to be over $2,500.

Next, a discussion on program exceptions (i.e., for businesses, large families, etc.) ensued.

- Two suggested that defining the allowable exemptions could be difficult. They thought buyers might lie about requiring an exemption to avoid the fee, and the program would then cost more money to manage; and
- One participant agreed with allowing exceptions for individuals that require larger vehicles.

A discussion regarding the cost of "cleaner" vehicles ensued.

- One participant suggested the cost of purchasing a hybrid versus a non-hybrid was considerably more, and it didn't make sense for her lifestyle because she did not drive a lot;

- One participant noted that she also compared the prices of hybrids and conventional vehicles and found that a hybrid Maxima was considerably more, so she purchased the conventional Maxima; and
- Another agreed that there is a large price gap between hybrids and conventional vehicles. He noted that the hybrid model of his Ford Escape was about $5,000 more.

Participants were then asked if they equated "hybrid" with the environment or if they equated "hybrid" with fuel efficiency.

- Two participants equated hybrids with fuel efficiency first, then with the environment;
- One equated hybrids with both fuel efficiency and the environment; and
- One equated hybrids with the environment first, then fuel efficiency.

The participants were then introduced to two different types of feebate designs: step and continuous. Several charts were presented to give the participants a visual aid to understand the different designs and the impact on fees and/or rebates.

After the moderator explained the step and continuous designs, participants had a few questions.

- One participant questioned whether the program took into consideration the adverse effects it would have on American car manufacturers and on American workers and asked if the program was meant to encourage improved MPG; and
- One participant questioned whether vehicles and trucks could be on the same step in the step system.

Next, participants were asked for their opinion regarding the two designs for the feebate program.

- Two participants agreed with the rebates but not the fees.
- One participant suggested that classifying vehicles would make the systems more fair;
- One stated that instead of these two systems, a law should be created to pressure car manufacturers into manufacturing fuel-efficient vehicles;
- One suggested raising taxes on gasoline and stated that this would have the same impact as the two designs;
- One suggested that the feebate designs would not be successful because they were simply a one-time penalty or incentive. This individual thought the program would only be successful if there was a continuous punishment (fee) or incentive, such as a monthly, bi-monthly, or annual fee or rebate;
- One participant did not feel that fees and rebates were the answer to environmental issues and thought car manufacturers were already manufacturing fuel-efficient vehicles on their own because of consumer demand;
- One stated that he would purchase a vehicle out of state to avoid the fees in either system;
- One suggested that imposing fees might prolong a consumer's decision to purchase a new vehicle, which would leave older, inefficient vehicles on the road for longer periods of time; and
- One suggested that instead of monetary incentives, the program should offer incentives such as ability to drive in the carpool lane or a sticker for free parking.

Next, participants were asked whether they would prefer a single target value for all vehicles or different target values for different vehicle classes.

- Two participants preferred the system of different target values for different vehicle classes, noting that target values would be fair to individuals with larger families and to those who required a larger vehicle for business.

Participants were asked if they saw this program as a way to make clean vehicles more affordable.

- One participant suggested that the best way to increase the production of "clean" vehicles is to impose the fees on car manufacturers.

Administration and Transaction

Next, the moderator introduced a possible method of administering fees and rebates, including two options available for consumers to receive their rebates and one option to charge fees. Participants were then asked for their opinion on the proposed transaction methods.

- Three participants thought the rebate should be deducted from the vehicle price at the time of purchase;
- Two suggested the fee be incorporated into the loan amount and that consumers should not be billed later. One noted that if the fee were billed after the point of purchase, the program would have to deal with consumers who did not pay the fee, which would increase administration costs;
- One participant noted that including fees and rebates in the loan amount would change the amount financed, which would affect taxes and fees. This individual stated that including a $1,000 fee in a loan would increase the total fee paid in the long run because of taxes and interest on the loan.

Next, a discussion on financing fees and rebates ensued.

- Three participants did not think it was fair for consumers to pay interest or taxes on fees that were added to the financed loan amount, suggesting that the fees and rebates should be separate from vehicle financing; and
- One suggested making the fees non-taxable.

Participants were then asked how they felt if the fees and rebates were applied entirely to manufacturers instead of consumers.

- Three participants felt that the car manufacturers would simply pass the fees on to the consumers;
- One liked the idea, as long as vehicle prices did not increase; and
- One participant suggested this approach might encourage manufacturers to make more fuel-efficient vehicles, especially if the program was implemented nationwide.

Next, participants were asked how they would like to receive their rebate if their purchase qualified.

- Two participants stated that they preferred a gas card in the amount of the rebate because a gas card would serve as a constant reminder that they did something good for the environment;
- Two preferred cash in the amount of the rebate;
- One suggested offering vehicle maintenance and oil changes in the rebate amount; and
- One suggested giving consumers a list of options at the time of purchase, such as deducting the rebate from the price of the vehicle, receiving the rebate in the form of a gas card, or receiving a check for the rebate.

Next, participants were asked how their spending would be impacted if they received a rebate.

- One participant reported that he would apply a rebate towards the price of the vehicle; and
- One participant stated that the rebate would persuade him to look at a more expensive vehicle to get more options.

Revenue Neutrality

The participants were asked for their opinion on the idea of revenue neutrality where fees collected by the program would be used to pay for the rebates.

- One participant did not immediately understand the concept of revenue neutrality;
- One explained that revenue neutrality is impossible because there is no way for the program to forecast how many individuals would purchase a vehicle that qualified for a fee or rebate;
- One noted that it was very important that fees and rebates were balanced, otherwise taxpayers would end up paying for the rebates; and
- One noted that using fees to pay for the rebates does not include the cost of actually operating the program.

Next, a discussion on purchasing used vehicles ensued.

- Four participants believe more consumers would purchase used vehicles if this program were implemented, which would impact revenue neutrality because consumers purchasing efficient vehicles would buy new, while consumers purchasing larger vehicles would buy used;
- One stated that she would never purchase a new vehicle;
- One believes that purchasing used vehicles will be the loophole consumers use to avoid paying fees; and
- One suggested the program should not operate based on the purchase of new or used vehicles but should only focus on fuel efficiency.

Implementation Schedule

Participants were asked to consider how much time in advance they would want to know about program implementation and changes.

- Three participants agreed that the program sounded more and more complex as the discussion progressed, and Californians would not be happy with it;
- Two stated that one year would be an ideal amount of time for program changes; and
- One stated that six months should be the minimum amount of time given, but nine months notice would be ideal.

Environmental Perceptions

The moderator then asked participants what they knew or had heard about GHG emissions. A general discussion regarding the impact of GHG emissions on the environment ensued.

- Two participants agreed that GHG emissions are caused by human activity and that global warming is real; and
- One participant questioned what percentage of GHG emissions resulted from vehicles and what percentage was the result of manufacturing and other sources.

Next, participants were asked how they felt about government regulation of vehicles and fuels.

- Two participants noted that the government should not be involved.

Participants were then asked if the government should allow the sale of higher emitting, "dirty" vehicles.

- One participant stated that the government should not allow the sale of "dirty" vehicles.

Participants were asked what group or entity they would trust to set program objective levels.

- Two participants stated that the government should be the group setting the benchmark levels for the program;
- One suggested a private group of scientists;
- One recommended that citizens of California help set objective levels; and
- One suggested commissioning a group of environmentalists to set objective levels.

Information and Outreach

The participants were asked for their opinion on methods for disseminating information about the fee or rebate for different vehicles.

- Two participants suggested using schools to disseminate information;
- One suggested promotion and marking through flyers, print, the Internet, and billboards;
- One recommended informational events;
- One suggested television;

- One stated there should not be a need to disseminate information and that car manufacturers should just start producing fuel-efficient vehicles; and
- One felt manufacturers are already producing more fuel-efficient vehicles and educating consumers on vehicle fees and rebates will not educate them on larger environmental issues.

A discussion on the possibility of program failure ensued.

- One participant suggested that if there are not enough fees to pay for the rebates and the program fails, Californians will blame the government for another failure; and

- All participants agreed that the current economic climate makes the timing of this program difficult to support.

Participants were then asked whether they approved of the name "clean car incentive program" for this type of program.

- Three participants liked the name.

Participants were then asked whether they approved of the name "feebates" as an alternative.

- The participants all disapproved of "feebates" noting that the name emphasizes the fee aspect of the program and not vehicle fuel-efficiency.

EXPLORING RESPONSE TO FEEBATE SCHEMES IN CALIFORNIA:
FOCUS GROUP STUDY

Focus Group #11: Conducted in Fresno, CA, September 9, 2009

FOCUS GROUP SUMMARY

Overview

The purpose of the focus group was for researchers to gain knowledge of potential consumer perceptions and response to the Clean Car Incentive Program, a proposed policy that would charge a fee for the purchase of vehicles with higher greenhouse (GHG) emissions and provide a rebate for the purchase of vehicles with lower GHG emissions. Participant responses were explored in a focus group conducted on Wednesday, September 9, 2009 (5:30 PM to 7:30 PM) at the Sunnyside Regional Library in Fresno, CA. The focus group participants included six Fresno residents who intended to purchase a car within the next five years or have purchased a new car in the past five years. A researcher with the Transportation Sustainability Research Center (TSRC) of the University of California, Berkeley facilitated the focus group discussion with researchers assisting and taking notes. This summary begins with the findings from the pre-focus group survey and continues with a summary of the focus group discussion.

Background Survey Results

At the beginning of the focus group, TSRC researchers administered a survey that explored the demographic attributes of focus group participants, general travel behaviors, and vehicle make/model information.

The following were the demographic attributes of focus group participants:

Table B 21: Demographic Attributes of Focus Group Participants (Group 11)

Gender	Marital Status	Age	Educational Level	Household Pre-tax Income
M	Married	26-30	Master's degree	$50-$79.9K
M	Divorce	41-55	Bachelor's degree	$20-$49.9K
M	Single	31-35	Bachelor's degree	$80-$109.9K
F	Married	26-30	Master's degree	$80-$109.9K
F	Married	36-40	Some College	$50-$79.9K
F	Single	18-25	Some High School	$10-$19.9K

Participants were also asked to provide their ethnicity.

- Two participants were White/Caucasian;
- Two were Hispanic;
- One was Indian; and
- One was Black.

Participants were asked how many vehicles they had in their household:

- Four participants reported having one vehicle in their household;
- One reported having five vehicles in their household; and
- One noted having three vehicles in their household.

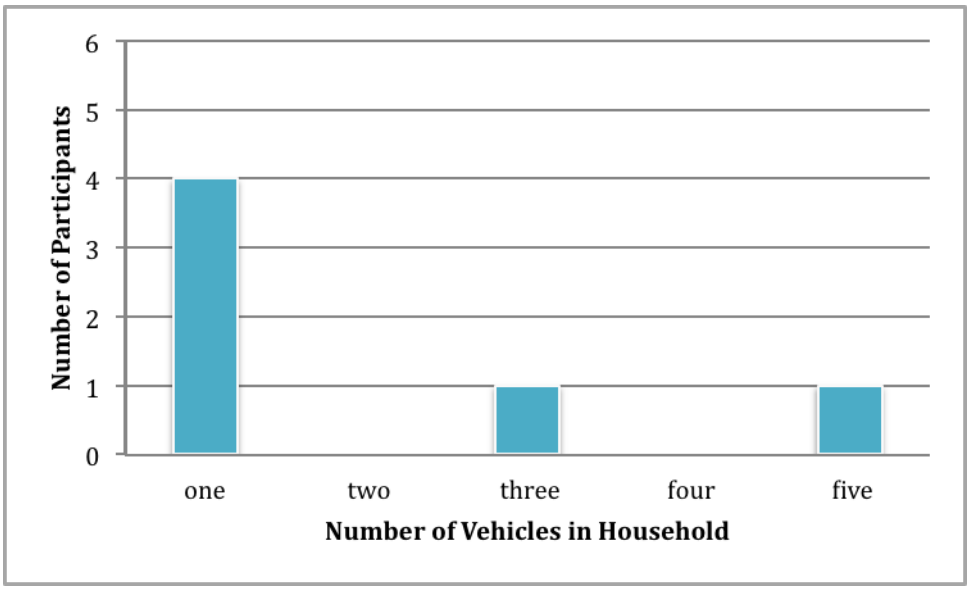


Figure B 11: Number of Vehicles in Participant Households (Group 11)

Participants were then asked if they anticipate purchasing a new car in the next five years.

- Five participants indicated that they plan to purchase a new car in the next five years; and
- One did not plan to purchase a new car in the next five years.

The survey then probed for an estimate of how many miles they drive annually.

- Two participant drive under 5,000 miles/year;
- One drives between 5,000-10,000 miles/year; and
- Three participants drive between 10,000-15,000 miles/year.

Participants also reported the average miles per gallon (MPG) for their vehicles.

- Four vehicles were reported as 11-20 MPG;
- Four vehicles as 21-30 MPG;
- Two vehicles were reported as 31-40 MPG; and
- MPG for two vehicles was not reported.

Next, the survey sought to find information on the types of vehicles the participants own.

Table B 22: Vehicles Owned by Focus Group Participants (Group 11)

Number of Vehicles in Household	Participant 1 Vehicle Make/Model			
5	Audi A4 '04 New Jeep Cherokee '98 New Chevrolet S10 EXT '00 Used Toyota Tacoma '99 Used Nissan Maxima '02 New			
Number of Vehicles in Household	**Participant 2 Vehicle Make/Model**			
3	GMC Sierra '08 New Toyota Avalon '03 Used Volkswagen Jetta '03 Used			
Number of Vehicles in Household	**Participant 3 Vehicle Make/Model**	**Participant 4 Vehicle Make/Model**	**Participant 5 Vehicle Make/Model**	**Participant 6 Vehicle Make/Model**
1	Honda Accord '01 Used	Audi A6 '00 Used	Ford F-150 '01 New	Ford Focus '08 New

Focus Group Discussion

After completing the pre-focus group survey, the moderator provided participants with a brief study overview and initiated the focus group discussion. The discussion began with a focus on vehicle purchase decision-making processes. The moderator provided an introduction to the Clean Car Incentive Program, including design possibilities and transaction options. Participants were then asked to provide their perceptions on the environment. The focus group concluded with thoughts on information and outreach for the vehicle incentive program.

Car Purchasing

Participants were asked about their most recent vehicle purchase experience including how and why they purchased it.

Participants reported their top three considerations when purchasing a vehicle:

- Four participants reported fuel efficiency;
- Three considered vehicle durability;
- Three stated the vehicle's driving "feel;"
- Three indicated vehicle price;
- Two mentioned the vehicle's appearance;
- Two answered the vehicle's safety; and
- One replied the spaciousness of the vehicle.

Participants were also asked how gas prices affected their vehicle purchase decisions.

- Two participants indicated they purchased a fuel-efficient car to lower their gas costs; and
- One stated that gas prices did not affect his vehicle purchase decisions because he used public transportation as his main travel mode.

Next, participants were questioned on the effect of incentive programs on their vehicle purchase decisions.

- None of the participants were offered an incentive when they purchased their vehicle.

Participants were also questioned on their awareness of incentive programs for vehicle purchases.

- Two participants heard of the "Cash for Clunkers" Program; and
- One heard of dealers offering Labor Day specials with either a reduction in vehicle price or 0% interest financing for a number of months.

'Clean Car Incentive Program' Definition and Discussion

The participants were presented with a description of a potential program called the "Clean Car Incentive Program" and asked if they had any questions.

- One participant asked if the consumers pay the fees;
- Another asked whether the program applied to used vehicles;
- One asked whether the program applied to California only; and
- One inquired how the fees are used after they are collected.

After the moderator explained the program, all participants confirmed that they understood the definition of the Clean Car Incentive Program.

Participants were asked for their opinion on this type of program.

- Two participants answered that the program will motivate manufacturers to produce more efficient vehicles;
- Two replied that the fees and rebates should apply to manufacturers;
- Two felt that the program should apply to other states or countries besides California;
- One did not like the program, stating that consumers should be able to purchase any vehicle they desire without being penalized;
- One liked the rebate part of the program but disliked the fee component;
- One expressed concern that the program's incentives might encourage consumers to buy more vehicles, which could lead to additional traffic and accidents; and
- One did not feel the program would impact his vehicle purchase decision.

Next, participants were asked whether they would prefer a single target value for all vehicles or different target values for different vehicle classes.

- All participants preferred different target values for different vehicle classes.

The participants were introduced to two different types of Clean Car Incentive designs: the step and the continuous. Several charts were presented to give the participants a visual aid to understanding the different designs and the impact on fees and/or rebates.

After the moderator explained the step and continuous designs, all participants confirmed that they understood the designs.

Next, participants were asked for their opinion regarding the two designs for the feebate program.

- Two participants liked the step design more than the continuous design because they felt the price differences in the continuous design were too minor to affect their vehicle purchase decisions; and
- One liked the continuous design.

Participants were asked what dollar amount of fee or rebate would make a difference in their purchasing decisions.

- Three participants preferred an incentive over multiple years;
- Three stated $3,000;
- Two reported 20-30% of the vehicle price; and

- One suggested an extra rebate for first time car buyers.

Administration and Transaction

Next, the moderator introduced a possible method of administering fees and rebates, including two options available for consumers to receive their rebates and one option to charge fees. Participants were then asked for their opinion on the proposed transaction methods.

- Three participants did not feel the option of having a mail-in rebate was necessary since they believed consumers would choose to use the rebate to reduce the vehicle price;
- One liked if consumers could have the option of a mail-in rebate or a reduction in vehicle price; and
- One stated that consumers should have the option of having the fee charged to them after their vehicle purchase.

Participants were also asked how they would prefer to receive rebates.

- Five participants preferred to receive a reduction in their vehicle price; and
- Two would like their rebate to pay their car payments for the first few months after their vehicle purchase.

Participants were then asked how they felt about a hybrid system in which the rebates would be paid to consumers, but the manufacturers would pay the fees.

- Three participants liked the system, stating that it would cause manufacturers to produce more efficient vehicles.

Participants were also asked how they felt about fees and rebates applying to manufacturers instead of consumers.

- Two participants felt the system would benefit the environment because manufacturers would produce more fuel-efficient vehicles to attract consumers;
- Two stated that this method would not provide consumers with an incentive to purchase a fuel-efficient vehicle; and
- One answered that manufacturers would limit consumer options by flooding the market with vehicles that are more likely to receive a rebate.

Revenue Neutrality

The participants were asked for their opinion on the idea of revenue neutrality where fees collected by the program would be used to pay for the rebates.

- One stated that the rebates would outweigh the fees because consumers from other states will come to California and purchase vehicles that offer rebates;
- One indicated that rebates would outweigh the fees because consumers would purchase new vehicles that offer rebates, but avoid purchasing new vehicles with fees and instead purchase larger vehicles used;

- One suggested that money collected from fees could fund environmental research and development; and
- Another suggested that money collected from fees be used for public transportation systems.

Participants were then asked how they felt about the program adjusting rebate and fee amounts on an annual basis to maintain revenue neutrality.

- All participants supported annual adjustments to the rebates and fees to maintain revenue neutrality.

Implementation Schedule

Participants were asked how far in advance they wanted to be alerted to changes in the program's fees or rebates.

- One participant responded two weeks to one month.

Next, participants were asked to summarize how they felt about the Clean Car Incentive Program after engaging in the previous discussion about the program.

- Three participants liked that the program aids the environment and offers consumer incentives but felt that the program's fees should be targeted towards manufacturers;
- Two liked the program; and
- One did not like the program but agreed that the manufacturers should pay the fees.

Environmental Perceptions

Participants were asked whether they believe the government should be involved in regulating vehicles and fuels.

- One participant stated that the government should not be involved in regulating the type of vehicles consumers own; and
- One replied that government regulation of emission levels in factories have an insignificant financial impact on the corporations that own the factories.

Next, participants were questioned on what they have heard about greenhouse gas (GHG) emissions.

- Two participants stated that GHG emissions cause global warming;
- Two added that GHG emissions create a barrier in the atmosphere that increase the Earth's temperature; and
- One answered that in addition to GHGs, carbon dioxide emissions also have major impacts on the ozone.

Participants were asked if they believe global warming is real and due to human activity.

- One participant believes global warming is real and due to human activity;
- Another believes global warming is real and that humans contribute to some degree; and
- One believes that global warming will occur but is unsure of its existence at present because he cannot physically see any change in the environment.

Participants were also asked whether they believe global warming is a threat.

- Two participants stated that global warming is a threat because it will affect future generations;
- One answered that global warming is a threat because it will drastically change the Earth's climate; and
- One replied that the Clean Can Incentive Program is taking a positive approach to motivate humans to combat global warming.

Next, participants were asked whether or not they purchase items where they consider the impact on the environment.

- Two participants purchase produce from local farmers instead of produce delivered from distant areas that use more transportation fuels;
- One purchases recyclable paper bags instead of using plastic bags;
- One uses reusable canvas bags to shop at grocery stores; and
- One purchases detergent that is not harmful to the earth.

Participants were asked whether they are willing to pay more for an item that is environmentally friendly.

- One participant is willing to pay more, especially for organic foods; and
- One is willing to pay a small amount more.

Information and Outreach

The participants were asked for their opinion on which entity or group (dealer, government, or other) they find most trustworthy for disseminating information about the fee or rebate for different vehicles.

- Three participants stated that both the government and the dealers should disseminate information because they can check each other to ensure the information is correct;
- One suggests the government and dealers work together to create brochures to distribute information;
- One trusts the government to disseminate information; and
- One trusts an independent third party, which presents information in a clear and unbiased manner.

Participants were also asked how they thought the public should receive information about the Clean Car Incentive program.

- Two participants suggested a government sponsored website that includes information on how vehicles impact the environment;
- Two suggested television;
- One stated the media;
- One replied that companies should educate their workers about the program; and
- One answered that people would not use a website because they would either be unaware of the website's existence or cannot access the Internet.

Participants were then asked whether they approved of the name “clean car incentive program” for this type of program.

- One participant liked the name because it is short and straightforward about the intentions of the program; and
- One liked how the word "clean" gave an impression that one is receiving something that is clean.

Participants were then asked whether they approved of the name “vehicle feebate program” as an alternative. The general response was negative.

- Two participants thought "feebate" was an unintelligible word;
- One liked the name "clean car incentive program" more than "vehicle feebate program;" and
- One did not like the word "fee" in the name.

EXPLORING RESPONSE TO FEEBATE SCHEMES IN CALIFORNIA:
FOCUS GROUP STUDY

Focus Group #12: Conducted in Fresno, CA, September 10, 2009

FOCUS GROUP SUMMARY

Overview

The purpose of the focus group was for researchers to gain knowledge of potential consumer perceptions and response to feebates, a proposed policy that would charge a fee for the purchase of vehicles with higher greenhouse (GHG) emissions and provide a rebate for the purchase of vehicles with lower GHG emissions. Participant responses were explored in a focus group conducted on Thursday, September 10, 2009 (5:30 PM to 7:30 PM) at the Fig Garden Regional Library in Fresno, CA. The focus group participants included seven Spanish speaking Fresno residents who intended to purchase a car within the next five years or have purchased a new car in the past five years. A researcher with the Transportation Sustainability Research Center (TSRC) of the University of California, Berkeley facilitated the focus group discussion with researchers assisting and taking notes. This summary begins with the findings from the pre-focus group survey and continues with a summary of the focus group discussion.

Background Survey Results

At the beginning of the focus group, TSRC researchers administered a survey that explored the demographic attributes of focus group participants, general travel behaviors, and vehicle make/model information.

The following were the demographic attributes of focus group participants:

Table B 23: Demographic Attributes of Focus Group Participants (Group 12)

Gender	Marital Status	Age	Educational Level	Household Pre-tax Income
F	Married	36-40	Master's degree	$50K-$79.9K
F	Single	26-30	Associate's degree	Under $10K
M	Married	41-55	Some College	$80-$109.9K
F	Married	26-30	Decline to respond	Decline to respond
F	Married	31-35	Bachelor's degree	$80-$109.9K
F	Single	18-25	Some College	Under $10K
M	Divorced	31-35	Some College	$20K-$49.9K

Participants were also asked to provide their ethnicity.

- All participants were Hispanic.

Participants were asked how many vehicles they had in their household.

- One reported having one vehicle in their household;
- Three reported two vehicles in their household; and
- Three participants indicated three cars in their household.

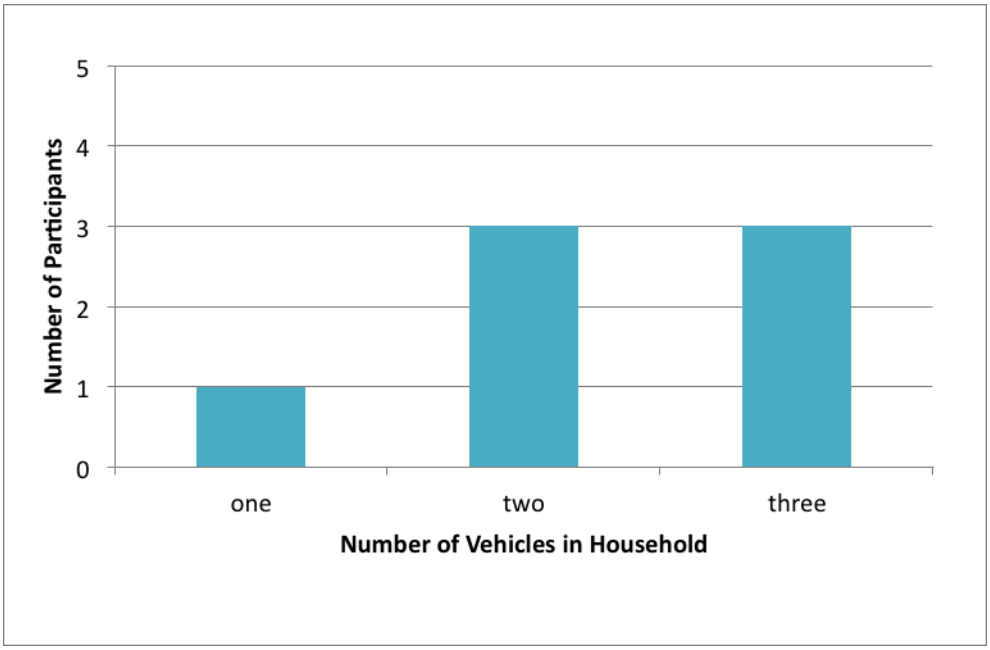


Figure B 12: Number of Vehicles in Participant Households (Group 12)

Participants were then asked if they anticipated purchasing a new car in the next five years.

- Six participants indicated that they plan to purchase a new car; and
- One indicated that she does not plan to purchase a new car.

The survey probed for an estimate of how many miles they drive annually.

- Five participants drive between 10,000-15,000 miles/year; and
- Two drive between 15,000-20,000 miles/year.

The survey also probed participants for their average miles per gallon (MPG) per vehicle.

- Four vehicles were reported as 11-20 MPG;
- Six vehicles were reported as 21-30 MPG;
- One vehicle as 31-40 MPG;
- One participant noted an average of 18 MPG for three vehicles; and
- One participant reported an average of 30 MPG for two vehicles.

Next, the survey sought to find information on the types of vehicles the participants own.

Table B 24: Vehicles Owned by Focus Group Participants (Group 12)

Number of Vehicles in Household	Participant 1 Vehicle Make/Model	Participant 2 Vehicle Make/Model	Participant 3 Vehicle Make/Model
3	Ford Escape '08 Used Ford 250 '02 Used GM Magnum '06 Used	Jeep Wrangler '04 Used Nissan Titan '07 New Mitsubishi Endeavor '03 Used	Ford Grand Marquis '86 Used Honda Odyssey '01 Used Dodge Neon '05 Used
Number of Vehicles in Household	**Participant 4 Vehicle Make/Model**	**Participant 5 Vehicle Make/Model**	**Participant 6 Vehicle Make/Model**
2	Dodge Dakota '98 Used Kia '05 Used	Honda passport '00 Used Ford Focus '02 Used	Volkswagen Jetta '00 Used Hyundai Elantra '06 New
Number of Vehicles in Household	**Participant 7 Vehicle Make/Model**		
1	Lexus LS '00 Used		

<u>Focus Group Discussion</u>

After completing the pre-focus group survey, the moderator provided participants with a brief study overview and initiated the focus group discussion. The discussion began with a focus on vehicle purchase decision-making processes, and the role of fuel economy and environmental awareness in vehicle purchase decisions. Next, the moderator provided an introduction to the Clean Car Incentive program including transaction and administration options. The moderator then prompted participants for their opinions on the concept of revenue neutrality, the program implementation schedule, and environmental perceptions. The focus group concluded with ideas for outreach to inform the public about the vehicle incentive program.

Car Purchasing

Participants were asked about their most recent vehicle purchase experience including how and why they purchased it.

Participants reported their top three considerations when purchasing a vehicle:

- Four participants mentioned a good deal on purchase price;
- Two noted vehicle gas mileage;
- Two reported lifestyle considerations;
- Two noted vehicle safety and size;
- One considered vehicle body style;
- One stated space and vehicle comfort;
- One noted vehicle maintenance; and
- One mentioned vehicle manufacturer.

Next, participants were asked if they had experienced or were aware of any government incentive programs. None of the participants had been offered any financial incentive when purchasing his or her vehicle(s).

- Two participants mentioned the "Cash for Clunkers" program, but they both noted that their vehicles did not qualify;
- One noted researching the program but was discouraged when the dealer assured him his vehicle would qualify, while the "Cash for Clunkers" government website stated that his vehicle would not. This participant stated that he knew individuals who experienced the same discrepancy;
- One stated that her parents took advantage of the program, but the vehicle price increased as a result. She also noted that despite its flaws, "Cash for Clunkers" was a good initiative to get older, inefficient vehicles off the road; and
- One mentioned that the program did not make a difference. This individual thought the program was more of an ideological undertaking with a goal to increase new vehicle sales.

'Clean Car Incentive Program' Definition and Discussion

The participants were presented with a description of a potential program called the "Clean Car Incentive Program" and asked if they had any questions. Participants asked a few questions:

- One participant was unclear how fuel economy would be determined;
- One questioned who would determine fuel economy; and
- One was unclear about when the fee or rebate would be received or charged.

Next, participants were asked for their opinions on the clean car incentive program.

- Two participants thought the program would be unfair to individuals who required a larger vehicle for their job or business, and they thought the program should include exceptions for businesses that require larger vehicles;

- One commented that this program would be unfair to car buyers who could not afford "cleaner" vehicles;
- One stated that the program was a good initiative to address the adverse effects of vehicle emissions;
- One stated that the program was a way to benefit car manufacturers and not consumers;
- Another suggested the program should only use rebates and not fees;
- One suggested that the program should address differences in vehicle type by classifying them; and
- One suggested that the program would have an adverse impact on car manufacturers.

Next, a discussion on program exceptions (i.e., for businesses, large families, etc.) ensued.

- One participant disagreed with allowing exceptions for jobs or businesses that require large vehicles. She noted that businesses already receive tax breaks for business vehicles and thought an exception would provide businesses with an additional unfair benefit;
- One stated that fees are unfair to begin with; and
- One participant felt that the issue of program exceptions is not relevant because the program should not target consumers. The pressure should instead be on car manufacturers to produce cleaner vehicles.

Next, participants were asked whether they would prefer a single target value for all vehicles or different target values for different vehicle classes.

- Four participants preferred the system of different target values for different vehicle classes;
- One favored a single target value;
- One commented that the program should distinguish between compact, medium, and larger vehicles; and
- One noted that the program should distinguish between luxury vehicles and non-luxury vehicles.

A further discussion regarding the Clean Car Incentive program ensued.

- One participant stated that her next vehicle would be purchased new, but she did not think the fees or rebates would be significant enough to influence her decision. She expected to purchase the vehicle based on her lifestyle needs and budget.

- One participant suggested the fee or rebate should be based on the amount of miles a vehicle is driven. This participant stated that implementing fees or rebates at the time of purchase is irrelevant because emissions also depend on driving patterns. Imposing fees on large vehicles that are not used very often would not be fair.

- Another participant disagreed with this suggestion and noted that there is no system to effectively calculate and track the number of miles each vehicle accumulates.

- Next, one participant suggested that if the program is successful and consumers begin to purchase smaller, fuel-efficient vehicles, then manufacturers would respond by lowering

the price of larger vehicles. This would incentivize the purchase of larger, less fuel-efficient vehicles.

The participants were then introduced to two different types of feebate designs: step and continuous. Several charts were presented to give the participants a visual aid to understand the different designs and the impact on fees and/or rebates.

After the moderator explained the step and continuous designs, the majority of participants confirmed that they understood the designs. (One participant did not understand why the Grand Prix and the Escape where on the same step in the step system.)

Next, participants were asked for their opinion regarding the two designs for the feebate program.

- The majority of participants favored the continuous system; and
- One noted that she preferred the continuous system because she felt it was fair since the fee or rebate was based on the exact miles per gallon of each vehicle.

Next, participants were asked which system they felt was easier to understand.

- One participant suggested that the continuous system was easier to understand because the concept is simple and consumers can simply expect to pay more for a vehicle with lower MPG and receive larger rebates for higher MPG.

Participants were asked what dollar amount of fee or rebate would make a difference in their purchasing decisions.

- Two suggested that the fees and rebates should range between $2,000 and $3,000.
- One participant suggested that a fee or rebate of $1,000 or more would influence his decision;
- One noted that the rebate should be set between $1,500 and $2,000, but that there should not be any fees;
- One participant believes that fees or rebates set at $2,500 would influence his decision;
- One suggested that a $3,000 fee would influence her decision; and
- One participant does not feel that rebates should be lower than $4,000, especially when Cash for Clunkers was able to offer $4,500 for a "clunker."

Administration and Transaction

Next, the moderator introduced a possible method of administering fees and rebates, including two options available for consumers to receive their rebates and one option to charge fees. Participants were then asked for their opinion on the proposed transaction methods.

- Two participants preferred that the fees and rebates be directly applied to the vehicle's sticker price;
- Two were skeptical of car dealer integrity saying that dealers may raise the price of the vehicle to offset the rebate;
- One suggested signing a form to allow an outside financial group to handle the fees and rebates;

- One believed that allowing the dealer to handle fees and rebates at the time of purchase could compromise their ability to negotiate vehicle price; and
- One participant suggested a hybrid system where the rebate is issued at the time of purchase, while the fee is paid later.

Next, participants were asked how they felt if the government handled the transaction, rather than the dealer.

- The consensus was that consumers should receive a check if they are getting a rebate, and they should send a check directly to the government if they are paying a fee.
- The majority of participants also agreed that they were fine with waiting for the rebate check.

Revenue Neutrality

The participants were asked for their opinion on the idea of revenue neutrality where fees collected by the program would be used to pay for the rebates.

- Two participants explained that revenue neutrality is impossible since there will likely be more persons purchasing vehicles with a rebate. If this happened, the fees would not be great enough to fund the program;
- One noted that revenue neutrality requires a perfect equilibrium, which would not be achieved in this program; and
- One stated that allowing the state to operate this program would result in a lack of funds and the distribution of IOUs.

Next, participants were asked how they felt if program changes were implemented to maintain revenue neutrality.

- One participant stated that allowing program changes may result in the government implementing multiple changes, which would overwhelm consumers and cause them to be unaware of program specifics at the time of their purchase;
- One noted that consumers do not purchase a car every year. Consumers purchase a new car once every three to four years, which would allow buyers enough time to research program rules for the year in which they decide to purchase their vehicle;
- One explained that programs changes would not be enough to ensure revenue neutrality; and
- One stated that using fees to pay for rebates is a good idea, but it would not be enough to fund the program. The program would require additional funds.

Implementation Schedule

Participants were then asked how program adjustments might affect their vehicle purchase.

- One participant explained that consumers purchase vehicles when they have the money. Neither $500 nor $1,000 would impact consumer decisions as to when they would purchase their vehicle;

- One noted that increasing fee amounts might cause buyers to purchase a vehicle sooner to avoid paying higher fees; and
- Another noted that if the program announced a significant reduction in rebate amounts for the following year, he would be inclined to purchase a vehicle sooner to receive the higher rebate.

Environmental Perceptions

The moderator then asked participants what they knew or had heard about GHG emissions. A general discussion regarding the impact of GHGs on the environment ensued. All participants agreed that global warming is real, and it is caused by human activity. All participants saw global warming as a threat.

Next, participants were asked how they felt about government regulation of vehicles and fuels.

- Two participants agreed that the government is not doing enough; and
- One suggested that companies should be required to be more 'eco-friendly.'

Next, participants were asked whether they believe the government should allow automakers to sell "dirty vehicles." All participants agreed that the government should not allow the sale of "dirty vehicles."

- One participant suggested that fees instead be applied to manufacturers not consumers;
- Another agreed and noted that there should also be a greater focus on alternative technologies; and
- One stated that it is the government's responsibility to find alternative fuels and technologies.

Information and Outreach

The participants were asked for their opinion on which entity or group (dealer, government, or other) they find most trustworthy for disseminating information about the fee or rebate for different vehicles.

- The majority of participants felt that people do not trust information provided by the government;
- One participant suggested that a non-government, neutral party should oversee the program;
- One favored a non-profit, independent environmental group to run the program; and
- One suggested that a separate entity should not be created to run the program. Like Cash for Clunkers, the government should administer the program.

Next, participants were asked for their ideas to provide information about the program to the public.

- One participant felt that television is the best means of disseminating information;
- One felt that the dealership should be involved in disseminating information; and
- Another felt that all mediums should be used.

Participants were then asked whether they approved of the name "clean car incentive program" for this type of program.

- Two participants felt that the name "clean car incentive program" was too long and not catchy; and
- One noted that the name only emphasized program incentives and ignored the fees.

Participants were then asked whether they approved of the name "feebates" as an alternative.

- Two participants felt the term "feebates" was catchy;
- One disapproved of "feebates" noting that the negative aspect, "fee," suggests a punishment;
- One noted that the term "feebates" was not easily translated in Spanish; and
- Another stated that, unlike Cash for Clunkers, the term "feebates" is not clear.

B.2. Feebate Focus Group Screener (all focus groups)

Programmed for CATI

Q: INTRO1
Hello. May I please speak with _____?

This is _____ from E&W Research Consultants, calling on behalf of the University of Berkeley.

I am calling to follow up on the posting you recently responded to about a focus group on California State Policy.

Do you recall that posting?

1. Yes
2. No
8. DK/Unsure

if (ans > 1) skp term1

Q: Q1
Great, I would like to ask you a few questions to see if you qualify for this focus group.

How old were you on your last birthday?

[INTERVIEWER: has to be before at least 18yo]

IF (ANS > 1991) SKP term2

Q: Q2
And are you male or female?

T: 10 40 1
1. Male
2. Female
8. DK/Refused

Q: Q3
Have you purchased or leased a new vehicle in the LAST 5 YEARS?

1. Yes
2. No

if (ans = 2) skp Q6

Q: Q4
Was that vehicle primarily for personal use, business, or both?

1. Personal
2. Business
3. Both
8. DK/Refused

if (ans = 8) skp term1

Q: Q5
What was the make and model of the car you purchased/leased?
MAKE and MODEL:

Q: Q6
Do you anticipate purchasing a new vehicle in the coming five years?

1. Yes
2. No

if (q6 = 2) and if (Q3 = 2) skp Term4noqal, if (ans = 2) skp Qemploy

Q: Q7
Are you considering any particular body types and sizes?

1. Passenger Vehicle (all sizes)
2. SUV
3. Pickup Truck or similar
4. Minivan
5. Large Van (Passenger or Cargo)
6. Other

if (ans = 6) skp Q7a else skp Qemploy

Q: Q7a
What other makes and model do you have in mind?

Q: Qemploy
Which statement best describes your current employment status:

1. working full-time (35 hours/week or more)
2. working part-time (less than 35 hours/week)
3. have a job, but not at work due to temporary illness
4. unemployed or laid off and looking for work
5. unemployed or laid off and not looking for work
6. in school
7. retired
8. a homemaker
9. OTHER (describe):

if (ans = 9) skp Qemploy_oth else skp qethnic

Q: Qemploy_oth
Can you please describe the other employement status?

Q: Qethnic
Which of these groups best describes your family of origin? (multiple choice)

1. Black or African American
2. Hispanic, (Latino, Mexican, Mexican-American, Chicano, or other Spanish)
3. White or Caucasian
4. Asian or Asian-American
5. Southeast Asian including Vietnamese, Hmong, Mien, Lao, Thai
6. Middle Eastern
7. Native American or Native Alaskan
8. Pacific Islander, or
9. Filipino
10. Other

if (ans = 10) skp Qethnic_oth
Skp Qedu

Q: Qethnic_oth
Can you please describe your family of origin?

Q: Qedu
What is the highest level of education you have finished, whether or not you received a degree?

1. High School or GED
2. Technical School
3. some College but no degree
4. College degree
5. Graduate degree

Q: Qincome
Which category best describes your household income in 2008?

1. less than $25,000?
2. $25,001 to $50,000?
3. $50,001 to $75,000?
4. $75,001 to $100,000?
5. $100,001 to $150,000?
6. more than $150,000?
9. DK/Refused

AT THIS POINT INTERVIEWER DETERMINATION BASED ON RECRUIT GRID WHETHER TO INVITE OR NOT FOR FIRST GROUP.

Q: Intro_confirm
Okay, I would like to confirm your participation in this group. Please remember to arrive 15 minutes prior to the group start. If you arrive late, you may be asked to leave, and will not be awarded the honorarium for the group.

Q: Place

Day: XXX
Date: XXX
Location of facility:
Exact address:
Phone of facility:
Contact name at facility:
Phone number of facility:
Meal Provided: Y/N
Parking provided:
Time: Start and End
Compensation: $$$
Specific directions to facility

Q: Qconfirm

Great, I would just like to confirm your full name, city you live in, email address and phone number.

NAME:

CITY:

EMAIL:

PHONE:

Q: Thank

Great, that is it, we will see you at the focus group. If you have any questions or something changes, please call us at 415-230-7740

Q: Term1

Thank you very much for your time. Goodbye.

Q: TERM2

I am sorry, but you have to 18 years or older to participate in the focus group.

Thank you for your time.

Q: TERM4noqal

Great, thank you so much it looks like you don't qualify for the current group.

Thank you again for your time a good bye.

B.3. Feebate Focus Group Questionnaire (all groups)

Thank you for completing this questionnaire. All answers are completely confidential.

1. How many vehicles in your household? _____

2. Can you please provide the vehicle make/model information below:

Make	Model	Year	Acquired New or Used	Average Miles per Gallon

3. Do you anticipate purchasing a new car in the next five years?

   ⑥ Yes
   ⑥ No

4. Approximately how many miles do you drive annually? _____

5. Are you... o female o male

6. What is your current marital status?
   o Single o Married o Separated o Divorced o Widowed

6. What is your age?

o 18 - 25 o 26 - 30 o 31 – 35 o 36 - 40 o 41 - 55 o 56 or older

7. What is the last level of school that you completed?

o	Grade school	o	Bachelor's degree
o	Some high school	o	Some graduate school
o	Graduated high school	o	Master's degree
o	Associate's degree	o	Ph.D. or higher
o	Some college	o	Other, please specify:_____

8. What was your household's 2008, pre-tax income?

o Under $10K

⑥ $10K - $20K
⑥ $20K - $50K
⑥ $50K - $80K
⑥ $80K - $110K
⑥ More than $110K
⑥ Decline to respond

Thank you very much for completing this questionnaire!

B.4. Feebate Focus Group Protocols

FEEBATE FOCUS GROUP PROTOCOL1
Revised July 24, 2009

Sacramento (7/28) and Fresno (7/30)

Note: Items in parentheses prefaced by e.g./i.e. are for moderator reference only and will not be read verbatim to participants.

6:00-6:10: Pre-Focus Group with Participants

- Consent forms
- Intake questionnaire

6:10-6:20: Introduction

- Moderator introduction and focus group purpose/overview
    - Not a consensus process
    - We want to hear your opinions
    - No wrong answers

- Tell us your first name, when was the last time you purchased a new vehicle and what you purchased? (around the table)

6:20-6:40: Vehicle Purchase Decision-Making Process

- How do you gather information about your new vehicle purchase? (e.g., showroom, internet, other exposure)

- What was your last method of vehicle purchase and what do you expect your next method of vehicle purchase will be? (e.g., dealer, broker, web?)

- What vehicle characteristics are your top priorities when purchasing a new vehicle?

- Can you tell the group if you have any experience with financial incentives when you purchased a new vehicle?
    - If so, what was the financial incentive and what was your experience? (including tax credits, dealer incentives, manufacturer incentives)

- Are there additional issues and factors that you consider, when purchasing a vehicle, in addition to features and price?

    - Environmental concerns? [prompt if not volunteered]
    - Energy-security concerns? [prompt if not volunteered]

6:40-7:00: Role of Fuel Economy and Environmental Awareness

- Tell us how familiar you are with climate change, also known as global warming?

<u>To make sure we all have the same understanding of climate change I am going to provide a brief explanation:</u>

- Greenhouse gases (GHGs), also known as "global warming pollutants," are air emissions that the consensus of scientists believe is contributing to changing the climate.
- The greatest effect is thought to be overall warming of the atmosphere, although local impacts may vary.
- These emissions are building up in the atmosphere and a many scientists believe this is due in part to human activity.
- The primary GHG emission is carbon dioxide.

- What have you heard are the primary contributors to GHG emissions and climate change?

- (if cars and fuel economy are not mentioned above, prompt with: What have you heard about how vehicle fuel economy ("miles per gallon") relates to GHG emissions and/or climate change?

- What have you heard about what the government is doing with regard to emissions and energy use of vehicles?
    - What do you think of what is being done?
    - What else might be done?

    (Possible existing programs:
        - *i. Federal fuel economy regulation - CAFE*
        - *ii. Tax credits for clean vehicles [maybe prompt this one if not volunteered, time permitting]*
        - *iii. Fuel taxes*
        - *iv. Air pollution regulations*
        - *v. California GHG regulations*
        - *vi. Other: e.g., HOV lanes)*

- Now we want to show you one thing the government is doing to educate the public about emissions from vehicles and get your opinion of it:

    - Chart 1: Introduce ARB greenhouse gas sticker graphic, new for 2009

7:00-7:05: Feebates Introduction

Now I am going to tell you about a potential program that the government might put in place to encourage the reduction of GHG emissions from vehicles. Under this program:
(moderator to refer to flip chart with bulleted list to help define)

- The program would consist of monetary incentives (fees and rebates) for NEW vehicles when they are first purchased.
- The program sets a target level for greenhouse gas emissions.
- Vehicles with GHG emissions below the target level would receive a rebate.
- Vehicles with GHG emissions above the target level would pay a fee.
- The fees and rebates would be set so that the program is self-financed and no additional government funds would be used.
- For example using the Global Warming Scores we saw earlier on the sample sticker and remembering that cleaner vehicles have higher scores:
  - The program sets a target Global Warming Score of 5.
  - Vehicles with scores 6 or higher would receive a rebate.
  - Vehicles with scores 4 or lower would pay a fee.

7:05-7:15: Overall Impression of Feebates:

- [Confirm that everyone understands the basics]

- What do you think about this type of program?

- If you were going to buy a new car, and this program was in place, what would happen for you?

- What do you think about the name "feebates" for this type of program?

- (if time, ask for suggestions for the name of this type of program)

- We will use the term "feebate" during the rest of this focus group.

7:15-7:45: Feebate Design:

Now we will consider different types of feebate programs and hear what you think of them (moderator will confirm that everyone understands each chart before moving to the next):

STEP DESIGN:

The first type of feebate program is one we are calling "Step Function." Let's walk through how this would work. [Fees and rebates are rounded to the nearest $250 and applied to ranges of GHG emissions, in a "step" type pattern]

<u>Chart 2:</u> In this example, the target Global Warming Score is 5. The Chevy Malibu has a global warming score of 6 and is therefore would receive $250 rebate.

<u>Chart 3:</u> The Ford Escape has a global warming score of 4. Because it is below the target, buyers would have to pay a $250 fee. Remember that cleaner vehicles have higher global warming scores. The Ford Escape has higher emissions than the Chevy Malibu.

Chart 4: Vehicles with the same Global warming score would pay the same fee or receive the same rebate. Here, the Pontiac Grand Prix also has a global warming score of 4 and would pay the same $250 fee as the Ford Escape. You can see that the efficiency of the two vehicles is not exactly the same.

Chart 5: Each step you move away from the target Global Warming Score will change your fee or rebate by $250. So a vehicle with a GWS of 7 is two steps better than the target so the buyer would receive a $500 rebate instead of only $250. On the flip side, a vehicle that is two steps worse than the target would pay $500 instead of $250. If a vehicle has a GWS of 5, which is exactly the same as the target score, the buyer would neither pay a fee nor receive a rebate.

- Is this clear? Do you have any questions about the step function design?
- What do you think about this "step function" design for a feebate system?

CONTINUOUS DESIGN:

Another option for a feebate program is what we are calling "Continuous." Under a continuous system the fee or rebate is based on a continuous change in GHG emissions per vehicle type. This system would be based on the exact vehicle emissions rather then the Global Warming Score. Each vehicle would have a fee or rebate specific to its GHG emissions.

Chart 6: For example, the Ford Escape and the Pontiac Grand Prix both have a GWS of 4, but the Escape actually has higher emissions than the Grand Prix. Under this new system, the Escape buyer would have to pay $270 and the Grand Prix buyer would pay only $160; Under the step design both buyers would have paid $250.

[Note, if people have trouble understanding emissions, can explain in terms of fuel economy or gasoline consumption.]

[Optional if needed: Whether buyers pay a fee or receive a rebate would still depend on whether the car they are buying is better or worse than the target level (but now we are measuring better or worse using emissions/fuel consumption instead of GWS). And the amount of the fee or rebate would depend on how much better or how much worse the vehicle is compared to the target.]

- Is this clear? Do you have any questions about the continuous design?
- What do you think about this continuous design for a feebate system?

CLASS-BASED DESIGN:

Another option that we are calling "class-based" would have different standards for cars and light trucks.

Chart 7: You may have noticed that larger vehicles are more likely to pay a fee and smaller vehicles are more likely to receive a rebate. Another way to the design the system would be to have different target levels for different kinds of vehicles. So instead of all vehicles being measured against the same target, cars would be compared to one target and light trucks (i.e. vans, pickup trucks and SUVs) would be compared to a different target. Under this system the Chevy Malibu and the Ford Escape receive similar rebates even though the Escape has a lower Global Warming Score. Under the previous system, the Escape buyer would have had to pay a fee.

Chart 8: Adding in other vehicles, you can see that we are only comparing cars with other cars and light trucks with other light trucks. The Pontiac Grand Prix is now relatively

dirtier and would pay a larger fee than before. The Escape is now relatively cleaner and receives a rebate and the Equinox pays a slightly lower fee than before.

- Is this clear? Do you have any questions about the class-based design?
- What do you think about this class-based design for a feebate system?
    - Do you think that all passenger vehicles should be treated the same or should they be divided into separate car and light truck/SUV vehicle categories?

    - If the vehicles are divided into categories, what other categories do you think might be helpful (in addition to cars and light trucks)

OVERALL DISCUSSION

- (If the advantages and disadvantages have not been covered during the previous discussion, raise them now): What advantages and disadvantages do you see with each of the systems (talk about each system separately)

COMPARATIVE DISCUSSION

- Of the three systems we have discussed, which do you think would be best for you and why?

- Which do you think would be fair to the largest number of consumers and why?

7:45-8:00: Visibility of Feebate Transaction

- In thinking about how you would respond to this type of program, consider that any fee that you would pay for a vehicle would be paid "on the spot" at the dealership. For vehicles that qualify for rebates, the rebate could either be applied immediately at the dealership (like the fee that would be paid for those vehicles) or received separately after an application was filed with the state or included with your state income tax refund.
    - Would you want to receive a rebate directly at the time of purchase or have it sent to you later, within 60 days?
    - If you did receive it at the time of purchase, do you think you would apply it to buy a slightly more expensive car, or just spend that much less?
    - If you would receive the rebate separately, would you still choose the same vehicle?

Closing (if any time left)

- Other ideas for how this type of vehicle incentive program might be implemented in the fairest and easiest way?
- Now that we have talked in more detail about different feebate systems, do you have additional thoughts about a good name for such a program?

8:00: Dispense Incentives and Adjourn

FEEBATE FOCUS GROUP PROTOCOL2
Revised August 3, 2009

Irvine (8/4), El Monte* (8/5), Oakland (8/11), San Diego (8/12)
*** Translated to Spanish**

Note: Items in parentheses prefaced by e.g./i.e. are for moderator reference only and will not be read verbatim to participants.

6:00-6:10: Pre-Focus Group with Participants

- Consent forms
- Intake questionnaire

6:10-6:20: Introduction

Welcome and thank you for attending this focus group, My name is _____. I work for the University of California, Berkeley at the Transportation Sustainability Research Center. Additional project partners include the California Air Resources Board, UC Davis, and the University of Michigan.

- Moderator introduction and focus group purpose/overview

The purpose of this focus group is to improve the understanding of perceptions and opinions regarding feebates, a proposed policy initiative in California. We have invited you to participate in this focus group today to better understand your opinions and experiences with purchasing a new vehicle to understand how a system of feebates may impact this decision.

  - We want to hear your opinions
  - You don't all have to agree with each other or the moderator
  - No wrong answers

- Tell us your first name, when was the last time you purchased a new vehicle and what you purchased? (around the table)

6:20-6:40: Vehicle Purchase Decision-Making Process

- An important part of our study is to understand how you make vehicle purchase decisions. Why did you purchase your most recent vehicle? What steps did you follow, and why?"

  The moderator may ask minor questions such as (questions will be based on what the participants say):

  Did you consider any other vehicles?
  What about an SUV (or a passenger vehicle)?
  What about fuel economy?
  Did you do any calculations about costs and fuel economy
  If purchased when gas prices went up did this impact you?
  (PROBE- IF NOT OFFERED) What about financial incentives? What, if any financial incentives were offered to you at the time of your most recent purchase of a new vehicle?

6:40-7:00: Role of Fuel Economy and Environmental Awareness

Now we want to get your opinions on a subject related to vehicles, and which you may have heard about in the news.

- Tell us what you have heard about the following and give your opinions:
  - Greenhouse gas emissions;
  - Climate change, or global warming.

<u>To make sure we all have the same understanding of climate change I am going to provide a brief explanation (REFER TO THE POWERPOINT):</u>

- Greenhouse gases (GHGs), also known as "global warming pollutants," are air emissions that the consensus of scientists believe is contributing to changing the climate.
- The greatest effect is thought to be overall warming of the atmosphere, although local impacts may vary.
- These emissions are building up in the atmosphere and a many scientists believe this is due in part to human activity.
- The primary GHG emission is carbon dioxide.
- For the rest of this focus group, when we say "emissions" we are referring to GHG emissions.

- What have you heard about what the government is doing with regard to GHG emissions and energy use of vehicles?
  - What do you think of what is being done?
  - What else might be done?

    (Possible existing programs:
    - *i. Federal fuel economy regulation - CAFE*
    - *ii. Tax credits for clean vehicles [maybe prompt this one if not volunteered, time permitting]*
    - *iii. Fuel taxes*
    - *iv. Air pollution regulations*
    - *v. California GHG regulations*
    - *vi. Other: e.g., HOV lanes)*
    - *vii. cash for clunkers- if offered probe:* Do you think it's fair that only some people can receive a rebate? Is this a valid use of taxpayer dollars?

- Now we want to show you one thing the government is doing to educate the public about emissions from vehicles and get your opinion of it:

Introduce ARB Environmental Performance Label, new for 2009 and the Global Warming Score (GWS). (REFER TO THE POWERPOINT) Points to bring out on the label are:

- The GWS is not stating exact emissions levels.
- Instead the emissions have been converted to a score.
- The lower the score the higher the emissions.

- The higher the score the lower the emissions.
- Smog and GHGs are different. Smog are health-based emissions. We are not discussing Smog emissions today.

What do you think about the Environmental Performance Label?

Now I am going to show you a chart that shows the GWS and the miles per gallon (MPG) associated with each score. (REFER TO THE GWS/MPG CHART). Note that the GWS is related to the efficiency of the vehicle.

7:00-7:05: Feebates Introduction

Now I am going to tell you about a potential program that the government might put in place to encourage the reduction of GHG emissions from vehicles. Under this program:
(*REFER TO POWERPOINT*)

- The program would consist of monetary incentives (fees and rebates) for NEW vehicles when they are first purchased.
- The program sets a target level for greenhouse gas emissions.
- Vehicles with GHG emissions below the target level would receive a rebate.
- Vehicles with GHG emissions above the target level would pay a fee.
- The fees and rebates would be set so that the program is self-financed and no additional government funds would be used.
- For example using the Global Warming Scores we saw earlier on the sample sticker and remembering that cleaner vehicles have higher scores:
  - The program sets a target Global Warming Score of 5.
  - Vehicles with scores 6 or higher would receive a rebate.
  - Vehicles with scores 4 or lower would pay a fee.

7:05-7:15: Overall Impression of Feebates:

- [Confirm that everyone understands the basics]

- What do you think about this type of program?

- If you were going to buy a new car, and this program was in place, what would happen for you?

- How much of a fee or rebate do you think would make a difference to you?

  - Can you think back to the last new vehicle you purchased or the next one you are thinking of purchasing when you think about how much of a feebate would make a difference to you?
  - Ask one or two of the participants' for their vehicles' MPG and refer to the MPG and feebate chart to inform the discussion.

- What do you think about the name "feebates" for this type of program?

- (if time, ask for suggestions for the name of this type of program)

- We will use the term "feebate" during the rest of this focus group.

7:15-7:45: Feebate Design:

Now we will consider three different types of feebate programs and hear what you think of them. The first we will discuss is called "step," the second is called "continuous," and the third is called "class-based." (moderator will confirm that everyone understands each chart before moving to the next):

STEP DESIGN:

The first type of feebate program is one we are calling "Step Function." Let's walk through how this would work. [Fees and rebates are rounded to the nearest $500 and applied to ranges of GHG emissions, in a "step" type pattern]

Chart 1: In this example, the target Global Warming Score is 5. The Chevy Malibu has a global warming score of 6 and is therefore would receive $500 rebate.

Chart 2: The Ford Escape has a global warming score of 4. Because it is below the target, buyers would have to pay a $500 fee. Remember that cleaner vehicles have higher global warming scores. The Ford Escape has higher emissions than the Chevy Malibu.

Chart 3: Vehicles with the same Global warming score would pay the same fee or receive the same rebate. Here, the Pontiac Grand Prix also has a global warming score of 4 and would pay the same $500 fee as the Ford Escape. You can see that the emissions of the two vehicles is not exactly the same.

Chart 4: Each step you move away from the target Global Warming Score will change your fee or rebate by $500. So a vehicle with a GWS of 7 is two steps better than the target so the buyer would receive a $1,000 rebate instead of only $500. On the flip side, a vehicle that is two steps worse than the target would pay $1,000 instead of $500. If a vehicle has a GWS of 5, which is exactly the same as the target score, the buyer would neither pay a fee nor receive a rebate.

- Is this clear? Do you have any questions about the step function design?
- What do you think about this "step function" design for a feebate system?

CONTINUOUS DESIGN:

Another option for a feebate program is what we are calling "Continuous." Under a continuous system the fee or rebate is based on a continuous change in GHG emissions per vehicle type. This system would be based on the exact vehicle emissions rather then the Global Warming Score. Each vehicle would have a fee or rebate specific to its GHG emissions.

Chart : For example, the Ford Escape and the Pontiac Grand Prix both have a GWS of 4, but the Escape actually has higher emissions than the Grand Prix. Under this new system, the Escape buyer would have to pay $540 and the Grand Prix buyer would pay only $320; Under the step design both buyer would have paid $500.

[Note, if people have trouble understanding emissions, can explain in terms of fuel economy or gasoline consumption.]

[Optional if needed: Whether buyers pay a fee or receive a rebate would still depend on whether the car they are buying is better or worse than the target level (but now we are measuring better or worse using emissions/fuel consumption instead of GWS).

And the amount of the fee or rebate would depend on how much better or how much worse the vehicle is compared to the target.]

- Is this clear? Do you have any questions about the continuous design?
- What do you think about this continuous design for a feebate system?

CLASS-BASED DESIGN:

Another option that we are calling "class-based" would have different standards for cars and light trucks (. In the examples of the class-based system we are showing you the fees and rebates are based on the continuous system, but the cars and light trucks are separate. This class-based system could also be set up with the step system we saw earlier.

Chart : You may have noticed that larger vehicles are more likely to pay a fee and smaller vehicles are more likely to receive a rebate. Another way to the design the system would be to have different target levels for different kinds of vehicles. So instead of all vehicles being measured against the same target, cars would be compared to one target and light trucks (i.e. vans, pickup trucks and SUVs) would be compared to a different target. Under this system the Chevy Malibu and the Ford Escape receive similar rebates even though the Escape has higher emissions. Under the previous system, the Escape buyer would have had to pay a fee.

Chart : Adding in other vehicles, you can see that we are only comparing cars with other cars and light trucks with other light trucks. The Pontiac Grand Prix is now relatively dirtier and would pay a larger fee than before. The Escape is now relatively cleaner and receives a rebate and the Equinox pays a slightly lower fee than before.

- Is this clear? Do you have any questions about the class-based design?
- What do you think about this class-based design for a feebate system?
    - Do you think that all passenger vehicles should be treated the same or should they be divided into separate car and light truck/SUV vehicle categories?
    - If the vehicles are divided into categories, what other categories do you think might be helpful (in addition to cars and light trucks)

OVERALL DISCUSSION

- (If the advantages and disadvantages have not been covered during the previous discussion, raise them now): What advantages and disadvantages do you see with each of the systems (talk about each system separately)
- Now that you understand the feebate system, I would like to ask you once again what level of fee or rebate would make a difference to you. For example if the new car cost $30,000, what fee or rebate would matter to you?

COMPARATIVE DISCUSSION

- Of the three systems (Step, continuous, and class-based) we have discussed, which do you think would be best for you and why? (around the room)

- Which do you think would be fair to the largest number of consumers and why?

7:45-8:00: Visibility of Feebate Transaction

- In thinking about how you would respond to this type of program, consider that any fee that you would pay for a vehicle would be paid "on the spot" at the dealership. For vehicles that qualify for rebates, the rebate could either be applied immediately at the dealership (like the fee that would be paid for those vehicles) or received separately after an application was filed with the state or included with your state income tax refund.
    - Would you want to receive a rebate directly at the time of purchase or have it sent to you later, within 60 days?
    - If you did receive it at the time of purchase, do you think you would apply it to buy a slightly more expensive car, or just spend that much less?
    - If you would receive the rebate separately, would you still choose the same vehicle?

Closing (if any time left)

- Other ideas for how this type of vehicle incentive program might be implemented in the fairest and easiest way?
- Now that we have talked in more detail about different feebate systems, do you have additional thoughts about a good name for such a program? (OK to ask this question while someone is going around the table and giving out the gift cards if time is running out.)

8:00: Dispense Incentives and Adjourn

C. INTERVIEW SUMMARIES

C.1. Summary of Findings: Automaker Interviews

From July to December 2009, the UC Berkeley research team conducted six interviews with experts from five automobile manufacturers in the US and abroad (one company was interviewed twice). For the most part, UCB interviewers followed a protocol containing six basic questions (see below). In addition to these interviews, the team also received a written response from a sixth automaker. Identified below are some of the common comments and themes that arose from these interviews. The transcripts from these interviews are also appended below.

With regard to various themes that emerged through the interviews, we find both some consistent and some divergent results. First, three of the five automakers interviewed are generally supportive of a feebates program, though several of them indicated that their continued and future support depends on the structure and design of the program. For two automakers, this support stems from the belief that a feebates program sends a signal to the market and car buyers that the government supports a fleet wide shift toward more fuel-efficient vehicles. One automaker supports feebates as part of the company's overall shift toward greater environmental stewardship. One interviewee indicated that they have not taken a position on feebates, since, to them, it's not a "black and white," pro-feebate or anti-feebate issue.

Two interviewees expressed general opposition to a feebates program. For one automaker, this sentiment stems from the belief that the program would be bias against consumers with large families or needs that require larger vehicles and trucks. This automaker believes that CAFÉ standards will likely result in the fleet wide improvements that CARB hopes to achieve with feebates. Another automaker described feebates as "unnecessary and duplicative" and an "inefficient, expensive and complicated way to get small environmental benefits." Like the other opposing automaker, this company believes that Federal and state vehicle fleet average fuel economy and greenhouse gas regulations are a preferred alternative to feebates along with cap and trade programs already authorized in California and proposed nationally. This automaker added that feebates has the potential to reverse reforms that may be brought about by CAFÉ standard improvements.

Four of the five automakers indicated a preference for a continuous feebate structure as opposed to a step-based structure or a structure with a zero-band, and three of these indicated a preference for a single class system that places all vehicles on the same scale. Two automakers prefer a multiple-class system that would "compare vehicles that are really comparable;" for example, a class-based system that would compare SUVs to SUVs, and compact cars to compact cars. One automaker that is generally opposed to feebates prefers class-based as the "lesser of two evils." None of the automakers indicated a preference for a step-based function (one strongly opposed it), and two pointed out that the step-based structure could lead to market distortions, gaming, and border issues, where manufacturers make slight changes to vehicles to make them eligible for incentives.

When presented with the concept of a footprint-based function, one automaker indicated that this kind of system would be too complicated for consumers to understand and another expressed dislike for footprint-based systems in general. Two of the six automakers preferred footprint-based: one likened the footprint-based system to the shadow area-based program in the

Netherlands (which this automaker favored), and another prefers a feebate system that aligns with CAFÉ (so thus prefers footprint-based).

Four of the six automakers indicate that a feebates program in California would likely impact product design and product planning. Three of these indicated that the program would primarily result in product adjustments at the manufacturer level, while one indicated that feebates would result in a mixture of product design changes and shifts in production allocation. One of the four argues that this impact on product planning will be largely negative and that the program will cause "planning mistakes" and "wasted resources."

Two of the six automakers indicated that the program would not impact product planning and design, either because they did not believe that the program will be effective overall or because they believe that the program is more likely to cause shifts in production allocation. Feelings about how the program would affect product planning also influenced automakers' preferred lead-times and advance notice for program adjustments to maintain revenue neutrality.

In general, most automakers pointed out that the more lead-time, the better (for product planning and sales mix shifts). Three automakers think that one- to two-years notice would be adequate to make internal adjustments to meet consumer demand shifts. Automakers that believe that the program will and should impact product planning indicate that more lead-time (3-4 years) is needed to influence product design. Two of the five automakers used Cash for Clunkers as an example of how late notice and fast implementation leads to dealer frustration and other problems with implementation.

When asked about previous experience with similar incentive/disincentive programs, three of the five automakers indicated that they had had relatively positive experiences in the past. One automaker felt that the Canadian feebate program—though relatively short-lived—was generally good and motivated the company to improve one model in order to make it eligible for the incentive. Another automaker felt that Cash for Clunkers was successful at influencing consumer decision-making and also attracted new car buyers to the new car market. A third automaker described the Dutch feebate program—which they explained as a multiple-class, vehicle "shadow area"-based program—as a model for future feebate programs.

Four of the six automakers also described negative experiences with past programs. Cash for Clunkers, according to two automakers, disrupted dealership cash flows and provided little lead-time for dealers and manufacturers to prepare for program implementation. Two automakers used the Canadian program as an example of what not to do with a California feebates program, since they argue that the program was too short-lived and resulted in a lot of gaming and little technological change and environmental benefit.

Three of the six automakers responded that the feebate program should be administered by the dealership, where they believe it would more effectively influence consumer decision-making (one company indicated that an automaker-administered feebate would seem like a "hidden tax," and as such, would not influence consumer purchases). One automaker pointed out that administration by any entity other than the government (i.e. via vehicle registration) would dilute the signal from the government and incorrectly associate the feebate to the dealer or manufacturer. Another automaker argued that, if the point of the feebates program is to drive new technology, the only option is to administer the program at the manufacturer level, since this is where new technology

development occurs. This automaker also believes that it would be easiest and most amenable to dealers to centralize program administration at the manufacturer level.

All automakers that were asked about national versus state-by-state feebates programs much prefer a national program. If a national program could not be developed and if state programs were adopted, manufacturers would prefer similarly designed and aligned state programs.

C.2. Automaker and Dealer Interview Questions

VEHICLE FEEBATE ANALYSIS PROJECT
Automobile Dealer / Automaker Interview Questions

I. Introduction

Hello, my name is XXXXXX. I am a research analyst at the Transportation Sustainability Research Center (TSRC) at the University of California, Berkeley. The California Air Resources Board is supporting a study to evaluate the feebates. I would like to set up a time for me to interview you. It should take about 20 minutes. With your permission, for research purposes, we would like to record the interview/call. Note that the information you provide will be kept confidential and reported only in the aggregate and not for individual attribution.

Before we begin the interview I would like to read this consent form to you. (Interviewer reads consent form)

II. Preliminary Information

1. Identify name, position and organization. Years worked for the organization? Years worked in the field?

2. Time at which the interview took place.

III. Automobile Dealer / Automaker Interview Questions

1. California is considering adopting a vehicle "feebate" program that would incentivize consumers to purchase more efficient vehicles. Consumers purchasing more efficient than average vehicles would receive an incentive, and those purchasing less efficient than average vehicles would have to pay a fee. How would your dealership (or company) feel about the institution of this type of program?
2. Have you had any previous experience with this type of feebate program, or any other incentive or fee program, and any positive or negative experiences that you would like to relate?
3. (For dealers only) If the state requested that the automobile dealerships undergo a brief training session to help explain the program to consumers, would you be willing to have all salespeople undergo this training (approximately 1-2 hours)?
4. (For dealers only) One potential structure for the program would be to have the fees and rebates administered at the dealership level, where records would need to be kept and net fees or rebates returned to or obtained from the state, potentially on a monthly basis. What level of financial compensation would your dealership require to help to administer such a program? Assume that the feebate program applies to every vehicle sold.
5. (For automakers only) How would the institution of such a program be likely to affect product planning and the vehicle design cycle at your company?

6. (For automakers only) What would be the minimum amount of lead-time that your company would like, in being informed about the structure of the program before it becomes implemented?
7. Are there any features of the program that could be included that would make it easier for the dealer (or automaker) to administer?
8. Any suggestions for how the program should be structured? (e.g. applied to different vehicle classes rather than one scale for all vehicles?)
9. Any other suggestions for the structure or administration of the program?

C.3. Automaker Interviews

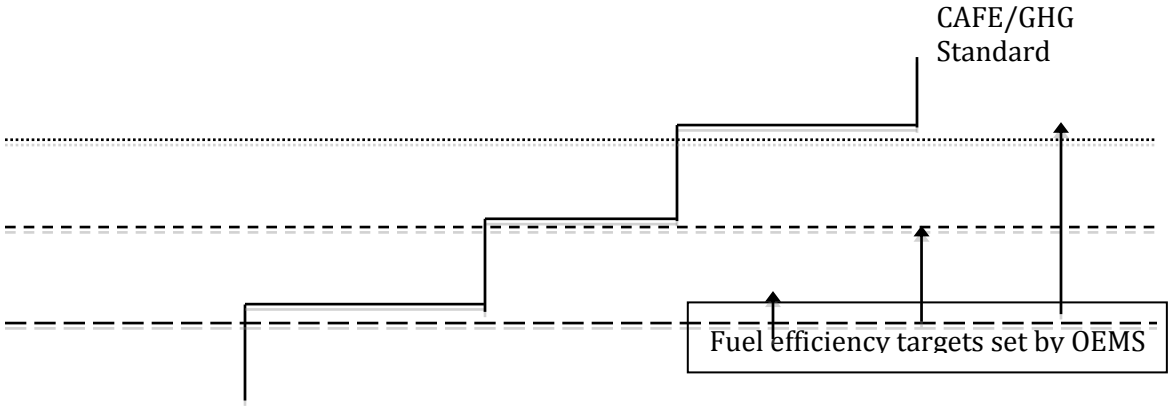
Automaker Interview #1
July 30, 2009

Preliminary Information: With company since 1980.

Interviewer: Davis is heading up analytical work for the feebates project. Berkeley is conducting complementary work with the public through focus groups, statewide phone survey, etc. There are two options for implementing feebates: (1) at the showroom/dealership, where the feebate would be tied to the GHG score; dealers report back to the state (similar to reporting for sales tax revenues); UC is talking to dealers to see how they would respond to this kind of a structure. (2) the OEMs would play a central role in administering the program. What are your general feelings about feebates.

Interviewer: Been thinking about it; trying to understand if it would be effective or not. We're generally supportive of increasing market signals to encourage consumers to buy more fuel-efficient vehicles. There are many different ways that feebates could be implemented; need to evaluate what would be most effective. For example, if implemented segment-by-segment, may only see differences between competitors at 1-2 miles per gallon. It's hard to get enough disparity in mpg to make very bad ones pay and the very good ones get a good rebate. If have a single point, every "minivan mom" is paying a penalty – is that fair? Can only feasibly make it "zero revenue" with a really good crystal ball. If implemented by OEM, would put an extra $200 into the car and get it back from the consumer as an incentive. Carmakers make the decision to implement new feature/design in January 2009, and these changes shows up in the MY 2012 vehicle. The expectation is then that the vehicle will be in the market for 5-6 years. When getting the board to sign off on this design decision, the board will ask "how do you know that you'll get the return?" The key is to match up the signal to where it will be most effective, but might be lag time. On the other hand, OEMs have all the signal that they need right now. It's not a question about whether to put power steering on the car. One issue is if for example you have a strong higher end and weaker lower end model, you'll want to keep the price down to get more market share and take a hit on more technology for higher end model. You may also see OEMs doing things that are strategic in nature that swamp the signal. The nice thing about a feebate is that it sends a signal to the customer, not to the OEM. CAFE/GHG regulation overtime will step up year-by-year.

The following was drawn by the interviewee to illustrate the point:



For the average OEM, the rational thing to do is to pick a target, earn credits early, and sell it for less later. This strategy averages out because the expectation is that the car will be in the market for a few years (first few years under the target/standard, last few years over the target/standard). Competitors will launch in difference years & choose targets according to launch dates. The guy that's last out of the market will have the lowest fuel efficiency, but cheapest cars. Some companies may decide to be the "fuel economy leader," creating a bigger gap between the leader and the "bottom guy." While companies are "duking it out" to hit fuel economy targets, customers are presented with more expensive and cheaper cars. If they don't get the market signals, it will make higher mpg cars hard to sell. This is where feebates will help.

May not be a very big range in mpg difference (maybe 4 mpg). Levering around 1-2 mpg is what makes the automaker nervous. Something like a 15-mpg spread would make more sense. We are more supportive of a single scheme for all vehicles. However, must also consider fairness/equity issues for those that may not have a choice about buying bigger cars (larger families, etc.). Could argue that, in these instances, larger vehicles (i.e. SUVs) are actually more efficient per passenger mile.

May also be concern that you will see compromises for better mpg. For example, you might put skinny tires on the car. Consumers could use the "rebate" to buy a new set of tires and still come out ahead.

Regardless of who collects the money (dealerships or OEMs), it's important to show the fee/rebate on the window sticker. If the feebate is part of MSRP, it would be simple for the OEM to take care of it. Also want to consider possible inefficiencies from what the dealers take (make ~10-15% of MSRP). If added as a tax after MSRP, may not get any percent of that (so may not get watered down by the dealer). If the OEM collects the feebate, it may also be a "selling point" for the company (i.e. "This OEM had $5 million in customer rebates in X year…").

Interviewer: How would feebate institution impact product design & planning?

Interviewee: It's important to keep it revenue neutral. OEMs want to plan over a 7- to 8-year period. Must also keep in mind time difference between decision-making, model year, and time in the market (~6+ years). We're looking for a promise that feebate "point" would be fixed over a certain period of time.

Interviewer: What's the minimum amount of lead-time that automakers would need?

Interviewee: There's no real way to give "lead-time." If feebates were announced today, it would affect cars models three years from now, but we have other cars out there that can't do anything about. Probably need 2+ years of "lead-time." With this amount of time, we can affect the product when it hits the market.

Interviewer: With revenue neutrality, at some point, the program/benchmark will get out of "whack" and will need to be adjusted (i.e. if generating a surplus/experiencing a deficit). To do this, will likely need to move the benchmark. How much lead-time needed for these adjustments?

Interviewee: We would like to see stability for a period of time, like an indication that it will be stable for five years and then move. It would be most effective with two years lead-time each time. Adjustments for feebates program would be made company-wide—not custom design models for CA. It's already a challenge to forecast demand for vehicles, and if you add a CA-specific vehicle, must now forecast demand for 2 different vehicles. Two versions of the same model would also make it logistically difficult to inventory, market, and distribute to dealers.

Interviewer: What features of this program would make it easier for automakers to deal with? Anything that you would suggest to make it a better program for your company?

Interviewee: To help automakers, the program should sent a clear price signal to the market. Make the feebate apparent to the consumer, put it on the sticker with the MSRP. OEMs collecting the fees makes the most sense. Stability and advanced notice are our friends—if we know about it, we can plan and build on it. Consistency will be key. Consumer feedback is right—you won't see the impact of a $250 feebate; it needs to be $500 or more to really influence consumer decision-making. Also don't want any "donut holes;" continuous is better.

At feebates meeting last fall, I was impressed with issues raised by the audience. At the time gas prices were high, and audience members were questioning the purpose of incentivizing cars that were flying off the shelves.

Interviewer: I've also heard some interesting comments from dealers that prefer fuel taxes, since they are more direct. A consumer may buy a truck but never drive it, so they're not producing the emissions.

Interviewee: The challenge is to create the right signal. For example, consider gas prices between 1990-2050. In 1990, gas prices were about $2.00 per gallon. With 3x the fuel economy, growing GDP and disposable income, gas prices will be nothing in terms of real dollars in 2050. We need signals in the market that buying a fuel-efficient vehicle is good. From a customer perspective, if you can purchase a $30,000 car for $29,000 with $1,000 rebate, this will definitely enhance competitiveness. Local conditions will swamp this rebate, but if you look at it from a large enough scale, it will have an effect.

Automaker Interview #2
October 2, 2009

Interviewer: From your perspective/position at the company what is your overall reaction to this feebates program? This program would be a continuous sliding scale with no zero-band; almost all vehicles would be included to create an incentive/disincentive structure.

Interviewee: This program is positive in the sense that it sends a message from government that efficiency is important, and thus government is incentivizing the purchase of more efficient vehicles. I assume that the fees would be assessed by entity of government at the time of vehicle

purchase or applied to yearly registration. This differs from typical CAFE-like "command and control" regulation where the burden is placed on the manufacturer to convince people to buy more fuel-efficient vehicles. A continuous set of fees/rebates with no zero-band is arguably fair. On the other hand, there has been widespread discussion on biases toward larger vehicles that have more capacity. My philosophical preference for a simpler system because modifications (i.e. separate systems for cars/trucks, zero-band, etc.) increase system complexity and make it difficult to maintain a sense of fairness.

Interviewer: Two permutations are being explored with this project: (1) step-based function vs. 2) continuous function. The step-based function would have more discreet "chunks" – i.e. $500, $1000, $1500. The step function utilized for France's feebate program. The continuous function would be more based on Pavley rating (GHG emissions/mile). We did not find much support for step-function idea in focus groups with the public, and the public also seems to prefer class-based concept: essentially comparing SUVs to SUVs and passenger cars to passenger cars, etc. (end up with 3-4 classes).

Interviewee: With a class-based feebates system, you'll run into other problems. For example, as seen in CAFE rules and other regulation, there's always a debate on definition of a "truck" vs. "SUV." As a vehicle manufacturer, you look at the rules and figure out the best way to have a vehicle categorized. We see examples of this with the PT Cruiser, SSR, Dodge Magnum, etc., which were classified as trucks specifically to help out the manufacturer on CAFE compliance ("gaming the system"). This is also problematic because a "good" SUV might get a rebate, but actually has worse fuel economy than a car that pays a fee. This is difficult to explain to customers when the program's goal is to promote efficiency/reduce emissions. My philosophical preference is to put all vehicles in one category in a continuous function. I don't like the step function because you get "gaming" every time you near one of the step-changing points. Automakers will try to figure out how to get it just over the border. There was an example of this in Canada with Toyota Corolla and Honda Civic. There was only slight difference in vehicles, but because it was just on the border, Corolla got big incentive and Civic got nothing. Boundary issues are unintended consequences anytime you have a step function or other kind of discontinuous function. This is not new; it happened with CAFÉ**.** NHTSA talked about a step function, but ultimately adopted a continuous approach.

Interviewer: Have you thought at all about a footprint-based feebate that would mimic CAFÉ?

Interviewee: I'm not a fan of footprint-based at all; I don't support NHTSA's basic position that small cars are less safe. I recognize the physics issues—smaller cars tend to be lighter and mass wins in a collision, but this is not the sole issue. If you move the whole fleet to lighter vehicles, this changes the story. NHTSA is operating under the belief that the fleet we have today is the fleet we will always have. I understand why, politically, footprint-based was pushed hard by domestic automakers. Attribute system major downside from a manufacturers perspective. If fuel got very expensive, the standard would be a lot higher. I believe there was an assumption by US automakers that Americans would always want larger cars. Potential to be very difficult to live with a footprint-based system in the future. When talking about applying a footprint-based feebate system, I would prefer an absolute basis and not be tied to an amount above or below the footprint. Footprint-based feebate would ultimately distort central purpose of the program to promote more fuel-efficient vehicles. In order for feebates to be successful, the government must do a better job of convincing the broad public of the need for more fuel-efficient vehicles. Global warming and energy security hasn't connected to the transportation

piece and demonstrated the sacrifices that people must make. With CAFE, the government forced automakers to build more fuel-efficient vehicles, which made it seem like a "free lunch" from the perspective of the public.

Interviewer: For this project we're also conducting a series of focus groups and a statewide survey, and we're finding that there is a lot of public suspicion about this program.

Interviewee: There's a group here in corporate planning that has done a lot of consumer research and learned that it's in our best interest to get the truth from customers/public. The answers that you get in surveys and focus groups depend largely on how you ask the questions, and sometimes you need to drill down levels of detail to get to true belief (otherwise you'll get the answer they think is most PC). Also found that it's hard to convince people of something they haven't already made up in their mind. For example, we don't try to convince someone shopping for an SUV to buy a midsize car, but we do try to convince them to buy *our* SUV.

Interviewer: What's the minimum amount of lead-time that automakers would need?

Interviewee: We disagree with Honda's position that feebates influences product manufacture. At our company, we're totally focused on what the customer wants, so if feebates moves our customers toward something we don't offer, we might alter our manufacturing. Within 1 year, we can readjust our production allocation. But all of this will depend on the magnitude of the fee/rebate. A feebate is $1000-$2000 would probably create a shift within the product lineup. If we were looking at some kind of future design, we would consider the value of perceived fuel economy. Disagree that it wouldn't affect customer (Honda says that the fee/rebate will go all into technology). The size of the rebate also influences the amount of time needed to adjust to it. The revenue neutrality aspect makes the feebate become a moving target that needs to be adjusted every year. Typically start planning products 4-5 years out. Would want some level of known stability year-to-year. As a manufacturer, there is an added difficulty of responding to this on a state-by-state basis. Also a concern with leakage issues from other states. For example, a resident in CA that wants to buy a new "fee" vehicle could buy the vehicle in another state and roll the odometer forward so that it would look like the car isn't a "new" car (in order to get out paying the fee). To my knowledge, it's not illegal to move the odometer forward, only to move it back. Our preference is to roll-out a feebate program nationwide, since it's too difficult to do it state-by-state (even if implemented in all Pavley states). From an automaker perspective, we're trying to manufacture vehicles that can be sold across the country. Ideally, we would like to have a "global vehicle market" rather than a national, but we definitely prefer national to state-by-state. One of the difficulties we've had is that dealers have are independent businessmen and they generally don't like charging customers any more fees than are necessary, so they've generally been against feebates. As a company, we're very deferential to dealers, which is one of the factors why we haven't come out and taken a position on feebates. Ask ourselves if we really want to advocate something that our dealers don't really like. Dealers are our key customers, so we try to work with them to make theirs a successful business.

Interviewer: There are two key program designs that we wanted to explore with you a bit further. One, the feebate could be done at the dealership where dealer collects the money or pays out the rebate; the dealer would handle some of the paperwork, so there would be some administrative cost associated with it.

Interviewee: The key thing here is that the feebate be seen as a clear signal from government; not something coming from the manufacturer. So having the dealers administer it may make it seem like it's a dealer or manufacturer thing, and I'd be concerned because it muddies that signal.

Interviewer: That gets to another way of doing it, which would be between the government and the automaker, where the dealers would be obliged to explain the program (and fee or rebate would be on the sticker).

Interviewee: The thing that comes to mind is the recent Cash for Clunkers. In the end, it didn't take as long to get paid as the dealers feared, but it took a lot longer than they were originally told, and it created some difficulty for them with their cash flow, etc. I think that, instead, administering this as part of the registration fee would help minimize the dealer effect. The dealer could handle this as a service, but it's already part of a well-established process. It's my opinion that this would be a good way to do it, be cause it would send a stronger signal to the customer; if it's handled at the manufacturer-State level, than customers view it as some kind of deal between the manufacturer and the government. Doing it this way might be better for administration, since State would only have to deal with a handful of transactions, but doing it behind the scenes would weaken the original goal. I'll also make a plug for another idea, which ties this fee to every year's registration. This sends a continual signal to consumers. Problem here, though, is this might send a signal to people to keep older vehicles to avoid paying fees every year. Has there been any discussion about doing this as part of registration fee?

Interviewer: There has been previous work in that area, but in our study, ARB very clear that focus study on the new vehicle concept. None of our policy designs contrast that with the registration fee.

Interviewee: Another concern is the consequence of dis-incentivizing the purchase of new vehicles. Have you guys tested how the feebate program might impact the total number of vehicles sold?

Interviewer: We'll still have to wait and see what our models tell us, but the research that I've seen shows that the total sales do drop a little bit, but that the revenues for the industry don't change much, since the vehicles that are sold have more technology in them, so may have more revenue associated with them.

Interviewee: I philosophically support the concept of a feebates program, because as manufacturers, we've long said that you're mandating that we produce these vehicles w/ CAFÉ, etc., but what of the signal from the government to consumers? I see this as a signal from the government. This is why it's important to design the program to maximize that signal. It's very positive from that standpoint, because it's something that's been missing for too long. We have to build these vehicles, but no law saying that anybody has to buy them.

Automaker Interview #3
November 23, 2009

Preliminary Information

This OEM is part of a larger corporation. The two companies generally function autonomously, other than when it comes to R&D, where they combine efforts. Interviewee has been with company for 3 ½ years. Tracks anything that could become a regulatory requirement in the US, specifically related to the vehicle (safety, missions, some environmental & chemical).

Interviewer: California is considering adopting a vehicle "feebate" program that would incentivize consumers to purchase more efficient vehicles. Consumers purchasing more efficient than average vehicles would receive an incentive, and those purchasing less efficient than average vehicles would have to pay a fee. How would Hyundai feel about that kind of program for CA?

> Interviewee: I should start out by saying that our office is sort of new, and while we've done a lot of thinking about this, we're still in the early stages, so it is possible that as we look more about feebates programs down the road, may have some changes in our opinions about feebates programs compared to the opinions that I'll give you today. With that said, we actually think that we would support a feebates program at this time. We're looking at it from a standpoint of corporate leadership and environmental stewardship, and we see this as an incentive program that really gets us there through our consumers.

Interviewer: Do you think that your position is based on past experience with programs in other countries or just your thoughts moving forward?

> Interviewee: It is partially based on our past experiences. Some of it just has to do with our actual vehicle fleet mix as well.

Interviewer: Did the Canadian experience come up as particularly relevant since it's also North America?

> Interviewee: We had some concerns with the Canadian program because it didn't last very long, but it was a generally good experience for us. We had one model where we worked to improve our fuel economy in order to get the incentive for that vehicle.

Interviewer: If California did this, how do you see this affecting product planning? Some responded to this saying that they would likely shift the vehicle sales mix and others indicated that they would have redesign vehicles. How do you think it would affect product planning with Hyundai?

> Interviewee: We would definitely take it into consideration with product planning, but we're not quite sure how. Based on feedback from the parent company, some of our experience in European feebate programs led to incremental changes in the vehicles in order to get them to qualify for incentives. So it might fall somewhere in the middle—a little bit of a sales mix and a little bit of redesign. Experience showed that they were able to do it with small increments over a period of time. Fuel economy has been a huge focus for our company, especially trying to get ready for the new standards. Feebates may be enough that the product planning people look at it as an incentive to push fuel economy just a little bit further, so I guess ultimately it would be more vehicle design.

Interviewer: Do you have comments on what you think would be a reasonable amount of lead-time for implementing this program from your perspective?

Interviewee: We started to think about this from the perspective of the Cash for Clunkers program. It was unbelievably fast implementation; we were able to turn it around and do it in 30 days. That said there were still administrative problems, administrative burdens, and dealer heartache over who was pushing the cash or holding the cash at different points. Considering these issues, we really think that a minimum of 6 months lead-time is needed, just to make sure that there aren't these kinds of problems. We also understand that if the feebates lead-time is too long, then people have too much time to respond, and that weakens the program's effectiveness. So keeping that in mind, we thought that 6 months was appropriate. I've talked to my sales company about this, and they said that if they really thought that this program was going to help them sell cars, they could get it up and running pretty fast.

Interviewer: If people knew that this program was coming and it was announced, would they accelerate purchases of less efficient vehicles that would have to pay a fee or delay the purchase of more efficient vehicles that would receive a rebate? We're thinking that this would probably be a one-time effect, so that there might be a wave of less efficient vehicle purchases right before the program starts, followed by a wave of more efficient vehicle purchases right after program is implemented, but eventually this will all settle out. Is that the sense that you have from your perspective?

Interviewee: That's actually not something that we've thought of too much.

Interviewer: (Outlined three potential structures: Class-based system [no zero band], multiple-class [i.e. one for cars and one for light trucks], footprint-based to parallel CAFE [larger vehicles pay a little bit less b/c of their footprint]). Do you have a comment about these different structures—what would be most appropriate?

Interviewee: I'll start off by saying that we hadn't even started to think about anything like the footprint-based; it actually sounds a little complicated. And one of our concerns is that the program is simple enough that the customer gets it when they come to the showroom; that it's very transparent, easy—and the footprint already sounds a little scary, but maybe as we learn more about it we would change our minds. With the other two concepts—we think that we have a preference toward a single-class system. We haven't gone as far into it to look at the zero-band, but we really thought that having all cars in one is probably the best way to do it. One concern is you could hypothetically have a car that must pay a fee and a small truck that would receive a rebate even though it gets worse gas mileage than the car—think that this is a difficult scenario to try to justify.

Interviewer: The feebate could be transacted at the dealership and handled just like other fees and rebates, like tire fees, etc. which are assessed at the dealership, where the dealer collects the money and is responsible for paying the state or getting their money back from the state. Another way that it could be handled is a bit more behind the scenes with the automakers, kind of like CAFE. In this case, for example, at the end of the month Hyundai and the state would settle up the fee/rebate. There would still be some kind of a signal on the sticker of the vehicle, but this set-up might allay concerns at the dealership about administrative burden of the program. What do you think about these scenarios?

Interviewee: We hadn't thought too much about it, since we thought that California wanted it to be dealer-applied so that it was really effective at changing the customer decision-making. The other thing is that there are already a lot of labels on the car, and the more labels there are on

the car, the less they get noticed by the customer. We just really thought that it would be transacted at the dealership, so hadn't thought about it much beyond that.

Interviewer: Any other thoughts on how the program should be structured?

Interviewee: We have a list of things that we thought about—and you've probably thought about too—and we don't have answers, but we thought we'd bring them up. One of the most obvious is how out-of-state purchases will be handled, especially for people who are near the border. Might have instances where people go out-of-state to avoid the fee or others that will come into the state to take advantage of the incentive.

Interviewer: The trickier thing is probably people who buy a car to get a rebate and then take it out of the state. In this case, it would be up to other states to try to catch that if they wanted to. For purchasing cars out-of-state, the State could collect the fee when the car is registered (because breaking the law if not register in the California shortly after entry).

Interviewee: We have two separate points that sort of relate to that. First, we don't really think that used vehicles should be subject to feebates.

Interviewer: There's currently no plan to directly apply the program to used vehicles. The only effect on used vehicle markets that we anticipate would be secondary effects. The feebate would only be a one-time deal on new vehicles.

Interviewee: We know that California has goals to have a revenue neutral program. Our concern is how you maintain revenue neutrality, but also, we heard some rumors at one point that the State was thinking of using this program to collect some money for other administrative programs. We really think that the feebate program should maintain revenue neutrality or pull a little extra just to cover the administrative costs, but not for any other purpose.

Interviewer: In order for it to be politically feasible, I think that will have to be the case, and I think that policymakers are very aware of that. Our definition is that it is revenue neutral including the administrative costs of this program and only this program and nothing else should be piggy-backed on it—that's really important for public acceptance.

Interviewee: When thinking ahead to later on in the program—assuming that the program is long-lasting and stable—at some point the scale will have to slide in order to accommodate more fuel efficient vehicles. There may then be scenarios in the future where vehicles that meet regulatory standards could end up facing a fee. From an optics point of view, it seems that any vehicle that meets California or federal fuel economy or greenhouse gas standards should not pay a fee.

Interviewer: Over time, the target value/pivot point will shift slowly, and we are thinking about how this will harmonize with other programs like Pavley & CAFÉ. My sense is that they'll be pretty well harmonized, and what we see with modeling is that the really key question is what happens to federal standards after 2017 (i.e. does it stop at 35 mpg automotive fleet average or does it continue to go up?). So what happens with that will have implications for what a feebates program does in relation to that (how will feebates harmonize with changing policy climate). Will probably have to adjust feebates according to what happens with Pavley & CAFÉ in coming years.

Interviewee: One other point was what GHG value will be used to determine the feebate. As you're probably already aware, there is a raw test data value, then actual certified value, and ultimately there's a totally different number that goes onto the label because it's adjusted and cleaned up and more testing goes with it. If you apply it with the fuel economy label, it loses step with whatever regulatory program there is; but if apply at regulatory standard level, then it's no longer transparent to the consumer. It's harder for them to figure out how a vehicle got a fee or rebate if the value doesn't correspond with what the fuel economy label says.

Interviewer: Research team is cognizant of this, and it will ultimately be up to the regulators. But the numbers we're currently thinking about are the numbers that will be used for Pavley Law compliance. One of the things that we explored in the focus groups was using what's on the sticker now—the zero to ten scale. This model year, California is requiring a GHG emissions scale to be added along with the smog score. The feebate could be tied to that—but then you're getting more into a step-function rather than a continuous-function, and we're trying to get away from the step-function. So I think it's leaning toward something that's based on the regulatory numbers, but then, like you said, that's a little less transparent for the consumers, and that's a very good point, so we'll make a note of that.

Interviewee: As an automaker, we always want to emphasize our preference for a national program. One of the really big considerations is the that putting the technology on the vehicles to improve them to get more rebates (of even to move them away from fees), is always more cost-effective at a larger scale. This is particularly true for our company, since we're still growing in the California market. It's a tough market for us and it could be difficult to make those technology changes unless we know that we can cost-effectively do it nationwide.

Interviewer: No question that a national feebates program would be most effective. All-around, there are multiple arguments for why a federal program would be better (i.e. leakage issues, GHG is a global problem, not just regional, etc.). If feebates program is implemented in California, there's no doubt that it will be looked to as a model for a federal program.

Automaker Interview #4
November 25, 2009

Preliminary Information: Interviewee has been with company for 21 years.

Interviewer: California is considering adopting a vehicle "feebate" program that would incentivize consumers to purchase more efficient vehicles. Consumers purchasing more efficient than average vehicles would receive an incentive, and those purchasing less efficient than average vehicles would have to pay a fee. The idea is that the program would essentially be revenue neutral—fees collected would pay for the rebates and any administrative costs of the program. How would your company feel about that?

Interviewee: First of all, the goals of the program have to be well established. If it's about efficiency—in terms of smog-forming emissions—there's really no differential across the range of vehicles you can purchase today. One of the keys upfront on any feebate is to really define the objective. If CO_2 is the focus here, this has to be spelled out in order for people to understand the costs and benefits.

Interviewer: We said efficiency, just to explain the program quickly, but to clarify, it would certainly be tied to greenhouse gas emissions, and the way we presented it to the public in focus groups was that greenhouse gas emissions are closely tied to fuel economy, since the public tends to be more familiar with fuel economy. But the actual level of the fees and rebates would be tied to GHG emissions, since this is a State program and this is what California has the authority to do. But I totally agree that goals would have to be very clearly spelled out for consumers.

Interviewee: One of the concerns that we have about a feebate program—and they've been around in design and concept for decades—is that they are most applicable in a stagnant market. What you have now, though—from a manufacturers perspective in today's market—is probably the most aggressive infusion of fuel efficiency initiatives ever in the auto industry. This has had an effect across the entire range of vehicle markets—whether it's additional efficiency for internal combustion engines (eco-boost), whether it's a full hybrid, mild hybrid, battery electric, etc. Since CAFÉ was designed, there's never been a regulatory structure also behind the driving change in fuel efficiency. Everything we're doing is to increase fuel efficiency across the board with vehicle technology, and it makes it very difficult for a feebate program to come into play from a customer perspective.

Interviewer: I'd like to probe that with you a little bit more. One way we're thinking about this is that, in the absence of the feebate program, faced with the CAFÉ increase, like you said, you'll have to do things across the board over time to meet the CAFE goal. In the absence of the feebate program, you'd have to do something internally to price the more fuel-efficient vehicles to make sure that they move in the marketplace. So you may have to do some internal price shuffling to make vehicles attractive to consumers (if no incentive available). If a feebates program comes in, it is now providing more structured incentive for cleaner cars, which may help to drive sale of cleaner cars that you need to sell anyway for CAFÉ compliance. So I wanted to hear more of your thoughts on how feebates are counter-productive for what CAFÉ is trying to do.

Interviewee: CAFE is supposed to be applied across the entire range, so every new product that we come out with is significantly higher in terms of fuel efficiency. When CAFE standards were stagnant, we would try to price pick-ups at a very low cost in order to be able to sell F150s. The issue of fuel economy and programs like feebates don't come into the decision process like they used to—actually we don't see it having a significant impact. The bottom line is that we're doing everything possible to meet the standards and also to remain competitive in our market and meet consumer expectations. This is a completely different competitive environment than we've seen in the past—before, it was a baseline $1.50/gallon, stagnant fuel economy for cars and slightly increasing fuel economy for trucks. We don't see those dynamics anymore. Now you have customers that are skittish on fuel costs because they've seen it go up to $4.00/gallon, so there is concern about affordability and cost from the fuel side. We don't see it as a driver in what manufacturers are putting on the table for customers, especially when you see that customers don't cross-shop segments very much. If feebates are hoping that customers planning to buy a minivan instead buy an entry-level compact, well, that's not going to happen. If they need the larger car, they will purchase one in that segment.

Interviewer: There's also a big modeling component to this project, and what is shows that, given the CAFE *increase, you have to go to a pretty high level of feebates to stimulate manufacturers to produces cars that are more efficient than what's already being required by* CAFE*. Feebates would essentially play into the* CAFE *by helping to move cleaner fuel vehicles, but it's not going to stimulate a*

given OEM to go beyond CAFE *unless the feebates get really steep and consumers demand even more fuel economy than you would need to produce from CAFÉ. And there's a big question about what happens after the 35 mpg—does it then go flat again for another 20 years? Or does it continue to increase by x% per year after that?*

> Interviewee: We see the competition driving that curve more than anything, even more than regulatory. What's really driving this is competition to produce affordable technology. We also see—and what feebates doesn't take into account—is that when you purchase a vehicle, you have a range of variables that you want to cover—i.e. size, function, safety, utility, affordability, etc. The feebate program won't do anything to address many of these variables that influence consumer decision-making. Within a segment, a feebate can penalize and reduce the cost of higher levels of technology and penalize those that can't afford it. This is one of the problems with a feebate in a segment. Why don't people buy hybrids? We offer a hybrid that's $3500 more than the non-hybrid version, but this is an affordability issue. It's also an issue of how the car will be driven—might be the same to drive a hybrid around town as to drive the non-hybrid on the freeway. What we see is that the complexity of the customer decision is not fuel economy only; it's really comes down to fuel economy and drive cycle. Our concern as a manufacturer comes down to meeting a wide variety of customer needs. A feebate has unintended consequences on customers—it can penalize customers that look for an affordable choice, and it can reward some with disposable income that are willing to pay for a higher technology.

Interviewer: Have you had experience with other feebate programs—like the Canadian program or programs in Europe—that may have some impact on your perspective of a feebates program?

> Interviewee: The Canadian program is probably the most recent and relevant. From our perspective it didn't drive any change. There are stories of one manufacturer that worked around the break point—any time you have a break point you can try to game the system. It helped to reduce the costs for people that could afford advanced technologies, and created higher costs for others. The real problem came down to maintaining revenue neutrality—it then became more of an issue of increasing the fee and reducing the "bate" rather than keeping them closer to equal. This caused it to become viewed as more like a tax. From the manufacturer perspective, it did not drive any change, in terms of vehicle design and vehicle application.

Interviewer: Did you see any sales mix shifting in response to any changes in consumer demand?

> Interviewee: We can't pull that out from all the other variables. There were also a lot of fuel cost changes at the time, so it was hard to try to isolate effects of the feebate program on its own. The big change in market share occurred a year-and-a-half ago when fuel cost went up above $3.50/gallon. There was quite a significant change in the small car and secondary (non-commercial) truck markets. With the Canadian program, we really just saw it as more of a burden on customers.

Interviewer: Looking at various structures for this feebates program. You brought up the step-function before with the Canadian program, which we're leaning away from favor of a more continuous function, which prevents the kind of gaming that you were talking about. We're also considering having multiple classes (explained this concept). The argument for the multiple class idea is that is

addresses the problem of the person that needs the larger car because they have a big family, for example. What do you think of the merits of these different structures?

Interviewee: There are a lot of design characteristics on these different classes of vehicles that we design in because of customer preferences. Find that, for some customers, payload, towing, and functionality can be very critical—even more important than fuel economy. You can't have a full-sized pick-up and not have towing capacity. We have, for example, even offered superior fuel economy type applications for that segment, so you could reduce your payload or towing capacity and optimize around fuel economy. But we found that there's no big customer preference for that. If you're in the truck market, you're looking for a wide set of variables that are different from the car market. We see that as a critical differentiator in how we design and put technology on vehicles. This is why you'll see in a hybrid application much more on a car side than on the truck side. We think that, with classes, the car/truck is a minimum, and then even within in the car side and truck side, there is a wide range of functionality differences as people get into those segments. That's why EPA has vehicle classification segments; CAFE has gone to footprint. The concern that we have with the feebate is that it penalizes the customer that is trying to optimize more than one variable. Anything that's sustainable doesn't last long if the customer feels that there's inequitable treatment or that they're being penalized on a suite of what they consider to be viable purchase criteria. The problem with the continuous curve is that the target point will be constantly moving, see fuel economy changes even within the same model year. This creates the possibility that you can purchase a car this year and receive a rebate, but the same car next year could pay a fee. You get a lot of swings because everything is so dynamic, which can cause a lot of confusion in the marketplace.

Interviewer: So you would expect to see pretty dramatic changes between model years?

Interviewee: Yes, absolutely. When we did the federal legislation for the hybrid tax credit, it was all based on a "baseline" that we locked in (didn't want the complexity of having to manage a changing baseline). There are tradeoffs there, of course, since the fuel economy is now moving up quite quickly. Also concerned about a constantly changing "baseline" since our product cycle can be 4-5 years, so as the baseline changes, our products are still caught in that timeframe.

Interviewer: That brings us to the next question, which is a question of lead-time. The State probably won't announce a program and give manufacturers 3-4 years to response to it, but they will likely give more notice than Cash for Clunkers, for example. What do you think would be a reasonable amount of lead-time? Along with that, how would this type of program—given that CAFE is increasing—affect the planning/design cycle?

Interviewee: We see all the discussions going on right now in terms of design and future programs; I just don't see it entering in. It might come down to a bit of a mixed plan within a certain region of the country if California were going to do this. But then you have a lot of problems with leakage, out-of-state purchases, cross-border flow, etc. At this point, I don't see how it would drive much change, since everything we're doing right now is to improve fuel economy within the constraints of the features that our customers demand. Our model years are 4-6 years out, so it wouldn't change anything that's currently on the table (working right now on 2012+). You need the lead-time to have an effective rollout, since customers will be impacted the most. And lead-time helps to avoid some of the problems that we saw at the dealerships with the Cash for Clunkers program.

Interviewer: You mentioned footprint—another way that we're thinking about a feebate is to base it on footprint in order to harmonize with CAFE. This would kind of cushion the blow on the larger vehicles. But this may make it less transparent to consumers.

Interviewee: Anything that you can do that provides flexibility to consumers in that multivariable decision. Size is a critical driver—we would see this as cushioning the blow to customers more than anyone. The problem is that the customer that has multivariable uses for the vehicle—so therefore might be in a truck—get's penalized. And this is a problem—those that get penalized most are those that are in the least affordable position to do so. If you look at socioeconomic justice, feebates has a very difficult proposition to provide value to those that need it. Basically what you're doing is providing a cost-offset to those that have the disposable income to seek out a more expensive vehicle, which is the higher technology vehicle, and you're penalizing the person that's considering the base vehicle because of affordability. There's a social justice issue in there, and anything that you can do to reduce that impact. That's why the feebates system in a dynamic environment is difficult to implement without unintended consequences.

Interviewer: I see what you're saying about cars with higher technology having better fuel economy, but there are a lot of cases where the base models might actually have higher fuel economy because they have manual transmission, smaller engines, less performance, etc. In that case, the feebates could help some of your base-model customers. So I could see it cutting both ways, but you raise a good point.

Interviewee: Going back to the structure of the program: if the goal is CO_2 reduction, model should look at how much CO_2 is saved from a feebate program versus other efforts. For example, when it comes down to it, what we really have to reduce is VMT—land use practices, mass transit, intermodal access—can have a dramatic impact, and can be relatively low-cost. Second, and this comes out of our experience with Europe, is eco-driving. With simple changes in driving practices, can easily save up to 15%, and we've done eco-driving courses where we take a person for a baseline lap, then have an instructor teach them some simple techniques, and take them on another lap, and the average fuel economy improvement is 25-30%--it's amazing. And so much of that comes down to the fact that we have all of these technologies, but we don't have drivers that know how to use them.

Interviewer: Those are really good points, and I'll add that there's nothing about feebates that isn't totally compatible with eco-driving, but you're right that if you're going to invest the time and effort in a program, you should look at what is the best program.

Interviewee: In California you have the base fleet modernization program, and our focus in the past has been to try to enhance that program, get better funding, etc. Right now this program is based on failure of SmogCheck, and you could almost say right now that it's a state fleet modernization initiative. The people affected by this program are typically those with an older vehicle that don't have the money to move into a more fuel-efficient vehicle. Our perspective is that Cash for Clunkers brought in a whole wave of new buyers that have historically bought used cars. If you look at the profile of people buying the vehicles, it is not the profile of a new car buyer. Might be nice to know how the feebate program melds with or enhances fleet modernization. California is one of two state programs that has a fleet modernization program—other is Texas.

Interviewer: One idea for the program is that it would essentially be transacted in the showroom along with other taxes that get paid. Dealers collect any fees and disburse any rebates as part of the purchase process, and then settle up with the State. Another way that is could be done is similar to how CAFE is handled, which would be between the State and the automakers directly. In this case, the dealers wouldn't really be involved with handling the money. There would be something on the sticker of the vehicle that would still say if it was getting a fee or rebate, but the dealer wouldn't be transacting that money. Do you have a reaction to that idea (i.e. more effective if handled at the dealer? Etc.).

Interviewee: Transparency is very important. The most effective part of a feebate program is consumer education, and you may miss out on this with a "hidden tax." Nobody wants to handle this transaction, but then what do you have if it's a kind of backroom paperwork exercise.

Interviewer: Well, it would still be affecting the prices of the cars.

Interviewee: If transacted behind the scenes, its not transparent and the point of the program will be lost to the consumers. With Cash for Clunkers, moved it out of the tax credit and moved it to the point of purchase directly at the dealership. The program was very effective, and by design. Nevertheless, there were some hard feelings on the part of the dealers and some angst in the system, but if it's not in the discussion with the consumer, then it's lost. We all share the same goal, and that's to dramatically improve fuel economy and do it in a way that consumers' needs are met and as affordably as possible. You can sense our company's hesitancy on feebates since we're in such a dynamic environment. Ten years ago, a feebate program could have had a dramatic impact in a stagnant environment.

Interviewer: I assume that, given a choice between a California program that would apply to a handful of other state (like Pavley states)—at most half the country—versus a federal program that applied to the whole country, you would prefer the federal program.

Interviewee: Yes, that's easy. One national program drives consistency that can be built into product plans. It's all about scale—without scale, you can't drive affordability, and without affordability, it doesn't matter. Nobody has enough money to throw at this unless you can get technology at a large scale. Do you have any timing plans for this project?

Interviewer: Quarter 1 of 2010, hopefully more in the middle than at the end. We'll provide you with that report, and may circle back with you on a few things.

Automaker Interview #5
Monday, December 14, 2009

Interviewer: We have two sets of questions that we've been asking automakers and experts that have prior experience with feebate programs, so we'll likely ask questions from both sets during this interview, but let's go ahead and start with one of the automaker questions. The first question is this: California is considering adopting a vehicle "feebate" program that would incentivize consumers to purchase more efficient vehicles. Consumers purchasing more efficient than average vehicles—and this is related to greenhouse gas emissions—would

receive an incentive, and those purchasing less efficient than average vehicles would have to pay a fee.

Interviewee: What is the average?

Interviewer: The cleaner the vehicle the more rebate and the less efficient, the higher the fee. What is your reaction is that type of program? This may be based on your experience in other countries.

Interviewee: What we support wherever we are is putting a price on CO_2. The first choice option for us in that regard has so far always been CO_2-based car taxation. Obviously this position comes from an environment like the one we have in Europe where we have either a purchase tax or an annual tax or both of them. The crucial thing about a feebate program in the US is how it is defined and how you assign a fee or rebate to the performance of a vehicle. This is crucial and something that we do not discuss in a black-and-white manner in the sense of we do or do not like fiscal incentives. It all depends on the model according to which these incentives are designed. It is really crucial that we compare vehicles to one another that are really comparable. So it's all about the baseline, when you say "above" or "below average," how you identify the average, which is a proper reference point for a given vehicle. For us, this is the crucial issue in order to avoid distorting the market and to create a level playing field between different segments or brands. Apart from that, it's all about the technicalities of the introduction of such systems, sufficient lead-time, identifying the proper tax structure that includes tax rate, etc.

Interviewer: Obviously, there are a lot of different ways that a feebates program could be structured, and it would have different implications for various automakers depending on this structure. Let's talk about that a little bit. There's one idea, which is that the feebate would be done on one scale, so that all vehicles are compared to each other (trucks, cars, etc.). In this structure, light trucks would likely almost always be on the fee side, and the smaller cars would get the rebate. There's another way of doing it that would entail separate scales, for cars and light trucks, for example, so cars would be compared to cars and trucks would be compared to trucks, so a smaller more efficient light truck could actually get a rebate. Larger cars, which might have gotten rebates on the single-class scheme, might actually have to pay a fee. Do you think that multiple vehicle classes would be more amenable to you?

Interviewee: To clarify, are you describing a program for different weight classes, where heavy-duty trucks would be in a weight class of their own?

Interviewer: This is only for passenger vehicles, not commercial. So what I'm describing would have one scale for light trucks and one scale for cars.

Interviewee: It's all about the message you deliver to the customer. What we ask for is consistency between the different kinds of instruments that are in place. If you look at Europe, and when we discuss issues like labeling, it is important that a car that performs well under one piece of legislation is not penalized under another. So from that comes the recommendation—or our position—that the existing fuel efficiency regulation and the new regulation that will be adopted at the federal level should define the baseline. This means that you have separate standards for trucks and passenger cars, which attribute a CO_2 target value to a given vehicle

size—in this case footprint—and then one should define the fees and the rebates based upon the deviation from this overall baseline. This would differentiate between trucks and passenger cars and ensure that a car that contributes to an overall positive score for the manufacturer for its fleet targets will not lead to a fee for the consumer purchasing the car. From that perspective, this seems like a logical way to design such a system.

Interviewer: You mentioned that it would make sense to you to have a kind of footprint-based character to the program in order to harmonize it with CAFE.

Interviewee: We have an overall preference for the weight-based system we have in Europe, but given the fact that in the US has a footprint-based system, as far as a separation between light trucks and cars goes, this would be your basis to build upon (i.e. footprint).

Interviewer: Do you have any past experiences with feebates programs in other countries that you'd like to share? From this experience, do you have any suggestions for how California should implement this program, should they decide to go ahead with it?

Interviewee: If one takes a scale, there are two extreme ends with respect to the sophistication that's put into them. On one end, there's a very simple program, which from our view was a too simplistic one, which has a single-scale where deviation from a target value translates into fees and rebates. In such a system, you compare the best performing upper-medium class sedan to a relatively inefficient compact car. From our perspective, this is unfair and will not add value from the perspective of consumer choice. This kind of an absolute scale—though it benefits quite a few BMW products—is not the kind of system that we would prefer. On the other hand, I think that the most elaborate system that we have in Europe at the moment is the system in the Netherlands where, rather than footprint (aka the space between the wheels) it applies to the shadow area of the vehicle. On that basis, they attribute efficiency classes into fees and rebates. We think that this system is conceptually much better than the French system since it relates to fees and rebates to the relative performance of the vehicle in comparison to the average of the market. Obviously this requires short-term adaptations to the overall development of the market and there are some other complicated parts, but from a general philosophy point of view, this is the proper way to do it. What we have learned so far from feebates schemes in other countries (France, Belgium, UK), is that if you have a step-wise or progressive tax rate, you will see a distortion in the market, and therefore we would appreciate a more linear tax/rebate program. This creates a clear incentive for each reduction of CO_2 over all vehicle classes and over all vehicle segments. Another issue that we have is with the tax revenues. If you have a high tax rate, you will get a lot of movement in the market, but this will also mean that you can't rely on the amount of revenues that you'll get from the consumers. If you want to distribute the fees collected to people receiving rebates, you have to be careful to balance the scheme.

Interviewer: While we are looking at a few different structures, we are focusing mainly on the continuous function. We've looked at the step function, like what they have in France, but find that this structure leads to border issues.

Interviewee: Prefer a structure where each gram of CO_2 matters equally, which would be represented most by a continuous function.

Interviewer: You also brought up this revenue neutrality issue—the intent of the program is to be revenue neutral, so that the fees cover the rebates. The model that we're using tries to predict this, but it's likely that the program will have to be periodically adjusted to maintain the balance.

Interviewee: Think that you have to be pragmatic about this. Adjusting every year can create confusion and makes preparation difficult.

Interviewer: We've heard from other manufacturers that lead time is very important, but I don't think that this is a situation where you will get 3-4 years advance notice—it will probably be closer to 1 or 2 years of notice.

Interviewee: That amount of time would be OK, I think.

Interviewer: Say the program was announced this January and would take effect January 2012.

Interviewee: I think that that would work, and with the national CAFÉ standard, every manufacturer will be prepared to launch some fuel-efficient cars in the market. I also think that we should stick to a constant scheme for a while, so that we can have some planning certainty from the product development side. It would be best if the program were announced several years in advanced so that our customers and we will know when to anticipate a new scheme or tax rate.

Interviewer: One thing that we might expect to see if it's announced far in advance is that there may be an initial perturbation to the market where people accelerate purchases of vehicles that would be assessed a fee or delay purchases of vehicles that would receive a rebate. This would be a one-time thing, however, that would probably settle out over time.

Interviewee: One point of consideration for a feebate program is that it should apply to all technologies and replace other incentives that are specific to certain technologies. This means that whether you're driving a hybrid or a diesel, the feebate should be performance-oriented and should provide rebates according to the deviation from the target value and not the technology used.

Interviewer: That's exactly what we're thinking right now, too—that the feebates program should be tied to the emissions performance of the vehicle and not to a specific kind of hybrid drive, or something like that.

Interviewee: If you remain technology neutral, then you create an environment where you have competing technologies and the best technology for the consumer survives or maintains a high market share, which is what this program should do.

Interviewer: We're doing this research for the State of California, and the idea is that this program would be implemented in California, but there's also a possibility that the program may extend to other states that have an interest in the Pavley law (GHG emissions law), or

possibly even to the national level, if a Federal program is adopted. What is your reaction to this?

Interviewee: If a feebate-like program is adopted by several states, we would prefer an alignment between the program structures. Otherwise you'd have contradictory effects, where one state may offer different incentives for a vehicle than another state. This would impact our product planning, so we'd much prefer more consistency. We'd prefer a linear tax rate, technology neutral, etc.

Interviewer: There is a bill at the Federal level, and I'll send you some information about it if I can find anything just to make sure that you're aware of it, but more likely what would happen is that this program would start in California and come up to the Federal level later on. We have no idea for sure what will happen though. You talked about how this program might affect product planning, and the way we're thinking about it is that manufacturers would have two responses in the short-term. One, they might try to optimize their sales under the program by changing the sales mix, which might mean selling more Mini Coopers and 1-Series than you otherwise would. Another thing that you could do is related to product planning, where you may actually make changes to the vehicles to make them more efficient in order to reduce the fee assessed or even bump vehicles to the rebate side.

Interviewee: The latter (making changes to the vehicles) is actually our preferred way of doing it. This is what we do in Europe and what we will do in the U.S. If a feebates system were designed in the manner that we've discussed, we would pursue a strategy to make as many of our vehicles eligible for feebates as possible in every class. We would not go for a downsizing strategy as long as the system is designed in a way that sets achievable targets.

Interviewer: This emphasizes why the lead-time is important to you.

Interviewee: The goal of the program should really be central to how the feebates scheme is designed. If you want to push smaller vehicles, then you might use the absolute scheme. If you stick to the relative approach, then you bring technology to each vehicle in order to improve the overall fleet average. Also important not to have different regulations regulating exactly the same thing (no overlap). The market is unpredictable, which makes it difficult to also predict how to orchestrate sales mix shifts. We have to offer a range of vehicles in various segments and sizes, and within each size/segment, we have to optimize greenhouse gas performance/efficiency. It doesn't make sense to just make shifts to the Mini or the 1-Series because there's a chance that the market won't accept it.

Interviewer: One of the concerns that automakers have raised is the effect that the program could have on their dealers, and dealers are concerned about this, too, since the program could impact the number of vehicles that are sold (though revenues may actually increase). Dealers are also concerned about the paperwork requirements. The dealers are generally opposed or don't seem to be too much in favor. Do you have any concerns about the impact on your dealers?

Interviewee: You raised a lot of issues, like how the fees/rebates will be administered—will it happen at the dealership? Or will it happen when you register the vehicle? I think

it's true that you will see a rise in the number of vehicle sales before the program is implemented (for those that would receive a fee), and then a drop in sales after the program comes into place. I think that this effect would last for one year, maybe two years at the most. This will have a relatively short-term effect, but regardless, this is something that will be felt by the dealership. The tax rate will be a crucial part of how consumers react and the effects that you'll see on vehicle sales. The program should try to minimize the administrative requirement as much as possible; the effect on the market (market discontinuity) will be unavoidable, but the administrative burden depends on how the program is crafted.

Interviewer: Efforts should be made to make it as easy as possible for the dealers, if the dealers do, in fact, end up administering the program. This is just one option—the program could also be handled directly between the automakers and the State, so that the dealers would not necessarily have to be in the middle of it. But I think it's more logical that the dealers would be involved—similar to Cash for Clunkers. Is there anything else that you'd like to comment on?

Interviewee: You just mentioned the possibility of administering the scheme at the manufacturer level. If you apply this to the manufacturer, then you miss the opportunity to influence the customer's decision-making.

Interviewer: While the program would be settled between the manufacturer and the State, you would still have something on the sticker of the car that would indicate whether it is being charged a fee or receiving a rebate. The customers would be aware of this, and would pay the price of the car accordingly, but then it would be up to the manufacturer to settle with the government. But it's kind of more complicated and behind the scenes, which may mute the effect of the program on consumer decision-making.

Interviewee: Would this replace the Gas Guzzler tax?

Interviewer: It would if this program were applied at the Federal level, but the California program would not replace the Gas Guzzler tax since it's a federal tax (not something that California has the ability to change). If the feebate scheme went to the Federal level, it's possible that would replace both the Gas Guzzler and the hybrid incentive programs in favor of a more harmonized scheme.

Automaker Interview #6

Interviewee: I guess you saw my note about Senator Bingaman, his legislation now in US Congress is being floated on feebates.

Interviewer: Right, I'd heard that he was working on it. I didn't actually see something get floated yet so thanks for the lead on that. It looks like Ira Ruskin has introduced a placeholder bill in California, too—AB 1212, which was introduced in February. I've been told it's a placeholder so it's not moving very fast, but there's definitely some activity out there. Let's run through these couple questions.

The first question is: California is considering adopting a vehicle "feebate" program that would incentivize consumers to purchase more efficient vehicles. Consumers purchasing more efficient than average vehicles would receive an incentive, and those purchasing less efficient

than average vehicles would have to pay a fee. How would your company feel about the institution of this type of program?

Interviewee: In general, we are very supportive of market mechanisms. When you get beyond that statement, there has to be clarification of a couple of things. Our interest grows significantly if it's truly something that could be sustained for a long period of time and that would be structured in a way that would last for the long-term. Short-term programs like Cash for Clunkers aren't something that we can plan around. It doesn't do anything for our product planning and therefore doesn't really stimulate technology, which in our opinion is the primary purpose of a feebate. Not necessarily to increase sales, but to stimulate more fuel-efficient technology development.

Interviewer: You mentioned Cash for Clunkers. What other experiences have you had with different programs, like federal hybrid incentives, statewide incentives, Cash for Clunkers, Gas-Guzzler Tax? Any positive or negative experiences in terms of incentives and what works and what does not work?

Interviewee: There have been multiple incentives from HOV lane access to the ability to generate credits if you're way below the line on certification. The company itself has not really pursued technology or product launch specifically with the intent of capturing credits. I think you can see that performance in the fact that we haven't produced a flexible fuel vehicle. Other manufacturers do it for the sole purpose of generating CAFE credits. I think that's probably the case for just about any other incentive out there. The sole reason is that we don't really think that anything out there is truly sustainable. Anecdotally, a very difficult question that we always get asked by DOE every 4-5 years is what do we do to model the future price of gasoline and how do we put that into our product plans. We just look at them like a deer in headlights because there's no consistent policy that would say that every year the gas tax is going to go up 5 cents and there's a floor that we can plan around.

Interviewer: Right, it's so volatile... How would the institution of a feebate program—and let's suppose for the sake of this question that you get a couple (2) years notice that this is coming—be affect product planning and the vehicle design cycle?

Interviewee: Two years would be a stretch for us, because that's not much lead-time at all, frankly. At the two-year point, we're finalizing the builds for instance on our whole certification program. But 3-4 years out, we could maybe do some things with the product ranging from tire specification to weight parameters to go after fuel efficiency targets. The devil would be in the details, though. We would need to know within that 3-4 year time period what the pivot point will be along with the slope of the curve. We strongly believe that a feebate approach should be the same structure as CAFE; for example, if you had a CAFE program based on classes and size as proposed by NHTSA, we think you ought to do the same thing with feebates for many reasons: 1) to avoid confusion in the marketplace, and 2) to give us a level playing field to plan around. So bottom line is that there's not much we can do with a two-year lead-time. There's not much that we can do to make meaningful changes.

Interviewer: Supposing that the state didn't want to wait 4 years after announcing the program to institute it, you wouldn't be able to influence what was already in the pipeline. Maybe then there would be some sales mix shifts that you would be thinking about on a global basis (sending more fuel-efficient cars to California)?

Interviewee: That wouldn't happen. We're not that much involved with moving stuff around, for instance, bringing something in from Japan that just hasn't been marketed here…

Interviewer: Is there any room to change the production levels of vehicles that are already certified in the US and anticipate that you might sell more Civics or Accords?

Interviewee: Proactively, the risks are so high with that that it might not happen on a broad scale, but it would certainly be considered and scenarios could be developed around it. What I would suggest is that in the early years of the program, that you not make it so stringent—that you plan for phase-in, and you base it primarily around the current fleet, so you plan it around the model of where we are today. You model it around model year 2010, and you start it off as a pilot, with the real teeth of the thing being placed in the 2014/2016 timeframe. This would allow manufacturers to plan around it and perhaps make some technology tweaks. This makes the most sense to me.

Interviewer: Yes, I know there is tension from the State's perspective looking at 2020 goals, and there is a strong sense that every year that you wait…So if you wait to 2014, that's only 6 years to start rolling stuff in. But that may be the best way to go…

Interviewee: It provides some flexibility and erring on the side of caution. You might be surprised the response that you'd get from some manufacturers. At least it would provide some flexibility, and that's what we need. If you go to the other extreme, I think you'll see a response that wouldn't be the best use of resources.

Interviewer: Are there other features of feebates that would make it easier for automakers to deal with? We've also been talking to a lot of dealers to explore the effects on dealers, which I don't think should be overlooked, since they're already feeling overburdened with regulations. In general, the dealers don't seem to be all that supportive.

Interviewee: Are they saying that because they don't want the administrative burden or do they believe that it's going to limit sales of some of their high-volume products?

Interviewer: I think it's a little of both. On the sales thing, sometimes we hear contradictory statements, like that the program won't be effective, but that they're concerned about effects on sales. Dealers probably make most of their money servicing cars rather than selling them, so if sales dip as a result of feebates (which research shows may happen at least initially), dealers may feel that effect. The other thing that they pretty much all mentioned is the concern that this will cost them to take in and dispense this money and that there may be fees or penalties associated with errors or lateness in payments to the State. And some are just philosophically opposed to the State restricting vehicle sales in any way.

So there's the continuous versus the step function options for the feebates program. The step could be tied to the global warming score (on a 1 to 10 scale), and the continuous would be more rational in the sense that it would be very closely tied to the greenhouse gas emissions of each vehicle. So I was wondering if there are any other features that come to mind.

Interviewee: Well, for the record, we strongly oppose a step function. You've got to go with the entire fleet, and there's so much gaming and unfairness that is typically created by a step

function. We've seen in happen in the real world with the Canadian approach. But I continue to preach that when you look at the reality of Ruskin or Bingaman getting something through, it doesn't make sense to propose something that dealers will oppose. I've asked the past Chairman of the Governmental Relations Committee of the New Car Dealers Association if he would oppose a manufacturer-based feebate, and the response I got was that he would have a hard time opposing that. I got the same response from the CNCDA Association itself. When you look at it, several things need to be understood. You want to push technology, and the people that make technology decisions are at the OEM—the engineering team leaders are given the responsibility of developing new cars and power trains. In my opinion, a customer-based feebate approach will be a tax that's not sustainable and short term, whereas a manufacturer-based program would be long-term and the rewards could be huge. I tell people anecdotally, that if a project team leader estimated that his unit sales in North America would be 50,000 units/year, the product run is typically 5 years for every OEM—and as opposed to a $4000 or $5000 rebate to customers--$300 per unit sale on a product is $75 million a year that would go back to a company that hit that target. That's a lot of money. The engineering team leader may never see the benefits of a customer-based feebate. If that type of cycle could catch hold through one full product development term, OEMs would sense that this is truly a new way to think about our business model, and we could start incorporating this into our product plans. The devil is in the details of course—you'd have to think about how to codify and give as much flexibility to the OEM as possible. The bottom line is that it doesn't matter if what you're going after are performance measures and stimulating technology. To answer your question about other constructs, this makes so much sense to us, and it's sustainable in the long run.

Interviewer: Why do you think that customer-based would be short-term and not sustainable?

Interviewee: It's primarily because of the cost that you have to apply to the vehicle sale to get their attention. Look at the flurry of activity that happened with $3500 and $4500 with Cash for Clunkers. I think it's going to take so long to get that kind of a bankroll into place to make it revenue neutral. I just don't see it ever happening. If you truly want to affect the whole fleet—that's a significant bank to establish there.

Interviewer: This is the tricky thing—you need a crystal ball to figure out what the sales are going to be so that you don't oversubscribe (like the French program). The hope is that this would be self-sustaining and calibrated.

Interviewee: If you developed feebates around CAFE, then you would include every car and have a continuous—and not step-based—function. But if you did include the whole fleet, you would think that every car out there would be a player.

Interviewer: Our thinking is that every car would be included. The only ones that might be excluded are the very average that might fit into a small zero-band right in the middle.

Interviewee: I would think that you would want to find a way to bring those vehicles in as well.

Interviewer: The one concern that people like UCS might have is that the fee might be more effective if it's more "in the face" of the consumers. If it's done between the State and the automaker behind the scenes—even if there's a sticker on the car—it might not have the same effect.

Interviewee: I guess my response to that is that UCS should sit down for a week with our product planners and engineering teams just to see how these people think. They do not think in the way that you would imagine about vehicle sales and consumer response to rebates—it doesn't come into the equation. Conceptually, there's an interest in jumping on the bandwagon to stimulate sales, but that's just not the way the world works.

Interviewer: How I imagine this would happen is that you might just let the "experiment" go (if this program were implemented), but over time, you might start to sell more Civics and Fits and fewer larger cars (Pilots, Accords). You have to start responding to this at some point with sales mix shifts or adding new technology to keep the less fuel-efficient cars moving.

Interviewee: We were pleased to an extent when gas prices increased and our Civic sales when off the roof. They tapered off, though, and now they're back where they were. So, again, it is just nothing that we can or ever will plan around. Technology is not developed that way. You have to get people in the room and get them agree on the goal—to stimulate technology development. Feebates based on consumer response will never do that.

Interviewer: Thinking again about the future of this kind of program, if this was done at the manufacturer level, you could still put something out there so that the consumer is aware.

Interviewee: The hope is that the feebates program would be complemented by other market mechanisms, ranging from the very modern approaches, where hotels offer parking, HOV access, ability to park closer, to a carbon tax to give people the signal that they should be interested in high tech vehicles.

Interviewer: That's what I was going to ask you, because some of the other automakers that we've talked to really favored a fuel tax (gave the example of the SUV only driven a few miles a year). The fuel tax would be more based on use. But one would argue that you could have both…

Interviewee: I think that's the only way you can go at it. The problem with the fuel tax by itself is that it's difficult for us to plan around. The key is sustainability. If you complement the feebate program with a package of other market mechanisms, this might stimulate consumers to think more about saving fuel. The thing that we've all got to do—this is where the politics will come in—is talk about who's paying. The dealers don't want it to be a transfer of wealth concept. The important thing is to talk to policymakers about the long-term versus short-term benefits of the policies they are considering here. If you get them to that point, you can start to show them that this manufacturer-based approach has the potential to be much more sustainable and get us truly to the 2020/2030 fleet changeover goals. You have to get them on that long-term thinking mode.

Automaker Response #7
(Note: Written Response Submitted by Email)

1. *California is considering adopting a vehicle "feebate" program that would incentivize consumers to purchase more efficient vehicles. Consumers purchasing more efficient than average vehicles would receive an incentive, and those purchasing less efficient than*

average vehicles would have to pay a fee. How would your dealership (or company) feel about the institution of this type of program?

We would view a feebate system as being unnecessary and duplicative. Feebate systems are very inefficient, expensive and complicated ways to get small environmental benefits. There are better policies, and these better policies are already being pursued, such as through greenhouse gas cap and trade programs (already authorized in California and proposed nationally) and Federal and state vehicle fleet average fuel economy and greenhouse gas regulations.

Feebates overlap with the CAFE system since manufacturers already use pricing differentials to subsidize small cars and small trucks in order to assist with CAFE compliance. Feebates also go a step farther by creating cross-subsidies between the customers of different manufacturers – e.g., large truck customers of Chrysler are subsidizing small car customers of Hyundai. This creates a potential for sharply disparate impacts on some manufacturers.

Historically, feebate proposals envisioned a single "neutral point" for the entire fleet of light duty vehicles, benefiting small cars while penalizing trucks and large cars, and this approach would severely disadvantage full line manufacturers, since many of their products are in the large car and large truck segments. Feebates create a windfall advantages for manufacturers who have concentrated on the small end of the market. Other proposals have considered vehicle classes, each with its own "neutral point". Fees and rebates are balanced within each class. While potentially better than a simple fleet wide system, a key issue is how the categories and fee structures are defined, and these details can produce large competitive impacts on automobile manufacturers in return for small societal benefits. Importantly, feebates don't address vehicle miles traveled, which is clearly one of the most important factors in overall fuel consumption.

A statewide feebate program brings an added level of complication in that vehicles subject to fees could be imported from other states as used vehicles, with a flow in the opposite direction of used vehicles that had been eligible for rebates.

2. *Have you had any previous experience with this type of feebate program, or any other incentive or fee program, and any positive or negative experiences that you would like to relate?*

The current U.S. gas-guzzler tax system resulted from a feebate proposal in 1978, but the rebate portion of the program was eliminated during the legislative process. This tax encouraged the development of the large truck market, which was not subject to the tax. The gas-guzzler tax created a big distortionary effect within a very small portion of the market (large wagons, large luxury and performance cars), but not perceptibly impacting overall average fleet performance.

The Canadian government suddenly and unexpectedly created a feebate system in March 2007. Subsequently, sales in each segment generally tracked prior levels and monthly patterns, and individual model sales did not change significantly either, whether eligible for a rebate or not (although competitive vehicle manufacturers responded with special incentives to offset the feebate disparities). This program

showed the administrative complexity problems of feebates, and the program was dropped after a couple of years, producing great heartburn in return for little results.

Over a dozen European nations have either vehicle purchase taxes (or feebates) or annual registration fees (or rebates) tied to fuel economy or carbon emissions. These produce large competitive impacts in specific situations, but overall fleet average performance in Europe is being driven by the overarching regional policy to reach certain fleet average emission targets. This is analogous to the U.S. experience.

3. *How would the institution of such a program be likely to affect product planning and the vehicle design cycle at your company?*

   A feebate system could greatly complicate planning and lead to an increased number of planning mistakes and resulting wasted resources. Initially, of course, the program would create unanticipated market distortions since product design, capacity and other decisions had been made without knowledge that feebates would be imposed. Subsequently, "revenue neutral" feebate proposals would involve rebalancing the amounts of fees and rebates to maintain a revenue balance as the market changes. This brings with it the risk that the actual feebate amounts will be different than the amounts assumed when product design decisions are made. Other program changes could create the same problem, even if seemingly minor details are changed.

   In general, these programs run a risk of creating product design decisions that are driven by the administrative features of the program, without creating real customer or societal value.

4. *What would be the minimum amount of lead-time that your company would like, in being informed about the structure of the program before it becomes implemented?*

   More lead time is better, but at least three years would be a minimum to have any influence on product design decisions.

5. *Are there any features of the program that could be included that would make it easier for the automaker to administer?*

   Do not make the automaker responsible for collecting or receiving the fees or rebates.

6. *Any suggestions for how the program should be structured? (e.g. applied to different vehicle classes rather than one scale for all vehicles?)*

   The specific design of a feebate system is critical, and yet inherently problematic. Fixed threshold systems discriminate against customers with unavoidable needs for larger vehicles, such as car poolers, large families, commercial users, farmers, etc. They also penalize full-line vehicle manufacturers and lead to large revenue transfers from full-line manufacturers to automakers with a focus on smaller cars

Although attribute-based systems have problems, they are probably better than a fixed threshold system. Any attribute chosen will create gaming and force manufacturers to design for the attribute rather than for customer needs. Any attribute used must be robust across all impacted vehicles. For example, using interior volume gives station wagons a bid rebate, while using footprint sharply advantages extended cab model pickups.

Although segment based systems have problems, they are also probably better than a fixed threshold system and have many of the advantages of an attribute-based system. Unlike a system that adjusts for an attribute that is continuous across the fleet, a segment-based system is discontinuous. Two slightly different vehicles may fall into different segments and receive vastly different treatment, whereas a continuous system avoids these "edge effects".

7. *Any other suggestions for the structure or administration of the program?*

Recent reforms in the light truck standards have mitigated, though they have not eliminated the adverse competitive effects of CAFE on the domestic full-line manufacturers. Similar reforms are expected soon in the car CAFE system, as well as in the expected Federal greenhouse gas regulatory program. A feebate system holds the potential to reverse these reforms.

In no case is any system of feebates nearly as cost-effective as a fuel tax or carbon tax or greenhouse gas cap and trade system on fuels, since the effect of feebates is limited to new vehicles, without impacting driver behavior, vehicles already on the roads, fuel carbon content, and other important variables.

Given that overall greenhouse gas emissions are already capped by AB 32 in California, and Federal policies are rapidly raising average new vehicle fuel economy, is does not seem possible that a California feebate program could produce discernable benefits that could justify the costs of the program.

C.4. Auto Dealership Interview Summaries

Overall Summary of Findings: Auto Dealership Interviews

From July to November 2009, the UC Berkeley research team interviewed general managers at eight different car dealerships around the state. For the most part, UCB interviewers followed a protocol that contained seven key questions. Identified below are some of the common comments and themes that arose from these interviews. The transcripts from these interviews are also appended below.

With regard to overall findings from these interviews, several themes became apparent. First, six of the eight dealers interviewed voiced opposition to the feebates program. One dealer expressed support for the rebate aspect of the program but opposes the fee (due to fears of depressed sales, described further below), and one dealer was generally supportive of feebates, describing the program as a "win" for his dealership.

Dealers who were opposed to feebates voiced a variety of concerns about the program. Two dealers raised the issue of equity, and argued the program would create "classes" of consumers and disproportionately and negatively impact larger families and those that need larger vehicles for their business or lifestyle. One dealer added that the program would reward those that do not necessarily need the rebate (i.e. those that can afford cars with more expensive, fuel-efficient technology) and penalize people who do not drive as much. One dealer also noted that many consumers rank functionality and purpose as more important than fuel economy and cost when making vehicle purchase decisions, and thus the feebate would penalize these consumers. Two of the six dealerships believe that a feebate program would deter consumers with older trucks, SUVs, and more polluting vehicles from replacing them with newer, less polluting vehicles, thus resulting in a net negative for greenhouse gas emissions. Two of the six dealerships oppose the program because they believe CAFE will result in the fleet-wide improvements that CARB hopes to accomplish with feebates.

Two dealers expressed concerns about the impact of a feebate program on vehicle sales and revenues. One dealer attributed the bulk of this impact to domestic dealers and expressed concern about placing additional pressure on the already struggling domestic auto industry. The dealer that opposes fees but supports rebates also believes that the fees will depress sales at a time when dealers are already struggling under the current economy. As an alternative means of funding this program, this dealer promotes an increase in the gas tax.

In fact, when asked about preferred alternatives to the feebates program, three of the eight dealers expressed a preference for an increase in fuel taxes. Higher fuel taxes, they argued, are more likely to influence driving habits and reduce vehicle miles traveled and can also influence consumers' purchase decisions. These dealers used observed shifts in vehicle purchasing behavior when gas prices increased in the past to support this argument.

When asked about past experiences with similar incentive and disincentive programs, two of the eight dealers described “Cash for Clunkers” as an overall positive experience—one of these dealers described Cash for Clunkers as the "single most successful program in [his] thirteen years in the car business" and another indicated that he saw a lot of business that he would not have otherwise seen. The same dealer spoke highly of the Cash for Clunkers website as a model that

should be used for future rebate programs. Two of the eight dealers, however, disliked Cash for Clunkers, since they found the administration and paperwork to be complicated and cumbersome. One dealer described past hybrid incentive programs as "OK," but not as much of a "call to action" as a program that provides an instant rebate.

Regarding program administration, three of the eight dealers strongly opposed dealership-level administration, mostly because of the administrative burden. One interviewee described his dealership as already "inundated as a business in handling the State's business." Two dealers also described past problems with other programs administered at the dealership—like the tire tax—which has resulted in steep fines when dealers make mistakes when reporting and making payments to the State. Two of the eight dealerships, however, indicated that they would likely handle the program similar to how sales tax revenues are currently handled, and as such, may be able to undertake the administrative aspects without much trouble.

When asked about compensation from the State for administration, four of the eight dealers provided estimates for acceptable reimbursement. Two dealers indicated that $50-$100 per transaction would be adequate, one dealer preferred a monthly compensation of ~$1000 per month, and one dealer argued for a percentage reimbursement rather than a fixed per transaction or per month repayment. When asked about the timing for the administration of fees and rebates, two dealers expressed a preference for delivering rebates at the point-of-sale, rather than asking the consumers to apply for rebates.

Six of the eight dealers interviewed expressed willingness to set aside time to train salespeople about the program, if implemented. Five dealers stated that this training would not be a problem, since salespeople already undergo training on a regular basis, and one dealer indicated that they would comply if compelled by the State. One dealer argued that the training should be as simple as possible—to mirror the desired simplicity of the program—and as such, indicated that the training should last a few minutes, rather than 1-2 hours.

When asked about preferred features of a feebates program, one dealer specifically requested clear and concise rules for the program and advance notice to allow dealers to prepare (this dealer used Cash for Clunkers as an example of a program that did not provide enough lead time or clear rules in advance of program administration). Another requested that the State give dealers the benefit of the doubt when it comes to program administration, and forgo steep and harsh fees for small mistakes (to address problems like those raised with the tire tax). When asked, two of the eight dealers opposed a class-based system and argued that this structure would be confusing to consumers and risks sending the wrong signal about the goals of the program.

Dealership Interview #1
2:00 PM Wed. July 8, 2009

Preliminary Information: Principle Dealer and President of XXX services in Sacramento; been working since January 1976 and been in the store all those years. Currently owns the store.

Interviewer: How much have you been following this with the public meetings that we had regarding the research project?

> Interviewee: This is not too different from the Ruskin bill that they tried to move several years ago where they are asking people who purchase vehicles that spew more greenhouse gases than others to pay a premium for a vehicle to create a fund that would go to other people buying clean-burning vehicles.

Interviewer: Right.

> Interviewee: Redistribution of the money.

Interviewer: Yeah. So the idea is a revenue neutral program where any administrative costs are kind of covered.

> Interviewee: It's expected to be revenue neutral.

Interviewer: It's expected to be revenue neutral, but it may have to be adjusted over time to achieve that. Yeah, it sounds like you go the gist of it...

> Interviewee: Right.

Interviewer: Question 1, how would your dealership deal with that type of program?

> Interviewee: Once again, anytime you're segregating a broad range of people, you have people of different needs that we are try to service especially the full line manufacturer like Ford is. We have people who have specific needs like pickup trucks & fuel-efficient cars. In my opinion, of course, and I'm just a dealer and not a manufacturer, you know, we are creating 2 classes of people. We already have multiple classes of people based on other laws and other areas. I'll give you an example: we have classifications for people in the credit world whereas some people are allowed to purchase on much better terms than other people based on a scoring model that has been established.

Interviewer: Right

> Interviewee: All we are doing is taking that methodology and applying that to GHG and carbon emissions. And I think that would make it more difficult for me, a retailer, to sell vehicles.

Interviewer: I see. So you're concerned that it will lead to an overall reduction in sales?

> Interviewee: Oh it will further damage sales. You are branding a certain group of people in having to pay more and you have large families that need SUVs and cars with additional

seating, pick-up trucks, etc. They are going to be expected to pay substantially more. You may be rewarding someone who may not necessarily need to be rewarded. Maybe all they need is a small commute car to buzz around town.

Interviewer: So this is sort of an equity issue?

Interviewee: You are almost branding a type of people and making them pay more. At the capital, they are sending money that can't stop damaging all of us as a result. If you are making X number of dollars, you should pay more. Well, you're doing the same thing to these people.

Interviewer: These are all very valid concerns and as researchers we are trying to contact many people and get different perspectives. We really appreciate your feedback. Q2

Interviewee: We've have had hybrids since 2005.

Interviewer: That's right. You had the Escape.

Interviewee: There is a pool of money to be given away based on the units of operation and as the # of units rose to a maximum and I think that was 60,000 units nationally within a given line, they continued to decrease the amount of money you can take as a write-off.

Interviewer: Exactly.

Interviewee: Yes, that has some impact obviously especially the Toyota Prius rates they had on the Ford Escape in that I know we made some sales based on the fact that we had fewer units of operation and people got a larger rebate. I think that if you were to check recent Prius sales in the state of California, they have been terrible.

Interviewer: Well, ever since the gas prices dropped in the fall and the incentives capped out as well. You're right on that. That was something between the dealer and the purchaser that get a tax credit when they fill out their taxes. Dealers offer direct incentives to consumers (cash back etc).

Interviewee: Dealers don't offer that. In the state of CA, you can't have a dealer rebate. It has to be a manufacturer rebate. That has been the case since 1986. To answer your question about feebates, the only ones we've actually been involved in on a state level is a gas-guzzler tax--that's federal I believe. We had a luxury tax where you had to pay a percentage if MSRP exceed a number of dollars and back in the day it was $36,000. It was quite stiff over a 10-year period. I can't think of a feebate/incentive policy on the state level in the car business.

Interviewer: There are several different ways this program can be implemented: dealer level or manufacturer level & state.

Interviewee: I would have to go for the manufacturer; we are inundated as a business in handling the state's business. We are collecting tire taxes. I am in charge of collecting alimony on county levels; I don't need another burden. They usually back it up with a punitive penalty. At one point, we were responsible for 19.5 cents for every dollar that

was collected for sales tax. They had such a stiff penalty. We are a huge contractor and we collected a lot of sales tax for the state - $96 million. They accused me of being 3 hours late of electronically transmitting $100,000 sales tax. The penalty for that is 10%. 3 hours late and they wanted to charge 30 days of interest. This is what the state does to a businessman. If you're asking me "would the dealer want to handle it?" I would respond with a resounding "no."

Interviewer: That's a really good example of what you're up against. My condolences. Q3 Let's assume that you're not administering it.

Interviewee: It would be more seamless to do it online to make it easier for them. But this is not going to help businesses.

Interviewer: If the State said we really want the dealers to be the one who collect the funds and return it to the State at the end of the month like we do with sales tax revenues now. In order to avoid asking you to cough up money that you didn't have, they would give some money to get you started. You'll always be in the black.

Interviewee: Any administration is expensive to do. They always tack on something that's really punitive. I don't need any more rules/regulations, even if they gave me a credit to start off with. People are going to look at the fee and not buy that product. Then we readjust it and go lower down the food chain. People are going to buy those.

Interviewer: One way is a donut hole, more continuous (affecting all vehicles), step. Let's assume for the rest of the discussion that all vehicles will be affected. How much would you want the State to pay you for your staff time to do the administrative costs? Say $1000?

Interviewee: I wouldn't say $1000; I would say 5% of the total of the fees and rebate.

Interviewer: So you would accept a 5% cut?

Interviewee: Yes. As the volume goes up, so does the administration

Interviewer: Well if you get a fixed monthly amount and you aren't selling as many cars that make sense.

Interviewee: Does this only apply to retail or does it apply to every vehicle sale for example, Crown Victoria's?

Interviewer: Wholesale large vehicle purchases? It might be that those vehicles get some kind of exclusion or waiver.

Interviewee: No. The public vehicles should not be excluded from the program. They use the same fuel and emit the same GHG.

Interviewer: They are for the highway patrol.

Interviewee: No, look. This is about the environment.

Interviewer: Yeah, this is something that the State is going to have to grapple with. If you hit the Crown Vic's with the fee, it would go out of the state and back in. It would not shift the Police into switching from Crown Vic's into another alternative. They are going to buy them no matter what cost.

Interviewee: After this discussion, that someone's already made the discussion that they already plan to do this.

Interviewer: We don't know but our study may be influential. Eventually we'll try to share this info with you through the dealer's association.

Dealership Interview #2
3:00PM Wed. July 8, 2009

Interviewer: Q1; There's a lot of ways that the program can be implemented: manufacturer and state or dealers or etc and there are different types of program designs (how steep the rebates, different categories). At this point, we don't have any preconceived notions on how to implement we are just trying to understand the tradeoff and how dealers would react. Based on your overall view of the feebate scheme, lets say it applies to all vehicles, what is your general response to that type of program?

Interviewee: I think it's a bad idea. There is an intuitive feel to it in the sense that you are trying to skew the market, but it is almost internally contradictory in that it has to not work for the goal that you're seeking. I think that goal has to focus back to the GHG issue if you want to see for the trouble of implementing this program if you want some level of revenue neutrality. It just can't work. If you have a broad sort of class list system, you are subsidized by people who have to buy the large cars. I see that as a moderately meaningless wealth transfer. As you have more and more classes, it gets more and more complicated. As it gets to that level of complexity, you will dilute the impact for the GHG concerns. There will be a small amount of money and that small amount of money will not drive much. You may defeat the program with complexity or the simplicity of the program doesn't have any meaning, but an administrative burden on everyone. Most people are driven by the utility of the vehicle. As far as revenue neutrality, if it works, it will skew people's buying habits. I think the American consumers are kind of amazing in trying to work systems. We see that all the time where someone makes a mistake and puts out a program that doesn't have the right control. People use it for the wrong reasons. This just sounds like people are asking for it. You'll kill the sales with the larger vehicles with the larger price. If you do that, you're going to pick a pivot point. The consuming public will try to get the benefit without paying the penalty. If they don't pay the penalty, people are going to stay in the vehicles they already have which is worse for GHG. That's my general opinion.

Interviewer: These are definitely valid concerns. Thinking more about the dealership perspective, back to the question of where it could be implemented. Lets say the State could do this or it could be between manufacturer and the dealers would essentially be out of it. Limit transactions in having to collect fees and rebates possibly with some initial money so that you would be in the positive.

Interviewee: If they want to collect something they want to collect the least number of points. For example, the tire fees that we collect, $1.75/tire, is done at the retail level. It's really stupid that we're collecting from the dealer. We have 5 or 6 tire manufacturers - collect it from them. The paperwork is completely unnecessary. They should collect the fee at the wholesale tire level where there are fewer companies. Similarly, with this, having it at each transaction, the benefit to your program is consumers will hear it at that level if there's a rebate or a fee that you have to add to the contract. In terms of it working, it will be better at the consumer level. If there's a penalty, the only usefulness is the technology-enforcing concept. The feebate proponents believe it is a strong element of it. The paper that you guys write suggests frequently changing the pivot point to adapt for market conditions. Manufacturers can't adjust to that. My preference is very strongly to not have it at the retail level, just because the administrative costs are high. If the consumer has to apply for the rebate, it won't work because they need the money now.

Interviewer: If the state requested that the automobile dealerships undergo a brief training session to help explain the program to consumers, would you be willing to have all salespeople undergo this training (approximately 1-2 hours)?

Interviewee: That's something we could do. Online training could be an option.

Interviewer: Q4 - If the state were willing to compensate you for the staff time required, is there any kind of estimate that would help handle that burden? If they gave you either a certain amount each month or a percentage of sales-based thing? Is there anything that would make it more palatable for you to help you administer?

Interviewee: Uh, sure. I'm not sure what that number would be. I think it would be a fair amount of work.

Interviewer: But it's safe to say that if the state were willing to help with some administrative costs it would obviously be…

Interviewee: Better.

Interviewer: I'm not saying that you would be happy about it. I'm just saying that it would be better if the State helped with some administrative costs. I would be really surprised. At least it will be like "well, it's not coming out of my hat as much"

Interviewee: If you end up proposing that as part of the program that you're going to front us some money and that goes through, I would be really shocked because I'm used to them making us do all kinds of work for nothing.

Interviewer: Another dealer was saying that he was 20 minutes late submitting some sales tax and he had to submit some crazy fines. He had to pay interest on money that he was only a few minutes late. There is sensitivity here. In order for this program to work out, if the dealers are really unhappy with it, then the program is less likely to be successful. I understand your skepticism.

Interviewer: Can you think of anything else in terms of this type of program? You expressed that this wasn't really a good idea.

Interviewee: I think it's a really bad idea. If you have a sense of the global warming problem, you ought to be doing something about it, which the State seems to have, this does not strike me as a place that would waste your time. I know there is a feebate industry out there and you may be a part of it. I believe if you truly believe that this is a problem, you should not be wasting you time with feebates.

Interviewer: Try to affect vehicle technology more directly? With a feebate program, you are looking at trying to shape what the vehicles look like. That's trying to reflect the market. When you try to change the market for what consumers want to buy, that's supposed to reflect back to the manufacturers and what they want to do. They'll respond immediately if the consumers want fuel-efficient cars. There are really good examples that people respond to gas prices. There are 15 million cars on the road. In CA, you are affecting 1 million. You are looking at several decades worth of change to make an influence and room to screw it up. It takes a long time to make a change in the vehicle.

Interviewee: Last year, 2008, Americans drove 1 billion miles less than in 2007. It's a huge number. Why is that an issue? Probably the price of gas and subsequently the economy.

Interviewer: Do you prefer higher gasoline tax?

Interviewee: Yeah. The problem with feebates is that it doesn't hit the footprint. You are trying to get through the vehicle to the vehicle use. Someone in a very high GHG vehicle carrying 5 people is better than any Prius on the road. Feebates don't look at the Suburban that only drives 2000 miles a year or that carries the soccer team every weekend and not used much. People who don't drive many miles are penalized.

Interviewer: Feebate complemented with something on the fuel side.

Interviewee: I feel that the fuel side is more effective. It gets at usage more directly. The market-based appeal is misplaced--$100 billion dollars short in the France program

Interviewer: Some of these brands are lower in GHG emission vehicles. Within these brands, you may see people shifting from Hondas to Buicks.

Interviewee: We ran out of Avayos, Cobalts. People weren't going from Pilot to CRV, Tahoe to Equinox. One step down would be somewhat more efficient. We have a lot of categories accommodating for that. From Suburban to Tahoe change, we are probably changing classes. Feebate is incredibly difficult to implement. You have to be very flexible and dynamic with the pivot point. Once you get flexible and dynamic, you lose the message. People get confused.

Interviewer: I agree with you. It's very difficult to come up with a right answer. That's what we're trying to figure out here and it's challenging.

Interviewee: I might be right. It's an oxymoron. It's too complicated so it might not be effective. Two administrative burdens: state will not do it for free. Dealers and manufacturers are going to implement their sides as well and both are going to be complicated. Internal contradictions so that you can't really accomplish the goal: it's to reduce GHG not implement a feebate program.

Interviewer: Do you have any concerns that in the absence of feebate program, for example, a change in CAFÉ standards?

Interviewee: I am vocal about changing the price of gas. To me, if they want the market. The market's there, the cars are there. In 8 months, I don't' think they could do that. By December, our lots were full of fuel-efficient cars and nobody wanted them. We still have some of them. We haven't sold an Insight this month. That's Honda's big bet on fuel efficiency.

Interviewer: So you see fuel prices as a key way to move GHG emissions?

Interviewee: The fuel prices are a key way to move GHG emissions. Factories will go to consumers all day long. Bringing consumer to factory…it's not so easy. People do act in their own economic sense. How do we get people to buy the vehicle you think they should buy? You don't know how many miles they are going to drive the car, how many people will be in the car, how do you penalize them? We need a decent profile of the people who drive. You don't know much about the usage so you can't properly price.

Dealership Interview #3
4:00PM Wed. July 8, 2009

Interviewer: Settling up with the state at the end of the month.

Interviewee: So in other words, the dealer creates his own fund and settles it monthly

Interviewer: You would be responsible with some sort of record keeping. Kind of like now with the tire fees. Another way it could be done is with the manufacturers and the state. At end of month, manufacturers can get a net …considering various options. Based on those general notions, what are your general reactions to it?

Interviewee: The lesser of two evils would be the manufacturer handling it with the state. I don't see either plan as a good plan.

Interviewer: If it was dealt with at the manufacturer level…

Interviewee: Well by dealing with manufacturer, you're cutting down with the number of parties involved. This creates a lot more bureaucracy. You have a bunch of dealers who are on top of things and others who are not as sophisticated in the record keeping. You got the state agency hired to administer it with them. I think it would look to me like you would involve more administrative personnel in the state to keep the thing balanced and operating.

Interviewer: That's certainly understandable. Let's assume that it's handled at the manufacturer level. If the state asked you if they were to put something on the window sticker that said "this vehicle either received a rebate or pay a fee" It might be good to have salesperson training on the program and how to answer that question. If the state asked you to do a 1-2 hour online training so that they would be able to answer consumer questions. Is that something you would be okay with?

Interviewee: That would probably be a good way to treat them. Are we going to get into the specifics of the policy and whether it's going to be a good idea?

Interviewer: Yeah, we're getting there.

Interviewee: That probably would be a good way to train, but you would also need to train dealership personnel on how to administrate.

Interviewer: If you were being asked to disperse fees, keep records, and send in money every month. We understand that you are not in favor of the program to begin with. Is there a number that pops into your head in terms of dollars per month?

Interviewee: It's hard to tell, but it looks to me like every car we sell would have…

Interviewer: Some fee or rebate.

Interviewee: Some fee one way or another involved. It would be very expensive. Say we do 300 transactions a month; we have to keep a schedule and the whole thing. If they are going to compensate the dealer for doing the administrative work it probably should be at least $1000/month

Interviewer: What is your overall view of a policy? If vehicles get a rebate, manufacturers will anticipate that and build lower-emitting cars. Consumers will actually buy them. That's the theory. What do you think of that and what do you think will happen?

Interviewee: I think the manufacturers already have the message on minimizing greenhouse gases. I think the consumers are concerned about that as well. My overall impression is that fuel economy and greenhouse gases tend to be related. So in an environment where we have high gasoline prices, the market mechanism is probably going to take care of that in and of itself. For example, our manufacturer, BMW, is really hard at work with both those issues (GHG and fuel economy). They believe that's what the consumer is going to purchase.

Interviewer: So you feel like the consumers are kind of moving in that direction particularly given relatively high gas prices. You're not really concerned about lower greenhouse gas emission cars building up on your lot and not being able to move them if there wasn't a feebate program like this?

Interviewee: For example, BMW is breaking into the diesel market in the US. It's going to take time for the diesel to take hold and become popular. Even here at the dealership. For example, my daughter drives an X5 Diesel and gets much better gas mileage with it and the emissions are much less than the gasoline, so she prefers the diesel, and the customers are going to figure that out. As they do, the economies of scale for producing diesel will make them less expensive than they are right now. The market is doing that.

Interviewer: You could have a single feebate for all vehicles or you could have it as a class-based or footprint system.

Interviewee: Unless it's a diesel.

Interviewer: Diesels will be rewarded under this program.

Interviewee: See this has been in Germany and Europe. BMW has been selling more diesels than gasoline. That is market-driven. BMW is producing some 4-cylinder models. We never thought we'd see some 4-cylinder models in the US. With the diesels, the 4-cylinders get as much torque as the 6-cylinders. They get better fuel economy and use less gas. They generate more performance out of diesel than gasoline.

Interviewer: Going back to the class-based system for something that affected all vehicles regardless of what type of vehicle it was. Do you think if it was class-based, would that be too confusing for the consumers or would it be better so you don't categorically disincentivize SUVs?

Interviewee: You say class so…say we take a bunch of SUVs in one class; I think it would be confusing to the customer. I don't know if it would be more or less confusing than alternative ways of doing it. One of the things we are finding in SUVs is people are getting SUVs more because they need them than because they are fashion. It used to be the other way around.

Interviewer: So the people buying the SUVs are set on buying SUVs?

Interviewee: Yes. The mother that's hauling kids to school and a soccer game needs those seats in the car. So if you penalize that person, you would be penalizing the person who needed the SUV. They have enough bills already. I would say that 5 years ago, that was a different scenario. People just wanted a big bulky SUV to fuel their ego. That's less so now.

Interviewer: Any other reactions to this?

Interviewee: We deal with DMV right now and considering the situation the State is in, financially, they can barely handle our business, registering cars. And if they had an additional responsibility to some agency of the state government, the costs are going to be huge. Whether it's DMV or another agency. Say you turn it over to DMV—that's going to add to their workload. They are creating an expense that they don't need. Dealers will get audited so that they ensure dealers are sending back the money they are supposed to send back. They are doing the program at a time when they can least afford setting up a mechanism for doing it and doing it at a time when people are more conscious than they have ever been. Our customers are interested in emissions and fuel economy. BMW knows that and that's what we're producing.

Interviewer: So your take is that the manufacturers are already aware and they are starting to shift their offerings? The demand is there and they are already moving in that direction?

Interviewee: Each BMW generation gets better gas mileage. The diesels burn a lot cleaner.

Interviewer: Criteria pollutants or GHG?

Interviewee: Whatever is coming out of there is cleaner.

Interviewer: It's an ammonia-based thing isn't it?

Interviewee: I don't know…I don't understand it.

Interviewer: It's a selective catalytic production thing?

Interviewee: It is and that's where they feel they have to go to compete in the US.

Interviewer: It will be very interesting to see the response from consumers over the next few years.

Interviewee: I think what the State needs to do is to continue to force them to improve that area. Don't get into another huge agency of the government that has to administrate collecting money from some people and giving it back to others—they'll create another monster. It all seems like a neat idea, but it's very, very impractical.

Interviewer: Relative to BMW, you are selling smaller cars too?

Interviewee: We are planning on selling more small cars. We have the 1-Series and the Minis. Those are smaller cars. The heat's on already! Leave them alone. They got the message.

Interviewer: You aren't worried that the cars will just sit in the lot?

Interviewee: At least if they are producing those cars…you know, the buyers want fuel economy. They are more socially responsible now. What do we do about the old cars that are out on the road right now? They are not being properly serviced. Anything that will make cars more expensive will keep the old cars on the road longer. Probably not as fuel-efficient or as clean as it was before.

Interviewer: Anytime you do a policy like this there a lot of pitfalls and unexpected consequences. There can be a potential downside to this.

Dealership Interview #4
11:00AM Fri. July 10, 2009

Preliminary Information: Dodge, Jeep, Chrysler dealership.

Interviewer: California is considering adopting a vehicle "feebate" program that would incentivize consumers to purchase more efficient vehicles. Consumers purchasing more efficient than average vehicles would receive an incentive, and those purchasing less efficient than average vehicles would have to pay a fee. You sell Dodge, Chrysler, Jeep. In general, what is your reaction to this type of program and how do you think it will affect your dealership?

Interviewee: I believe in the free market trade system. I would disagree with doing something like that.

Interviewer: Because it's messing with the market? It's making it harder for people to get the cars they want?

Interviewee: Cars. You reduce the value of society making free choice based on the value to them. You are basically taking from one customer and giving to another. It is a transfer of

resources. Why do you pay for the choice of someone else buying their car? I pay for my choices. They pay for theirs.

Interviewer: Have you had any previous experience with this type of feebate program like gas-guzzler taxes or hybrid car taxes, and any positive or negative experiences that you would like to relate?

Interviewee: People try to trade in one type of vehicle for the other. And then gas prices went down to where they are today; nobody wants to buy those vehicles anymore. The purpose of our nation is trying to do is very flawed. We need an energy policy that will direct our nation to be fuel efficient to the best of our ability, but people buy vehicles primarily on what fits their use. In other words, I don't go out and buy large Chevy, Ford, or Dodge pickup truck because I want to hurt the environment. I buy that car because I can't do the same things with a subcompact car. So you can direct things in society with an energy policy by the federal government and people can make their own free choices based on their usage of the vehicle. I call it a gimmick. I think it is more gimmick than anything else. Again, if you saw what happened last year, you certainly have a clear picture of what fuel prices do to a marketplace.

Interviewer: So it sounds like what you're suggesting is you think fuel prices are likely to have a stronger impact on what people...

Interviewee: You don't have to regulate the cars just define your fuel policy. Do you want us driving gasoline vehicles? Diesel vehicles? Electric vehicles? Come up with energy policies that in other words, technology costs something so for people to drive cars in the future with alternative fuel it costs manufacturers tremendous amounts of money to develop and manufacture. The only way people can afford it is for the price to be low enough for people to make payments. How many people can buy a $40,000 car? You can define what you want as a government and force it into the manufacturing world, but there isn't any guarantee that people can buy it. So if you want to move into a socialistic sort of life, you can incentivize them at federal and state levels allowing people to own things that they wouldn't otherwise. We are trying to micromanage something that is a national problem. We are trying to do something in CA …the feebate program is almost somewhat laughable, but really we're trying to do something…micromanage society with incentives from government taxpayer money, very poor choice. I don't think the government needs to do these things. The government could be investing in the manufacturer's technology and lower the cost for us. On the other side, we are swimming with one arm in a life preserver where we are just paddling in a circle because no one wants to take responsibility for an energy policy or our nation. The manufacturers can't build many cars because each state wants something different. It's been very hurtful for manufacturers to produce a car that you only produce in 1 state or 2 or 5. It's sad.

Interviewer: Analyze all types of angles to this problem. We are trying to find how it can be undermined.

Interviewee: If I took $5000 from you because you want to drive a Chevy Tahoe and gave it to the person sitting next to you because they want to drive a Dodge Caliber, how would you feel about it? You just paid $5000 for me to drive my car and I lost $5000 because I wanted and needed to drive the car that I bought. Is that what America's about? What are we thinking? Why do we even have the dialogue about this? It can be resolved at such a better level. As a nation we could be living it. CA does this, Nevada, do that…etc. We created so many fractural issues. It

throws so many curveballs at us. The nation doesn't necessarily gain anything. The personal losers are the consumers.

Interviewer: As you are aware, I'm sure, national fuel economy regulations are increasing so manufacturers are going to have to produce more fuel-efficient vehicles. Do you have any concerns that the more efficient vehicles meet the CAFÉ targets are going to be difficult to move out of the lot in the absence of feebate program like this that would help to steer consumers more towards fuel-efficient vehicles?

Interviewee: It is in answer to the program. Whether they move off the lot is a different question. How are they going to resolve this problem with feebates? Feebates don't resolve the problem.

Interviewer: It's more of a fuel pricing you think?

Interviewee: How much does it cost me to drive the vehicle? What is the use for the vehicle? Does it meet the needs of my family or my business? At the end of the day, what does it look like, is it comfortable to sit in, comfortable to drive? What are the factors that lead you to possibly consider the purchase of a certain type of vehicles? I think you'll get the majority same top 5 as most other people in America (long tangent).

Interviewer: Do you think fuel economy is in the top 5 at this point?

Interviewee: I think that's a function of what you do with your automobile. If you had to commute from Berkeley to Sacramento every day, as an example, would I want to be driving a suburban? Probably not, but I should have the choice to do it if I want. Let society work itself and not try to define what we are with what gimmicks are placed and incentives. Tell us what the plan is. You are helping us build technology, giving us government assistance to produce better mileage vehicles and that helps lower cost. Either the government comes along and says, "I'm going to put a federal gas tax." At the end of the day, it might move people to think about fuel efficiency in a car.

Interviewer: Suppose that the state is directly considering this. There are a couple ways the state could implement this. The dealer could be heavily involved; sticker on the car. Dealer would be responsible for collecting fees and paying rebates; settling with the state at the end of the month. The state could give you money to start off with so you would never go in the negative. Or it could be dealt at the manufacturer's level where they settle it with the state. If it was handled at the manufacturer level, would you be less opposed to it if you didn't have to be involved?

Interviewee: Still opposed to it. It's just not right.

Interviewer: So it's more of ideological thing that you have.

Interviewee: We definitely have every reporting agency wanting something from us at every point. We don't need any more regulatory performance. Whether you change that or don't change that in the organizational makeup, I would still be totally against it.

Interviewer: If the state were willing to compensate for the administration...

Interviewee: I'm not interested in the government directing it, government taking over it. Let the marketplace, let the consumer make the educated decision and do things for themselves. We don't need the government to regulate anything. It's just a total waste of resources. You save bureaucracy, you save the picture right away.

Dealership Interview #5
October 26, 2009
Interviewee: 13 years in car business

Interviewer: California is considering adopting a vehicle "feebate" program that would incentivize consumers to purchase more efficient vehicles. Consumers purchasing more efficient than average vehicles would receive an incentive, and those purchasing less efficient than average vehicles would have to pay a fee. How would your dealership feel about the institution of this type of program?

Interviewee: A feebate program would be good for us because we're a Honda dealership, and our cars are all extremely efficient, so for us it would be a "win."

Interviewer: Have you had any previous experience with this type of feebate program, or any other incentive or fee program, and any positive or negative experiences that you would like to relate?

Interviewee: Cash for Clunkers the single most successful rebate program in my 13 years of being the car business. That recent experience was tremendous and anything that the state and federal government can do to help subsidize car purchases if through reduced emissions purchases or whatever would be good for us and the consumers. Plus, cities would see benefits from sales tax revenues generated as a result of the program.

Interviewer: Any negative experiences related to Cash for Clunkers?

Interviewee: No, not really, although there were a lot of complaints about the burdensome paperwork that was required by the government. Quite honestly, it was well worth the cumbersome paperwork.

Interviewer: If the State requested that the automobile dealerships undergo a brief training session to help explain the program to consumers, would you be willing to have all salespeople undergo this training (approximately 1-2 hours)?

Interviewee: Sure.

Interviewer: One potential structure for the program would be to have the fees and rebates administered at the dealership level, where records would need to be kept and net fees or rebates returned to or obtained from the state, potentially on a monthly basis. What level of

financial compensation would your dealership require to help to administer such a program? Assume that the feebate program applies to every vehicle sold.

Interviewee: I would say, if any, a fee of $50 per transaction.

Interviewer: How much do you think a program like this would change the amount of time that it takes do complete the paperwork for a new vehicle?

Interviewee: Depending on how cumbersome they make the program, I would say that it would not be on the scale for Cash for Clunkers, which was extremely cumbersome and time-consuming for my staff. This would be similar to what we need to do to collect sales tax. So, I would say that this would have a small to medium change in the amount of time for paperwork.

Interviewer: Are there any features of the program that could be included that would make it easier for the dealer to administer?

Interviewee: Just clear and concise rules. And one other thing would help: if the rules for the program were clear and concise *and* distributed prior to the announcement of the program being in place. That was one problem with Cash for Clunkers. The law was enacted about 30 days before the rules were issued, creating a lot of confusion in the market, and quite honestly a lot of upset customers that should've been able to take advantage of the program but couldn't because the rules weren't out.

Interviewer: How much lead-time would you need to have upfront?

Interviewee: Thirty days.

Interviewer: Any suggestions for how the program should be structured? (Explained class-based versus continuous).

Interviewee: Maybe it should be a hybrid of the two (class-based and continuous).

Interviewer: What do you think that would look like?

Interviewee: Here's an example. A family needs a larger vehicle like an SUV. When the kids go to college, they have an option to downsize their vehicle. In this case, they'd be moving down in class, and they would probably get a large rebate based on what you're talking about. Conversely, a family just starting out needs a bigger vehicle. They shouldn't be necessarily penalized for using a bigger vehicle. They should still get something or not have to pay a fee just because they have a family.

Interviewer: So should it be based on the need, purpose, previous vehicle…?

Interviewee: Yes, although that could get complicated.

Interviewer: (Described step-based structure described)

Interviewee: That sounds like a good idea. If it's worked in France, then no reason to reinvent the wheel.

Interviewer: Any other suggestions for the structure or administration of the program? Any additional thoughts about your role? What do you think about it being on the sticker of the car?

Interviewee: I think that would be fine, to have full disclosure. Like I said, it would help us. I don't know how I would react to it if I were a General Motors, Hummer, or Mercedes dealership, but in my particular case, it would help.

Interviewer: Do you feel like you are currently moving a lot of the more fuel-efficient cars more recently, or has it increased steadily over time?

Interviewee: As gas prices have gone up and as the economy has shrunk, we [Honda] are definitely a great alternative, so these are the cars that have been sold in an otherwise tough economy.

Dealership Interview #6
November 9, 2009

Interviewer: This vehicle feebate program would incentive consumers to purchase more efficient vehicles—in this case, vehicles with less GHG emissions. Those purchasing more than average efficient vehicles would receive a rebate. Those purchasing less efficient vehicles, though, would pay a fee associated with the level of emissions of those vehicles. Right now we have the Gas-Guzzler Tax, but only applies to a few very inefficient cars. This would be a broader program that would encompass most vehicles. Levels of incentives & fees depend on the relative level of emissions for those vehicles. There's a new sticker that shows GHG emissions from 1-10 on new cars, and one idea would be that the fee/rebate could be tied to this score (though not sure that this is how the program would be set up).

Interviewee: Can I ask why we are concerned about the emission of greenhouse gases?

Interviewer: Sure. In general, there's a consensus among scientists these days is that these emissions are affecting the Earth climate in a way that is potentially disruptive to the economy and the world, but particularly coastal areas.

Interviewee:

So you are talking about global warming, which, I guess we'll just agree to disagree on whether it exists or not.

Interviewer: I should back up a step and say that we've been talking to a lot of stakeholders including the general public. Some members of the general public believe in global warming and others think that it is complete nonsense.

Interviewee: I'm a statistician by trade, so when I look at the numbers for global warming, they do not make sense. None of the global warming numbers make sense. The increase of CO_2 in the atmosphere does not correspond with anything but the increasing temperature of the oceans

and the world. That's the only correlation that exists, and temperatures are not a correlation with the rise in CO_2 other than it's a non-dependent, precedent rise. They are correlated in an inverse relationship; that is proven, and it amazes me every time I hear about global warming. You realize that global warming is caused by sunspots and the fact that temperatures in the world have not increased in the last 10 years.

Interviewer: Suppose for the sake of the next few questions that the State is seriously considering this and that basically the net effect of it would be to provide incentives for consumers to buy the more efficient vehicles, hybrids, etc.

Interviewee: Are you talking about inefficient on a greenhouse gas scale? Because it takes so much energy to create the batteries and everything that goes along with the hybrid car. We sell a ton of them, but I don't tell the customers that.

Interviewer: We can talk a bit more about this, but in general the amount of energy saved over the lifetime of a hybrid vehicle outweighs the amount of energy that goes into making the battery.

Interviewee: But the average hybrid battery has to be replaced about every 10 years.

Interviewer: Even factoring that in the hybrid uses less energy. The program will have some effect on dealers, and depending on the types of cars that they sell, some dealers may be negatively affected and some may be positively affected. Let's say that there was a fee/rebate tied to the global warming sticker, so people coming into your showroom might be asking questions about this. There are a couple of ways that this could affect your dealership. One is that there would be some education needed on part of your salespeople so that they can explain what is going on. The other depends on how the program is administered. One design might ask dealers to collect the fees and pay out the rebates in a kind of system similar to how sales taxes are currently handled.

Interviewee: You have to change your language—forced, not asked.

Interviewer: So the question is whether this could be much more behind the scenes between the manufacturer and the State (the dealers wouldn't be very involved). Another way would be dealt with at the dealership level (collecting fees and disbursing rebates and, at the end of the month, settling up with the State). This creates an administrative burden, which some dealerships are not too happy about, but this could be done at the same time as the sales taxes. Do you do that on a weekly basis or a monthly basis?

Interviewee: We do it on a daily basis, but quarterly is when you're due.

Interviewer: Would you be opposed to doing this unless the State compensated you for the time spent to do that computerized reporting?

Interviewee: It all adds up to man-hours. It would be nice to be reimbursed. How long it would take depends on how the program is administered—on a per car basis—10 min, 20, min.—it would be hard to say. The tire tax, because it is so straightforward, probably takes less than 5 minutes per car to do the accounting. So it just depends on how it's set up and how much time it requires for paperwork/processing per vehicle. I'm guessing that reimbursement is not going to happen.

Interviewer: The program would be set up to be revenue neutral, so that it wouldn't cost the State anything to administer the program. Any administrative costs would have to come out of the program i.e. the fees collected. If there were an additional cost, it would need to be built into the program.

Interviewee: Revenue neutral programs always mean that it costs us something.

Interviewer: It's hard to make it revenue neutral without a crystal ball. The way it would work is that the State would likely have to readjust the program on a yearly basis to bring it back to neutral.

Interviewee: I sell Hondas, so would probably come out ahead in this kind of program. With gas prices right now, people are pretty proactive in looking for cars that are somewhat gas efficient, which roughly equates to a greenhouse gas initial positive. And people who buy the larger trucks need them—contractors, builders, people with horses/trailers, etc. Many of them have no choice, which raises the question of whether this program would really be effective. Might be more effective to raise gas taxes—commuters, whether they have a small car or not, would be taxed for the amount of fuel that they use, which might be enough to get them to look for alternatives. With the Gas-Guzzler Tax, the consumer doesn't even see it; they choose to ignore it because it's a one-time purchase. So if looking for a revenue generator—it would probably very effective to do it the way that you're looking at doing it. But if you're looking an overall way to solving global warming—though I don't care much about GHGs because I don't believe it—the gas tax seems a better way to go. Reducing our dependence on fuel is a huge problem—in the next 20 years, there's a fair amount of concern in this.

Interviewer: We are looking at other options for how to set this up, too, i.e. via registration fees, etc. And the feebates program isn't necessarily mutually exclusive of a gas tax.

Interviewee: When dealing with registration fees; however, people always find ways to get out of paying through loopholes or whatever, but if you tie it to gas—it's hard to get away with not paying for that.

Interviewer: That kind of touches on our last question of whether you thought there are other types of programs that might work better. Another point is about training for your salespeople. Envision that it might be a 90-minute online training—is that something that you would be OK with having your salespeople complete in order to answer questions about a feebates-type program?

Interviewee: We require our salespeople to do so much training that they wouldn't even notice it. When they're not helping customers, they would have the time. Any time that there's a mandatory program, what really bothers us is when we're getting no revenue, something that will literally hurt. Another problem is that there are often huge penalties in fees if we don't do them correctly. With the tire fee, for example, we can get slapped with a $1500 penalty for a $4 error. Keep us in mind that we're doing your work for free, and give a little benefit of the doubt of small mistakes.

Interviewer: Talked about people who needed the bigger cars (families, businesses, etc.) One bill that was proposed in the past included exemptions for micro-businesses, so this could be a possibility. With regard to the family-size, may be another possible approach that would entail two separate scales—one for cars and one for light trucks. Under this system could get a rebate for a light truck, though it might have a lower GHG performance rating than a car that might pay a fee. Would a class-based system like this help to mitigate the issue of the family that needs a larger car?

Interviewee: I just don't know that the one-time fee will be something that will dissuade someone from a GHG emissions-intensive car. My opinion is typically that—like with the Gas-Guzzler Tax—when it's a one-time fee, people don't even care. The one-time fee is negligible when you consider the lifetime or the ownership period of the car.

Interviewer: It's my understanding that, while the dealership's primary job is to sell cars, they often make more money servicing the cars they sell. So the concern is that, if dealerships are selling fewer cars, they would also be servicing fewer cars. Is this something that you'd be concerned about—both selling and servicing fewer cars?

Interviewee: I'm guessing that the cars we sell will really not be affected. I didn't want to bring it up, but we would probably actually end up selling more cars. If I were only a GMC dealer, though, this would be a huge problem.

Interviewer: I'm sure the diversity of cars you sell probably makes a difference. What percent of unit sales are Honda vs. GMC?

Interviewee: About 85-90% Honda sales.

Interviewer: While the interview will be anonymous in how its reported, we are keeping a list of people that we interview to share the report once it comes out.

Dealer Interview #7
November 25, 2009

Interviewer: California is considering adopting a vehicle "feebate" program that would incentivize consumers to purchase more efficient vehicles. Consumers purchasing more efficient than average vehicles would receive an incentive, and those purchasing less efficient than average vehicles would have to pay a fee. How would your dealership feel about the institution of this type of program?

Interviewee: Depends on the parameters. There have been different rebates in the past for hybrids, etc., and those seem to work really well. Based on past experience, and from the perspective of this dealership, we would be all for it. Any way that you can incentivize consumers to take action—just like Cash for Clunkers—in order to buy something different from what they have, works great for dealerships.

Interviewer: So your overall experience with Cash for Clunkers was pretty positive?

Interviewee: Very positive. Very positive.

Interviewer: Any negative aspects of the program from your perspective?

Interviewee: No, there really weren't any negative aspects. The hardest part about it was in the very beginning. The changes occurred very rapidly, and some of the rules changed as they

defined what was going on. But, overall, the communication through the CARS website was very good. You kind of had to pay close attention, but it really wasn't that difficult. We saw a big increase in business, and we saw a lot of business that we wouldn't have otherwise seen. I think it was very positive.

Interviewer: Do you sell any other brands other than Honda?

Interviewee: I also have an Acura store.

Interviewer: How would you describe your experience with other rebate programs that you mentioned earlier?

Interviewee: Those were tax credit programs, and while they were good, they weren't as immediate and weren't as much of a call to action as Cash for Clunkers since Cash for Clunkers had an immediate rebate. The issue really becomes how they would implement something like what you were talking about. Say CA gives a $1000 rebate for people to move up 10 mpg, for example. How do they get it? Do they get it immediately? Do they deduct this from their yearly taxes? Does the dealership file paperwork for the rebate?

Interviewer: Those are good questions, and actually provide a good segue to my next question. The short answer is that we're still considering a variety of different designs for the program, so this is something that we wanted to get feedback on from dealers. So one structure, for example, would have the fees and rebates administered at the dealership level. Under this structure, if a fee were due, the consumer would pay the fee at the dealership.

Interviewee: Can you explain the fee?

Interviewer: Sure. Again, there could be various structures, but the basic idea behind the concept is that a pivot point would be set at some greenhouse gas efficiency, and cars that are more efficient would get a rebate, and cars that are less efficient would pay a fee.

Interviewee: I totally disagree with the fee. If you really want to change gas mileage behavior, and you want to add a fee to anything, add a fee to gas. The fee is a penalty on someone buying a new product, and right now in this economy, that will just stall people out, and you don't want to do that. If you need to pay for the program, add a gas tax. What you're doing when you charge a fee is stifling the economy in the car business. What you need to do is add a gas tax to pay for the rebates, because the gas tax encourages them to get out of the car they're currently driving. Let's say a customer currently has a 2000 suburban. If you add a fee to a 2005 suburban, which gets 5 mpg better gas mileage than the car they have, they won't buy the more fuel efficient suburban because of the fee. It's really important not to add any expense to anything. If you need to fund the program, do it in a way that gets them out of their older vehicle—and that's a gas tax. We see this very clearly. When gas gets up into the $3.00 range, we see a lot of old trade-ins. When gas gets below the $3.00 range, people stop trading in those vehicles and start looking at bigger vehicles. We sell everything from Pilots that get 20 mpg to hybrids that get 40 mpg. We see a huge swing at that $3.00 per gallon point, where people start trading in 15-20 mpg vehicles for vehicles that get 30-40 mpg. Another way that they could do it is on registration fees, but however they do it, it should impose fees on vehicles that they already own. You don't want to put more of a dent in the State's economy by stifling the sales of new cars.

Interviewer: Do you feel like new car purchasers decide what kind of car they want to buy well ahead of when the start shopping for the new vehicle? In other words, do you think that a fee/rebate would be enough to change a car-buyers mind about the kind of car they will buy?

Interviewee: Depends on the level of the fee/rebate. If it's at $500, I don' think they will change their mind, but it might keep them from buying anything at this point. But, when they have to go to the pump, if they have to spend $100/week rather than $50/week to drive their vehicle, that's a game-changer—that will change a car buyer's mindset. As a Honda dealer, we see it very clearly—as gas goes up, people start looking at more fuel-efficient cars. So, I say that the way to pay for this program is through some kind of gas tax, and it doesn't take much, especially considering the volumes of gasoline that are sold.

Interviewer: Let's say, hypothetically, that the State decides to go ahead with implementing a fee-and-rebate scheme, and they decide that this will be administered at the dealership, so that fee-and-rebates are handled at this level. In this example, let's say that dealers collect the fees and fill out paperwork so that consumers are paid back within a month or so by the State.

Interviewee: Here's how I think you should do it. Make it an instant rebate, meaning that the rebate comes off of the price of the car. Say it's $500—the dealer can take $500 off the price of the car right there-and-then, and then the dealer deducts that from the quarterly sales tax deposit. If dealership has to collect information for the rebate, then this opens a can of worms. People that don't get their rebates will come back to the dealership about it, and this creates bad feelings between customers and dealers. If they're going to do some kind of rebate, make it instant, so that the consumer gets the benefit of it at the time that they're purchasing the vehicle.

Interviewer: From your perspective, do you think that handling the fees/rebate at your dealership would require some kind of compensation from the State? Maybe on a per transaction basis?

Interviewee:

- Sure, this would definitely take up some time.
- I think that $50-$100 per transaction would be adequate compensation.

Interviewers: Would you be willing to have your salespeople undergo a training of ~1-2 hours about the program to equip them to answer questions from new car buyers?

Interviewee: Why would it take 1-2 hours to understand the program? The CARS program had a tutorial online, but it took 15-20 minutes. There's no reason to do a 2-hour training because it's just not that complicated. Either a car's going to qualify or it doesn't. The training should be online and very simple. If they want to look at an efficient way to communicate, they should look at CARS website. That was a very easy way to communicate the program. I would definitely not be willing to put my salespeople through a 1-2 hour training because it shouldn't be that complicated.

Interviewer: While we've already talked a lot about some of your ideas for how to structure this program, do you have any other ideas that you'd like to share that would make this program easier from a dealer perspective?

Interviewee: The main thing is that it needs to be done online. The dealer must be able to compensated right away, because they don't have the financial backing to carry $200-$300K worth of credits/receivables.

Interviewer: I also wanted to get some of your feelings on the possible structures for this program (described continuous, class-based schemes).

Interviewee: The problem with a class-based scheme is that you're not encouraging people to downsize. If you give rebates to some SUVs because they have better emissions relative to other SUVs, the net amount of pollution is still higher. So I generally think that putting all vehicles on the same scale will make the program more effective in what it's trying to accomplish overall.

Interviewer: Do you have any last thoughts or suggestions?

Interviewee: If you're going to do this, you should build in some marketing for it. If the consumer doesn't know about it, it doesn't spur any action. This whole thing needs to stimulate people to go out and buy a car with better tailpipe emissions and should stimulate purchases that wouldn't have happened anyway. So many times what happens with these programs is that the car-buyer comes in to learn, "Oh by the way you get this," so it didn't really motivate them to go out and make a change. Needs to have enough marketing to ensure that the public is aware of it's happening and they go out and make a change.

Interviewer: Did you feel like Cash for Clunkers did a good job with it's marketing?

Interviewee: It did not do a good job of marketing. The only reason why it worked was because the media latched onto it so much. Unfortunately the ARB program will not be a big enough deal for the media to go crazy about it, since it won't be offering such large payouts. You're going to have to have some marketing money involved. As long the consumer is not made aware of it upfront, then it's not doing anything to change their behavior.

Dealer Interview #8
November 23, 2009

Interviewer: California is considering adopting a vehicle "feebate" program that would incentivize consumers to purchase more efficient vehicles. Consumers purchasing more efficient than average vehicles would receive an incentive, and those purchasing less efficient than average vehicles would have to pay a fee. How would your dealership feel about the institution of this type of program?

Interviewee: After experiencing Cash for Clunkers, I think that these programs tend to be very complicated. Dealerships have to front all of the money for this and hope that they'll get it all back in return. It's something that we're not excited about.

Interviewer: One potential structure for the program would be to have the fees and rebates administered at the dealership level, where records would need to be kept and net fees or rebates returned to or obtained from the State, potentially on a monthly basis. What level of financial compensation would your dealership require to help to administer such a program? Assume that the feebate program applies to every vehicle sold.

Interviewee: I'm not behind the program so I don't want to respond to that aspect of it. I feel that what they're holding manufacturers to in terms of gas mileage over the next few years is sufficient enough to improve the gas mileage ratings on cars that are being sold. This should have the effect that you're trying to accomplish with this program.

Interviewer: Do you feel like the more fuel-efficient vehicles are moving off the lots enough to meet the production of fuel-efficient cars that are being manufactured?

Interviewee: Yes. The more efficient cars are being sold anyway, so I don't really see a need to incentivize it any more.

Interviewer: What is your current understanding of the feebates program structure and the role of the dealership (to help me set up the remaining questions)?

Interviewee: It's my understanding that there's a bigger rebate on vehicles that get better gas mileage, and vehicles that don't get good gas mileage would pay a fee.

Interviewer: What is your sense of the dealerships role in this program?

Interviewee: Dealership basically fronts the money until they submit the paperwork to the government to get paid back.

Interviewer: One structure of the program that we are exploring would have the dealerships process fees similar to how sales taxes are handled, and we're also exploring a variety of structures that may or may not require the dealerships to front the money for rebates. Do you have any comment on your thoughts on these different structures or ideas on how the program should be structured from your perspective?

Interviewee: I still think that what's been done in terms of holding the manufacturers to a higher level of gas mileage will settle what it is that somebody's attempting to settle here. If this was done years ago it might have been beneficial, but now that everything's in place in terms of the average gas mileage having to be 30 miles per gallon in a couple of years, I think it's going to take care of this. I'm just not really a fan of it.

Interviewer: Let's say that, hypothetically, the State ultimately decides to adopt this program. If the State requested that the automobile dealerships undergo a brief training session to help explain the program to consumers, would you be willing to have all salespeople undergo this training (approximately 1-2 hours)?

Interviewee: Yes, I'd have to, yeah. No doubt about it.

Interviewer: Any thoughts about how to structure it to make it easier for the dealership or more amenable? (explained class-based or continuous structures)

Interviewee: We sell a product that would obviously benefit from a program like this, so I'm really torn. As much as I don't feel that it is necessary, if it were to be done, I feel that Toyotas would do really well with it. I think it would cause more trouble for domestic manufacturers and potentially run them out of business again, which they're close to having it happen anyway. So, I don't really want to comment on what would be better. I just don't think it's necessary.

D. LESSONS LEARNED PROGRAM DETAILS

In recent years several governments have put in place either complete feebate systems or vehicle incentive systems with some of the characteristics of feebates. A detailed set of ten case studies has been compiled that cover a range of systems. These case studies are provided here in alphabetical order: Canada, Denmark, France, Germany, the Netherlands, Norway, Spain, Sweden, United Kingdom, and the US Gas Guzzler Tax.

D.1. Canada

On March 20, 2007, the Government of Canada announced a Vehicle Efficiency Incentive (VEI) program to encourage the purchase of more fuel-efficient vehicles. The program created a performance-based "ecoAUTO" rebate system of up to $2,000 Canadian dollars (CD) for the purchase of an efficient vehicle and a "Green Levy" on fuel-inefficient vehicles of up to $4,000 CD (Government of Canada, 2007). The majority of vehicles fell in a neutral zone between the two and incurred neither a tax nor a rebate. The ecoAUTO and Green Levy programs were accompanied by a seven-fold increase in the government's support for accelerated scrappage programs to $6 million CD. The scrappage programs are aimed at reducing both smog-forming pollutants and greenhouse gases by offering incentives to remove heavy polluters from the road. The ecoAUTO program was terminated after 2 years of operation but the Green Levy remains in effect.

The Province of Ontario has also had a version of a feebate system in place for several years which functions mainly as a gas-guzzler tax (Banerjee, 2007). If a vehicle consumes less than 6 L/100km (39.2 MPG), it receives a $100 CD rebate. Otherwise, the tax increases with highway fuel consumption up to $7,000 CD. According to Oliver (2009), most of the cars sold in Ontario fall within the range between $0 and a $200 to $400 fee, perhaps as much as $1,200 CD for a very large SUV (pick-up trucks are exempt). This is confirmed by Banerjee (2007) who reports that 90% are subject to a $75 tax, hardly enough to strongly influence either manufacturers or consumers. Banerjee also notes that the program is not well advertised and most car buyers may not even be aware of it.

Structure

The ecoAUTO program, the rebate portion of the Canadian feebate, was structured as follows. Passenger cars with fuel consumption ratings of 6.5 L/100km (36.2 MPG) or less, and minivans and SUVs with fuel consumption of 8.3 L/100km (28.3 MPG) and less were eligible for rebates of $1,000 CD plus $500 CD for each 0.5 L/100km by which the vehicle's rating fell below the benchmark (Figure D1). The maximum rebate was set at $2,000 CD. Hybrid vehicles and certain flex-fuel vehicles were also granted rebates limited to $1,000 CD. In the 2007 model year, eight passenger cars and nine light trucks qualified for rebates based on their fuel consumption ratings. The Chevrolet Impala (12.3 L/100km) and Chrysler Sebring (13.0 L/100km) qualified as efficient flex-fuel vehicles. Counting all eligible configurations of these models, a total of 18 vehicles qualified for rebates in 2006 and 21 in 2007. In the 2008 model year, 32 vehicles qualified for ecoAUTO rebates, 4 of which qualified as efficient flex-fuel vehicles (Dumas, 2008).

The Green Levy imposed a tax of $1,000 CD for passenger vehicles (cars, minivans, SUVs) with fuel consumption ratings of 13.0 L/100km (18.1 MPG) and above, increasing by $1,000 CD for each liter per 100km above 14 L/100km to a maximum of $4,000 CD. At the same time, the existing weight-based excise tax on heavy vehicles was eliminated. In model years 2007 and 2008, 125 and 138 vehicles were subject to the Green Levy, respectively (Dumas, 2008). The Green Levy remains in effect.

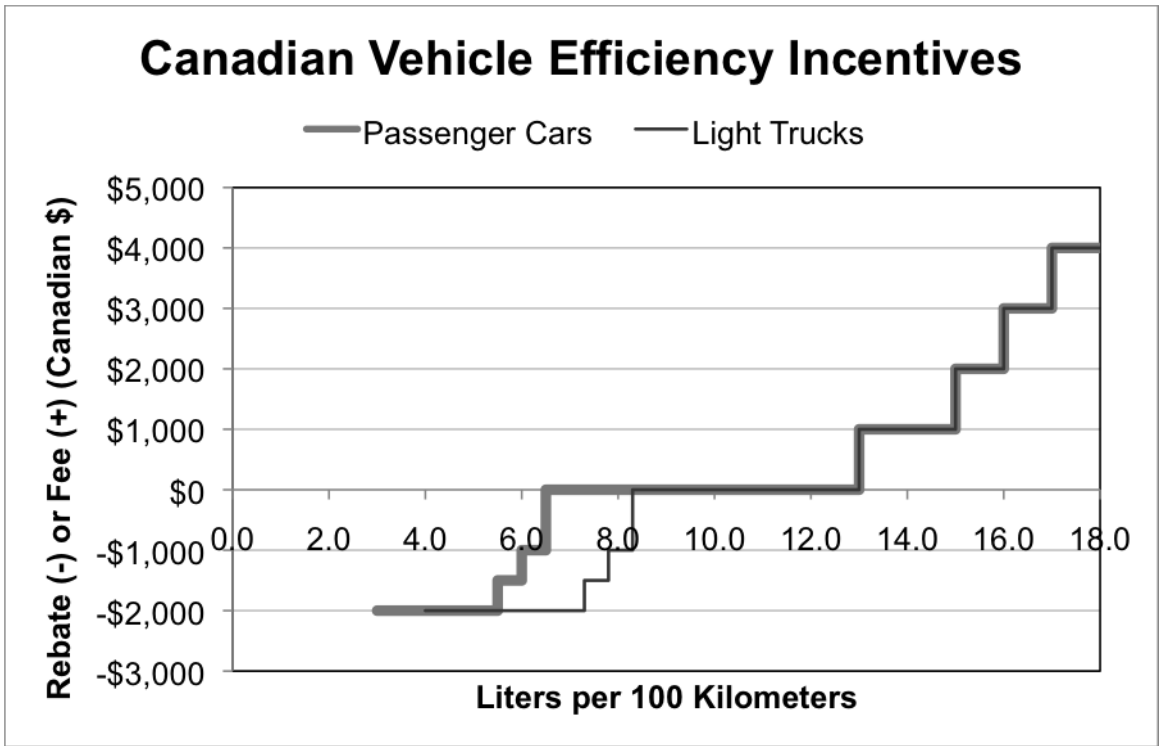


Figure D 1 Canadian Vehicle Efficiency Incentives

Implementation and Administration

Both the ecoAUTO rebate and the Green Levy were announced on March 20, 2007 as part of the Canadian national budget and took effect immediately. Rebates applied to all new vehicles sold on March 20, 2007 or later. Unsold model year 2006 vehicles held in dealers' inventories were included. The Green Levy, on the other hand, applied only to vehicles delivered to dealers after March 19, 2007. Dealer inventories were excluded, as were consumer purchase contracts entered into before March 20, 2007.

The combination of the ecoAUTO rebate, Green Levy, and scrappage program were intended to be approximately revenue neutral. For the rebate program, the government committed $160 CD million over a two-year period. By the time the program was terminated on March 30, 2009, $188 CD million had been spent. The Green Levy was expected to raise just over $100 CD million in revenue per year (Government of Canada, 2007). In the 2007-2008 fiscal year, the Green Levy

actually raised $44.3 CD million (Government of Canada, 2009). Approximately $15 CD million per year was budgeted for the accelerated scrappage program.

In addition to the Canadian Government's budget announcements, the rebate program was publicized in the media. However, there were no requirements for labeling vehicles.

The ecoAUTO rebate program was administered by Transport Canada, while the Green Levy was managed by the Canadian Finance Ministry. Via a Memorandum of Understanding, Transport Canada engaged Service Canada, an organization with broad responsibility for distributing funds to Canadians, to administer the rebate program. Consumers purchasing an eligible vehicle filled out a form available on Transport Canada's website, and submitted it to Service Canada. With funding obtained from Transport Canada, Service Canada mailed rebate checks to those submitting valid claims (Bourbeau, 2009). It was intended that the rebate benchmarks would be revised over time, however the early termination of the program made this moot.

The Green Levy, on the other hand, was an excise tax paid by car dealers when they took delivery of new vehicles. In effect, it was up to the dealer to make the customer aware of the Green Levy on any particular vehicle.

Impacts and Reactions

Three days before the termination of the ecoAUTO program, Transport Canada (2009) reported having received 180,000 applications, based on which they sent out 167,000 rebate checks totaling 187.7 CD million. As of June 8, 2009 the program had not yet posted an assessment of results but planned to do so (Transport Canada, 2009).

An early analysis of the program by a Canadian policy think tank (Banerjee, 2007) concluded that the effectiveness of the program would be limited because it applied to so few vehicles.

Public reaction to the Canadian Vehicle Efficiency Incentive (VEI) program has been positive. Polls indicate that while there is strong opposition to gasoline taxes, there is significant public support for gas-guzzler taxes and rebates for higher fuel economy vehicles (Banerjee, 2007). Oliver (2009) reports that there have been no complaints about the Canadian VEI from any consumer advocacy groups.

On the other hand, automobile dealers and manufacturers reacted negatively to the VEI. A national roundtable consultation had recommended against feebates in the absence of a more comprehensive policy strategy and when the government decided to implement them manufacturers were apparently surprised by the lack of consultation. One Canadian observer noted that none of the key stakeholders (manufacturers, dealers and customers) were initially "socialized" to the concept before it was announced. Manufacturers responded negatively, denouncing the VEI as a "tax". The abrupt thresholds were a source of irritation to some manufacturers. Honda was particularly upset that its relatively efficient Fit missed the rebate threshold by 0.1 MPG while its competitor Toyota's Yaris received a $1,000 CD rebate. Not only did Honda take out a full-page advertisement in the Globe and Mail decrying the unfairness of the standard, but they instituted their own rebate for the Fit and, in the following model year, boosted its fuel economy and that of the Civic enough to secure the rebate.

The lack of publicity for the VEI program and delays in getting rebate checks to consumers were also drawbacks. Although the program was announced on March 20, 2007, the first rebate checks were mailed out on October 1, 2007. For the 2008 model year, the rebate threshold was not

decided on until December 2008. The industry was not pleased by the late announcement, even though it was made retroactive for model year 2008 vehicles purchased prior to the announcement.

Impacts on Canadian auto manufacturing have not been estimated but were undoubtedly minimal, since the VEI applied to only 0.4% of the vehicles built in Canada. The industry's complaints dealt mostly with fairness and impacts on sales.

Lessons and Insights

Although the lack of formal evaluations of the Canadian VEI makes it difficult to draw quantitative conclusions, there appear to be several lessons to be learned from this short-lived program. While the Canadian public generally supported the VEI program, it was not well publicized and therefore not well known by consumers. Manufacturers and dealers on the other hand, reacted strongly and negatively. In part, this was undoubtedly due to the lack of prior consultation and notification. In addition, the perceived inequity of the abrupt feebate step function may have pleased some manufacturers but strongly offended others.

The large neutral zone established between the ecoAUTO rebate and the Green Levy may have been intended to increase public acceptance by leaving most vehicle buyers and vehicles unaffected by the system. However, it appears that public support was not the critical issue in Canada. Interestingly, the tax (the Green Levy) survived while the subsidy (the ecoAUTO rebate) was terminated, apparently chiefly due to industry opposition. A priori, this is the reverse of what might be expected. The industry's opposition, as noted above, appears to have been driven not by the actual impacts of the VEI on the industry but rather by the lack of consultation and the system's perceived inequity. Another possible reason, however, may have been the belief that the limited VEI was the beginning of a comprehensive feebate system and that a comprehensive feebate system would have significant impacts on the industry. In addition, the delays in processing rebates may have cast the ecoAUTO rebate in a negative light, while the behind-the-scenes nature of the Green Levy led to it not garnering much opposition.

Finally, placing the responsibilities for the fee and rebate components of the policy in two separate agencies (the Finance Ministry and Transport Canada, respectively) probably hindered a coordinated implementation of the VEI.

D.2. Denmark

Structure

Vehicles in Denmark are heavily taxed, both when first purchased and through an annual circulation tax, as well as indirectly through fuel taxes. Since the 1970s, new vehicles have been taxed when initially registered based on the price of the vehicle, inclusive of the 25% VAT added to most goods. Currently, vehicles are taxed 105% on the first 79,000 DKK ($15,000, subtracting VAT base vehicle price would be about $12,000) and 180% on the remainder of the vehicle's value. This extremely high tax rate has led to smaller and cheaper vehicles being purchased, but it has also slowed down fleet turnover.

Beginning in June 2007, an additional CO2 feebate was incorporated into the registration tax system. The addition is estimated to achieve 0.8 MT of CO2 reductions by 2020. The benchmark is set at 150 g CO2/km, however it is expressed to the public in terms of fuel economy and therefore differs by fuel type. This benchmark translates to 16 km/liter (36 mpg) for gasoline and 18

km/liter (41 mpg) for diesel. Vehicles that exceed these thresholds receive a rebate of 4000 DKK ($750) per km/l above the threshold and vehicles below the threshold pay 1000 DKK (US$200) per km/l shortage. The rebate rate is equivalent to $320 per mpg and the tax rate is equivalent to $85 per mpg. Consumers also receive deductions from the tax for safety equipment. The CO2 emissions-based portion of the Danish registration tax structure is shown as a feebate in terms of miles per gallon and US dollars in Figure D2.

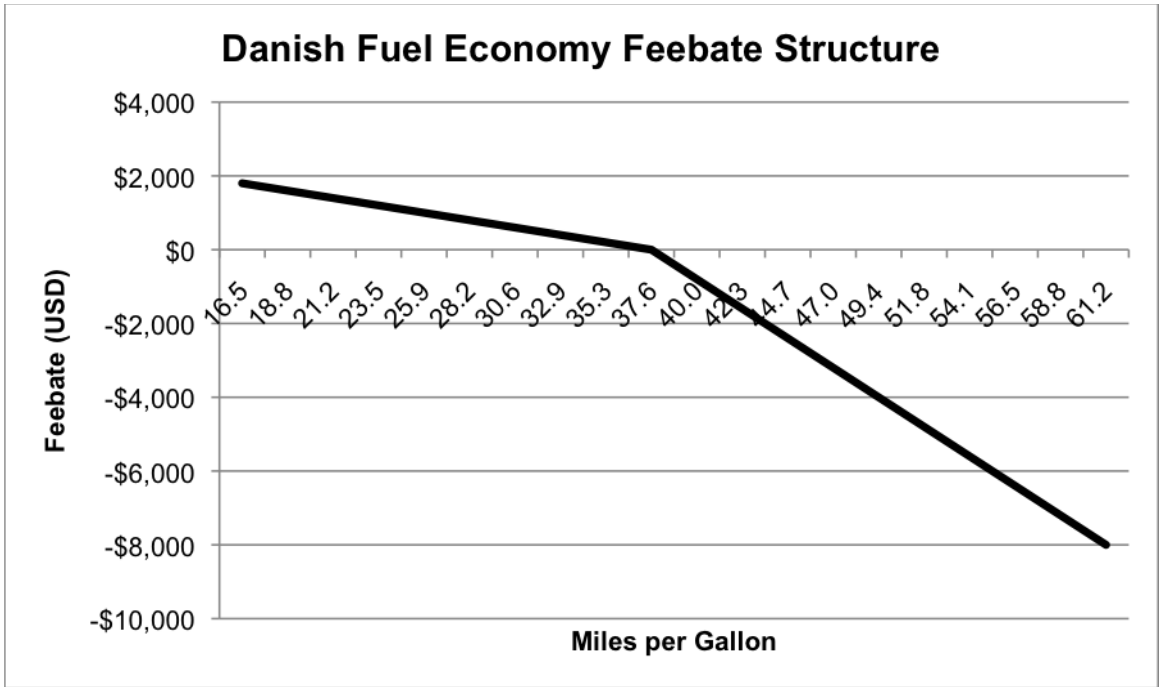


Figure D 2 Danish Feebate Structure in Miles per Gallon and US Dollars

In terms of fuel consumption (gallons per mile), the Danish feebate rate becomes increasingly large as fuel consumption decreases, and increasingly lenient as fuel consumption increases (Figure D3). This leads to some possibly counterproductive incentives. There is a much larger incentive for vehicles with relatively low fuel consumption to reduce their consumption slightly, as a small change leads to a large increase in the rebate. Conversely, the diminishing rate for relatively high fuel-consuming vehicles does not provide as strong a motivation for manufacturers to reduce fuel consumption.

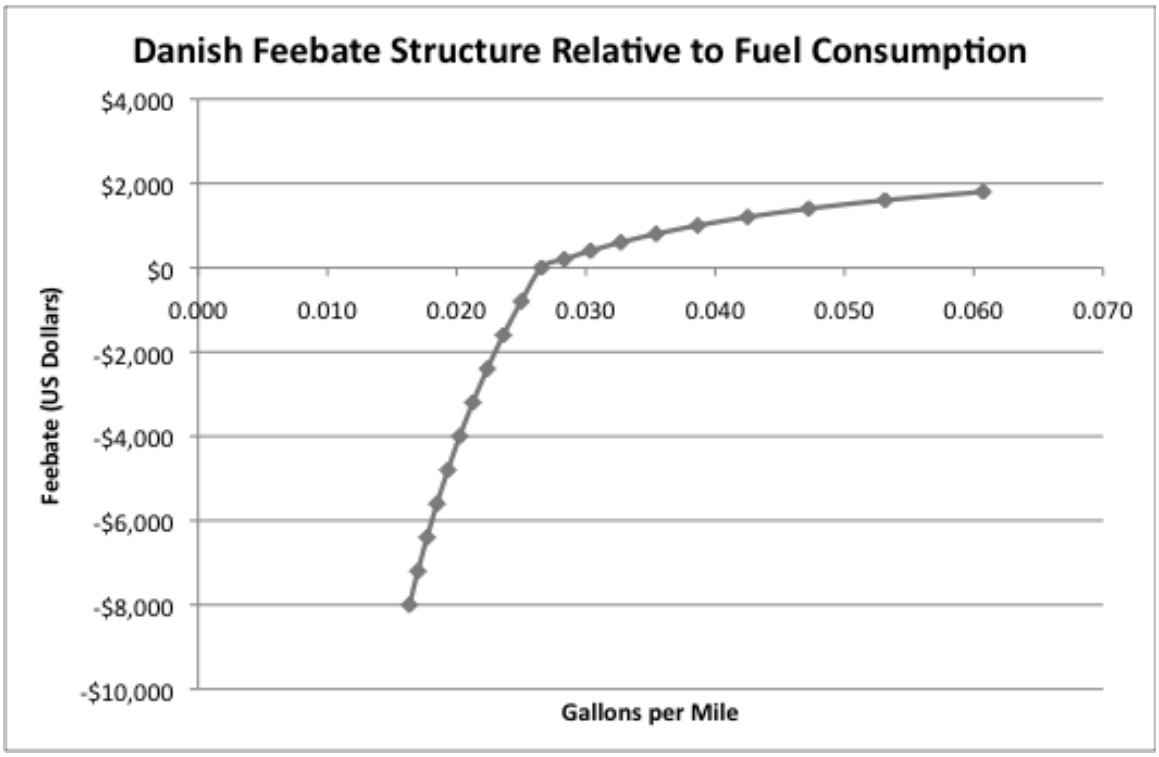


Figure D 3 Danish Feebate Structure in Gallons per Mile and US Dollars

In addition to the changes to the registration tax, Denmark has, since 1997, had a semi-annual Green Owners Tax. The Danish government implemented this circulation tax to replace the weight-based vehicle excise duty. The Green Owner Tax is calculated based on the fuel consumption of the vehicle and the fuel type (gasoline or diesel) and is paid twice each year. It varies from 520 DKK (about $100 US) for vehicles that can travel at least 20 km/liter (about 47 miles per gallon) to 18,460 DLL (about $3600 US) for vehicles getting less than 4.5 km/liter (about 10.5 miles per gallon) (ACEA, 2009).

In December 2008, the Danish government announced a new long-range strategy for the taxation of motor vehicles that called for shifting approximately half of the current tax burden from vehicle registrations to vehicle use using a kilometer-based tax. The details of this strategy and how it might affect the Danish feebate system are not yet available.

Implementation and Administration

The purpose of the registration tax is to generate revenue. In 2007, annual revenues totaled 24 billion DKK (US$4.6 billion), about 3% of total tax revenues and equivalent to 1.4% of GDP. Commercial vehicles are subject to about half the tax that private passenger vehicles must pay, to preserve economic growth. There are no earmarks on any of the revenue.

In contrast, the Green Owners Tax is intended to capture the externalities of driving. An additional 0.6 MT of CO2 reductions are estimated in 2020 from this tax. Revenues from this tax totaled 9.6 billion DKK (US$1.8 billion) in 2007, about 1% of total tax revenues and equivalent to 0.5% of GDP.

The Green Owners Tax took effect a few months after approved in 1997. Vehicles that had been ordered but not yet delivered by the start of the program were exempt from the new tax. According to a representative from the Ministry of Taxation, consumers are not sufficiently informed about the different tax breakdowns to warrant a discrete form. The price displayed on a new vehicle is a single number net of all applicable taxes (or rebates) payable at the time of registration, which are handled by the dealer.

In addition to maintaining vehicle certification data and the new vehicle database, the Danish Road Safety and Transport Agency also provides public outreach about the Green Owner Tax. Consistent with the EU Directive on Energy Labeling, all new vehicles must display the label shown in Figure D4, which provides information about energy consumption, CO2 emissions, costs, and safety.

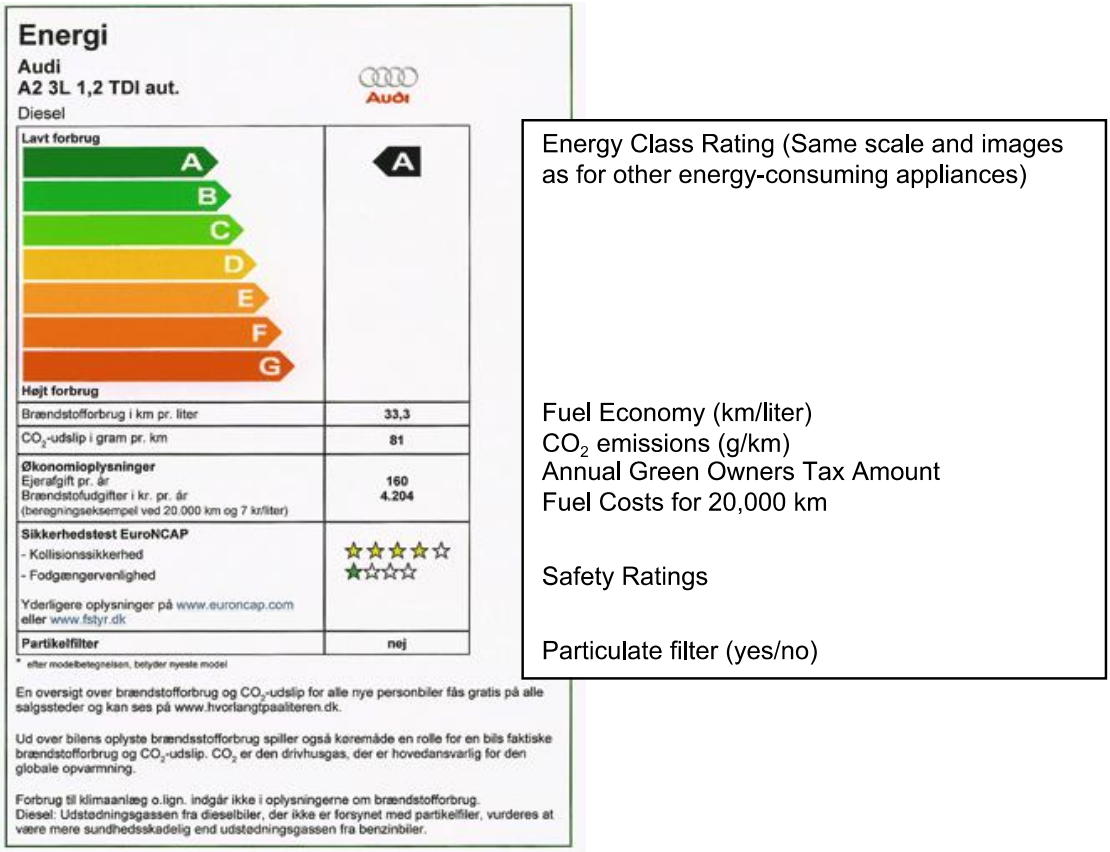


Figure D 4 Energy Label Displayed on New Vehicles in Dealer Showrooms

The energy classes are the same as those used for other appliances, which is meant to ensure that the public will understand the rankings. All information on the label is available in an on-line, searchable buying guide for both new and used vehicles (back to MY1997). A similar booklet for new vehicles must also be made available in dealer showrooms. The booklet lists all model year vehicle configurations (~2,000) with their corresponding energy class, power, weight, fuel consumption, CO2 emissions, annual fuel cost for 20,000 km, annual Green Owner Tax, and safety ratings.

Impacts and Reactions

The combination of the registration tax and Green Owner Tax appears to have had some effect in improving fuel economy and reducing CO2 emissions, though there has not been any formal

evaluation. The rise in fuel prices in 2008 is likely to be a confounding effect in the resulting changes in vehicle sales shown in Figures D5 to D7. In addition, minicars, which are currently quite popular in Denmark and are also low emitting, were not on the market prior to 2007. Thus, the changes in fuel consumption distribution shown in Figures D6 and D7 are not solely from mix shifting to existing vehicles but also due to acceptance of new vehicle offerings. It should be noted that although electric cars are exempt from both the registration and circulation taxes, they have 0% market share.

As a small country without its own auto industry, Denmark has almost no influence on vehicle supply. For example, the VW Lupo was very popular in Denmark but not anywhere else and was therefore discontinued. Consumer demand is essentially the only lever that government policies can use to meet the targeted average new vehicle emissions of 130 g CO2/km by 2012 and 95 g CO2/km by 2020.

In Figure D5 we see a slight peak in the average fuel consumption of new registered private cars, then a fairly rapid drop even before the beginning of the feebate program. As of June 2008, the average fuel consumption appeared to be settling at a level significantly below the level prior to the introduction of the feebate program.

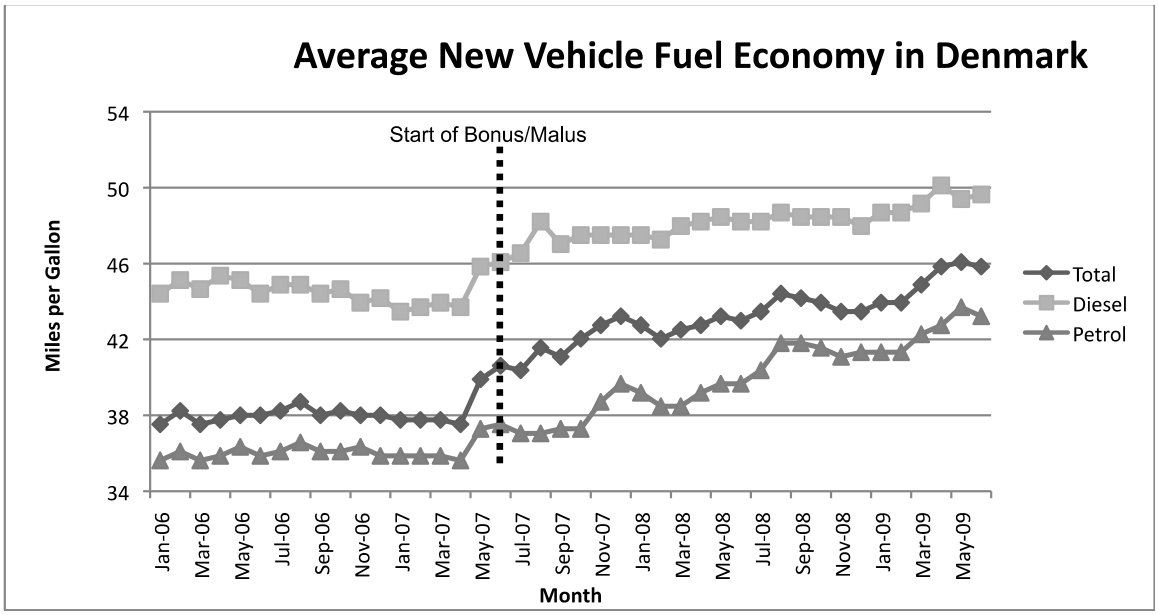


Figure D 5 Average fuel economy of new personal vehicles by month

Figure D6 appears to show a corresponding increase in the rate of decline of average CO2 emissions of new cars around the time that the feebate program was introduced.

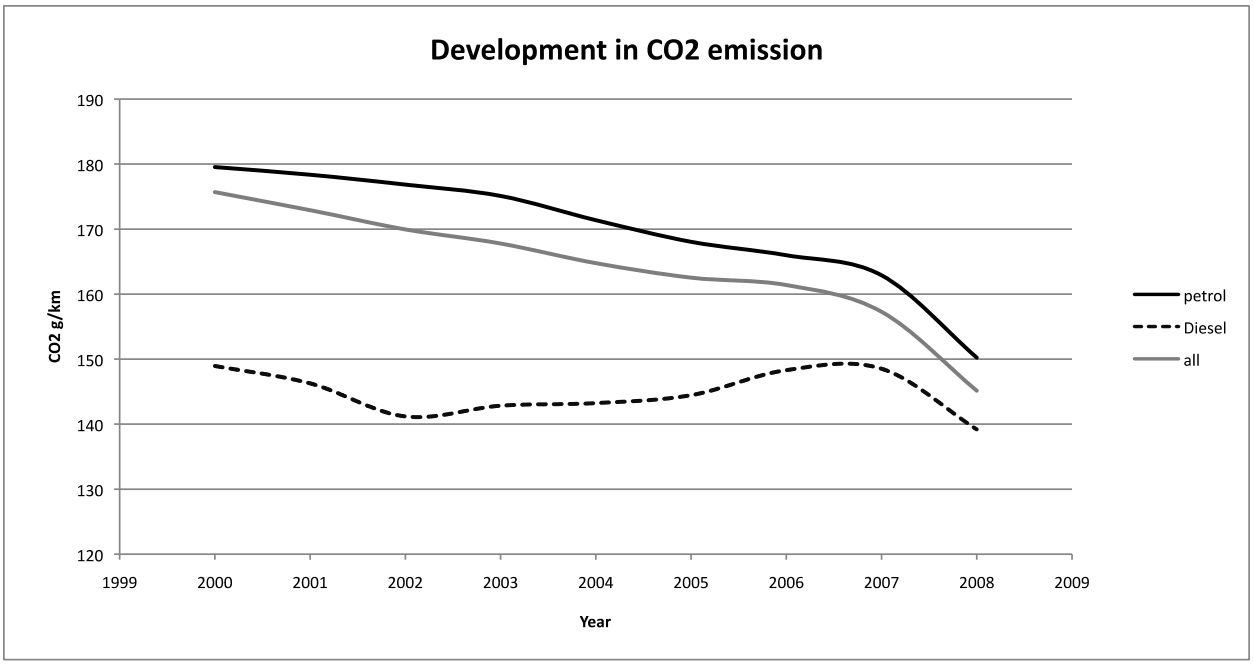


Figure D 6 Average CO2 emissions of new personal vehicles by year

Figures D7 and D8 show a shift toward lower fuel consumption in the share of new gasoline and diesel cars. The change from 2007 to 2008 is particularly drastic, with gasoline cars in class A nearly tripling their share of new vehicle sales and a 1/3 increase in the share of class A diesels.

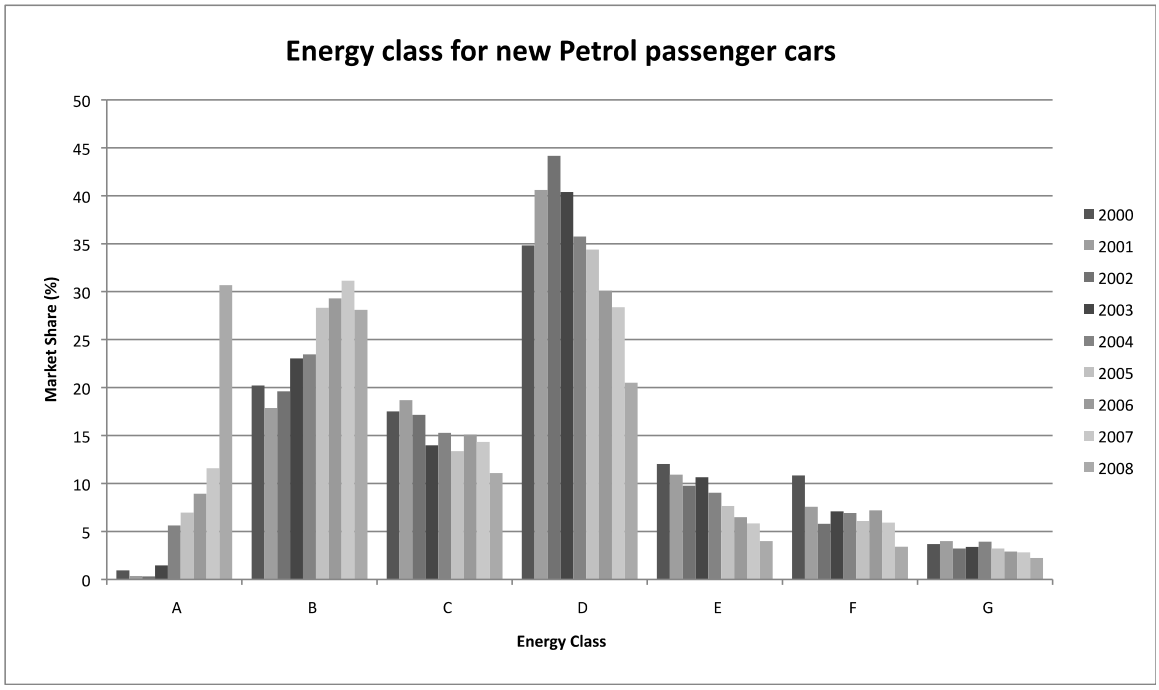


Figure D 7 Distribution of new gasoline vehicles by energy class and calendar year

Courtesy of Ulrich Lopdrup, Danish Road Safety and Transport Agency

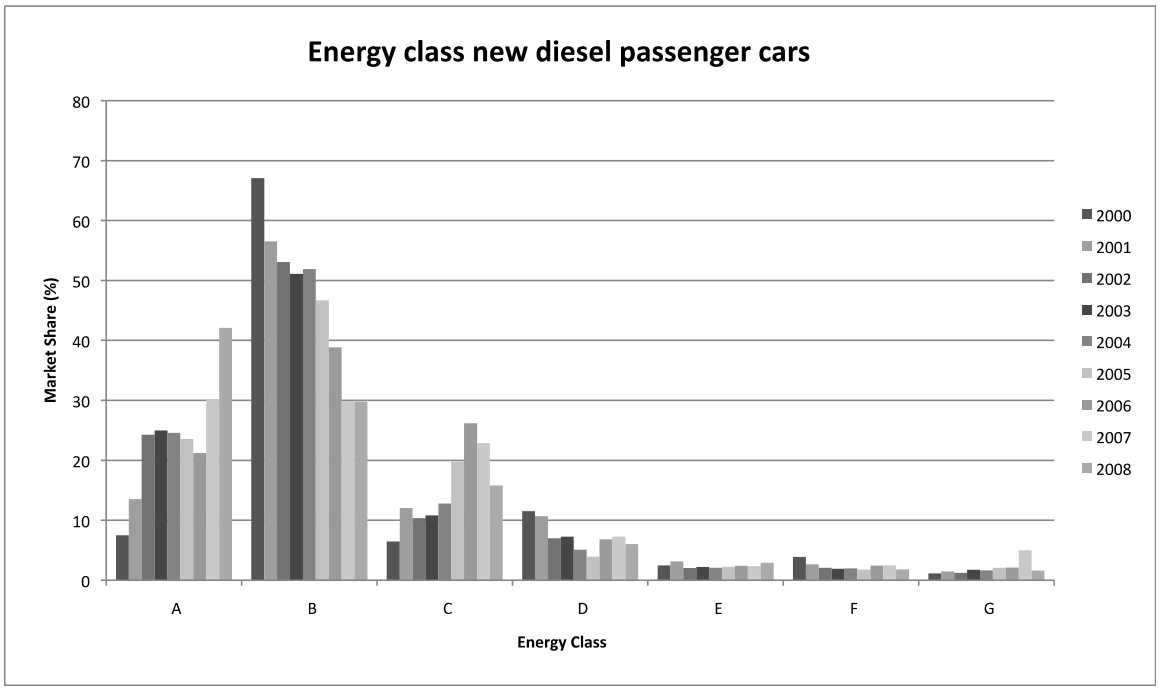


Figure D 8 Distribution of new diesel vehicles by energy class and calendar year

Courtesy of Ulrich Lopdrup, Danish Road Safety and Transport Agency

Lessons and Insights

The sales data for the time between the announcement and implementation of the Danish feebate system demonstrates a spike in average emissions/fuel consumption of new vehicle sales due to an anticipatory effect. The feebate system appears to have had the desired effect of reducing average CO2 emissions of new vehicles.

The functional form of the feebate included in the registration tax is piecewise linear in fuel consumption. Also, the program is essentially invisible to consumers, but it still appears to be effective in spite of this.

Denmark's policies are the most aggressive of all the cases we have studied, in that they have both stiff registration and circulation taxes and generous incentives. However, although feebates apparently have an effect, this extreme case also seems to demonstrate that there are eventually diminishing returns from these policies, especially when the existing fleet is already rather low-emitting due to complementary fuel tax policies.

D.3. France (Bonus/Malus)

Structure

France's Ecological Bonus/Malus feebate system applies only to passenger vehicles. It has a single benchmark and gives a rebate to those who purchase new cars emitting less than 130 gCO2/km, charges a fee for vehicles emitting more than 160 gCO2/km.

The feebate structure is a step function with a neutral zone of no fee or rebate for vehicles whose emissions fall between 130 and 160 gCO2/km (Figure D9). The system established four categories of bonuses, the final step being a "super bonus" of 5,000 € for vehicles emitting less than 60 g CO2/km. There are no such vehicles for sale today in France. For vehicles emitting 60-100 g CO2/km the bonus is 1,000 €, for those between 100 and 120 g CO2/km the bonus is 700 €, and those between 120 and 130 g CO2/km receive 200 €. Vehicles emitting 130-160 g CO2/km are not subject to a rebate or a tax. Vehicles emitting 160-165 g CO2/km pay a malus tax of 200 €, those with emissions of 166-200 g CO2/km pay 750 €, vehicles from 201-250 g CO2/km pay 1,600 €, and the highest emitters with > 250 g CO2/km pay 2,600 €. Not counting the super bonus, the average rate per gCO2/km equates to approximately $16.50 per gCO2/mile ($1,500 per 0.01 gallon/mile) over the range from 60 to 250 gCO2/km.

The sizes of the Bonus and Malus payments were intended to be roughly consistent with a carbon tax of about $100 per ton of CO2. Another key objective was that the revenues and subsidies should approximately balance. The system was intended to reward those manufacturers making large investments in reducing GHG emissions.

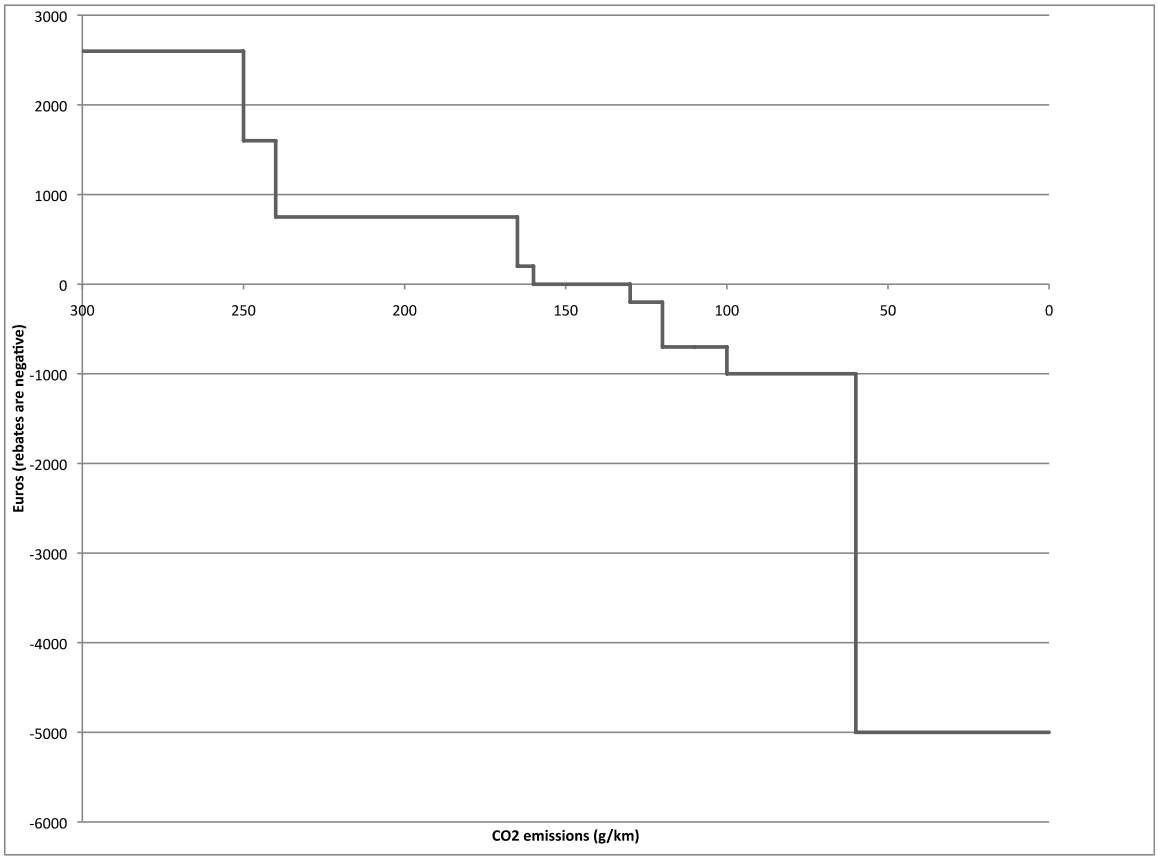


Figure D 9 France's Bonus/Malus Fee and Rebate Schedule (Current €)

Implementation and Administration

The French government implemented the Bonus/Malus system for passenger cars on December 5, 2007 despite high fuel prices and despite the ACEA voluntary (now mandatory) emissions standard negotiated with vehicle manufacturers that existed at the time. The government's motive was to correct a perceived deficiency in the market for vehicle energy efficiency. According to M. Jean-Christophe Boccon-Gibod of the Ministere de L'Ecologie, de l'Energie, du Developpement Durable et de l'Amenagement du Territoire, as high as fuel prices are in France, they have not significantly changed the design of vehicles. This is why the Bonus/Malus system was needed. The decision to implement the Bonus/Malus system reflects the view that people do not take the discounted present value of fuel savings into account when making their vehicle purchases. Homo economicus simply does not exist. Consumers require a simple signal at the time of purchase.

In addition to the Bonus/Malus feebate system, there is an annual tax of €160 for passenger cars with CO2 emissions above a specified level. This would qualify as a circulation tax. See Table D1 for the trigger levels for years 2009-2012 and beyond.

Table D 1 Trigger Levels for Circulation Tax on High-Emitting Vehicles

Year of First Registration	CO2 level (g/km)
2009	250
2010	245
2011	245
2012 and after	240

Source: ACEA Tax Guide 2009

Aside from the annual malus for high-emitting passenger cars, there are no other circulation taxes on vehicles in France. In a meeting in Paris with M. Jean-Christophe Boccon-Gibod on December 15, 2008, we learned that before implementation of the Bonus/Malus program there was a strong debate about whether it should be applied upon the first registration of new vehicles or instead as an annual circulation tax. Environmental groups strongly favored the idea of a circulation tax on GHG emissions. France previously had a circulation tax that was unpopular and was abolished in 2001. Due to the unpopularity of the circulation tax and the understood commitment by the government that it would not be imposed again, France decided in favor of a new vehicle registration feebate; that is, the fee is paid or the rebate received when a vehicle is registered for the first time. For essentially all new vehicles in France this is done at the dealership.

The rapid implementation of the system was considered an important strategy. The program was announced on December 5, 2007 and went into full effect on January 1, 2008. It was felt that an announcement too far in advance would disturb sales by creating an environment in which car buyers would postpone or accelerate purchases in anticipation of the changes. The bonus was effective at the time of the announcement while the malus was delayed for one month, again for public acceptance purposes.

The French government considered it very important to involve consumers directly in receiving bonuses or paying the malus fee. The government wanted consumers to see the program as a part of an overall strategy of encouraging consumers to purchase clean products. The bonus is deducted directly from the amount paid for the vehicle at the time of purchase. It must be identified and visible on the bill (French Embassy, 2009). The malus is typically paid by the dealer at the time the vehicle is registered. In France, most new vehicles are registered by the dealers. The dealer must then add the malus payment to the customer's bill as a "registration fee". If the consumer registers his own new vehicle, the consumer must pay the malus fee at the time of registration.

The Bonus/Malus system is designed to remain fundamentally the same for a five-year period. However, the thresholds will be reduced by 5 g/km every two years in an attempt to keep pace with changes in vehicle design and technology. The French government considered it extremely important to the public's acceptance to keep the system as a package for 5 years. The government did not want to appear to be changing the rules too frequently. France is not anticipating changing the system even though it is currently costing nearly €300 million on net this year (2009). Again, this is due to the belief that it is very important from a political point of view for the system to be constant. This also establishes a consistent signal for manufacturers and consumers.

The Bonus/Malus program was adjusted in 2008 to provide relief to families with more than two children who require a large car that would probably be subject to a high malus payment. The new provision allows consumers to deduct 20 g/km of CO2 per child over the second one from the vehicle's emissions rating when calculating the rate of the new tax. The vehicle in question must have at least five seats. For instance, a minivan that emits 175 g/km CO2 would normally be subject to a €750 malus, but a family with 4 children buying this vehicle would pay no malus (ACEA, 2009).

Impacts and Reactions

To the best of our knowledge there have been no formal evaluations to date of this relatively new program. The Bonus/Malus program had a dramatic impact on vehicle sales even within the first year. According to M. Boccon-Gibod, the size of the market shift surprised everyone. In 2007 approximately 30% of vehicles sold had emissions rates less than 130 g/km, 45% fell in the range of 130-160 g/km (unaffected) and 25% emitted than 160 g/km—See Table D2 and Figure D10. At present, in 2008, 43% of sales are of vehicles with less than 130 g/km GHG emissions, 42% fall in the unaffected range of 130-160 g/km, while less than 15% of sales have emissions greater than 160 g/km. This sudden change is due primarily to consumers choosing different vehicles and partly to manufacturers doing the simple and easy things that can be done to reduce GHG emissions.

Table D 2 Change in the Distribution of Passenger Car Sales in France by Bonus/Malus Category: 2007 to 2008. (CNPA, 2009)

Emissions of CO2 (g/km)	Bonus (-) or Malus (+) per Vehicle (€)	New Registrations 2007	New Registrations 2008	Percent Change 2008/2007

=< 60	-5,000	0	0	0%
61 to 100	-1,000	352	1657	+371%
101 to 120	-700	412,598	721,235	+75%
121 to 130	-200	215,010	194,143	-10%
131 to 160	0	936,139	846,030	-10%
161 to 165	+200	66,415	41,161	-38%
166 to 200	+750	305,296	184,202	-40%
202 to 250	+1,600	95,416	46,614	-51%
>250	+2,600	33,317	15,241	-54%
TOTAL		2,064,543	2,050,283	-1%

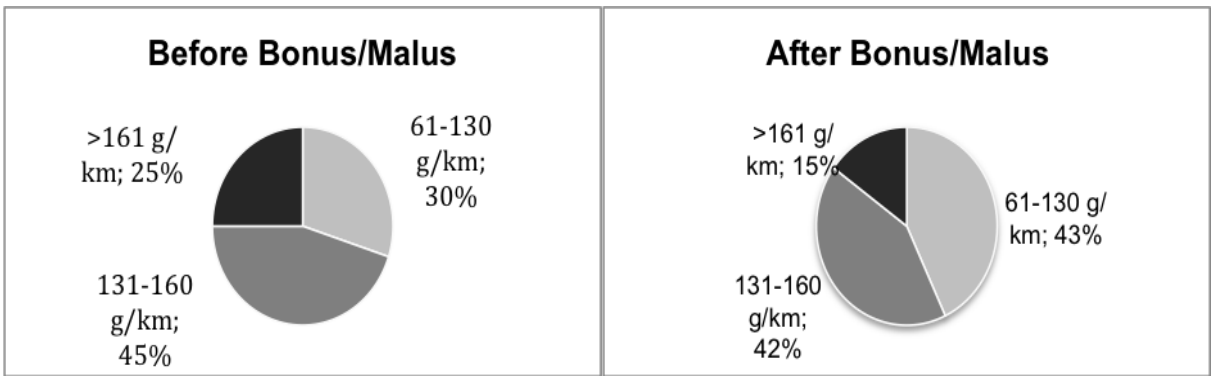


Figure D 10 Change in distribution of passenger car registrations before and after implementation of Bonus/Malus

The significant impact of the system was a drop in the average CO2 emissions of new vehicles of 7g/km, a reduction that enabled France to meet its 2008 target under the ACEA voluntary emission standard of an average emissions rate of 140 g CO2/km for new automobiles (Friez, 2009). A sudden rise in the emissions rate from November to December 2008 preceded the reduction, as some purchasers took advantage of the advance notice of the tax to purchase higher emission vehicles (Figure D11). Although designed to be revenue neutral, the system paid out a net subsidy of 284 million Euros in 2008 due to a much greater than expected market response.

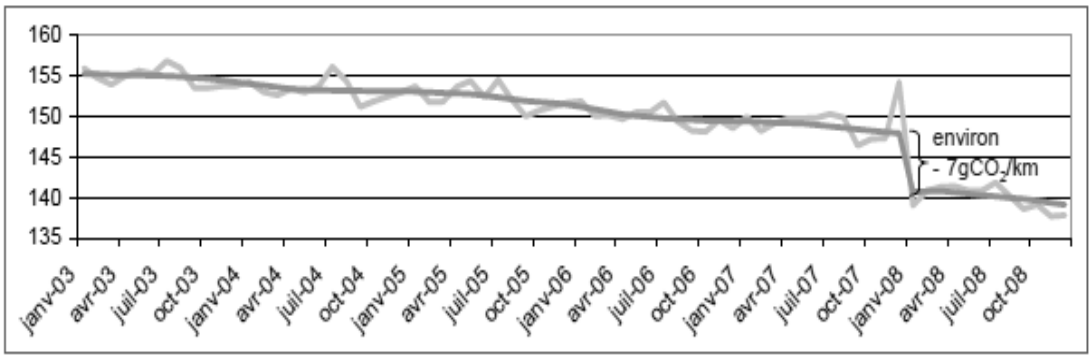


Figure D 11 Average emissions (grams CO2 per kilometer) of new passenger cars registered in France, by month. Source: Friez, 2009, Figure 1.

According to M. Boccon-Gibod, somewhere between 60% and 70% of the public supports the system. Auto manufacturers, on the other hand, are not keen on it because they see it as a tax and because it has so quickly changed the sales environment. A similar view is shared by auto dealers (CNPA, 2009). The industry in general complains that the system distorted the distribution of sales in France, shifting sales to less expensive and less profitable makes and models. It is not clear exactly how much of this shift was due to the Bonus/Malus system and how much to the concurrent global economic recession and changes in fuel prices.

Lessons and Insights

Although the government is generally satisfied with the program and intends to continue it, they believe that the existing system has faults. Perhaps foremost among these is the problem of threshold effects. By a small shift across a boundary a car can qualify for a significant savings in Bonus/Malus. However, this may be outweighed by the chief advantage of a feebate class structure, which is that it is simple and understandable by consumers. The French government believes that the simplicity of the system contributes to the fact that it is viewed positively by the public.

The economic crisis was, of course, a big surprise and may be part of the reason the system is not revenue neutral. Nonetheless, the government believes it is clear that manufacturers must transition to producing low emission vehicles. Thus, it considers it the best policy to maintain the system in effect. They expect to see significant changes in vehicle technology as a consequence of the Bonus/Malus system. For example, some electric vehicle models are expected by 2010, in large part due to the superbonus of 5,000 Euros.

D.4. Germany

Structure

In 1953, Germany enacted a circulation tax for passenger cars based on engine volume. As of July 1, 2009, this circulation tax was altered to be based on both engine size and CO2 emissions. The base tax rate, based on engine size, is €2 ($2.92 US) per 100 cc for gasoline cars and €9.50 ($13.86 US) per 100 cc for diesel cars. The difference in the rates for gasoline and diesel cars is due to the tax on gasoline being higher than the tax on diesel. The linear CO2 tax rate is €2 per g/km and is the same for gasoline and diesel cars. A car emitting less than 120 g/km is exempt from the CO2 tax. The exemption threshold will be lowered to 110 g/km for 2012-2013 and further reduced to 95 g/km after 2013. There is currently no plan to adjust the rate of the tax. However, in addition to these changes, a €150 ($220.50) circulation tax exemption for low-polluting vehicles will be implemented in 2011.

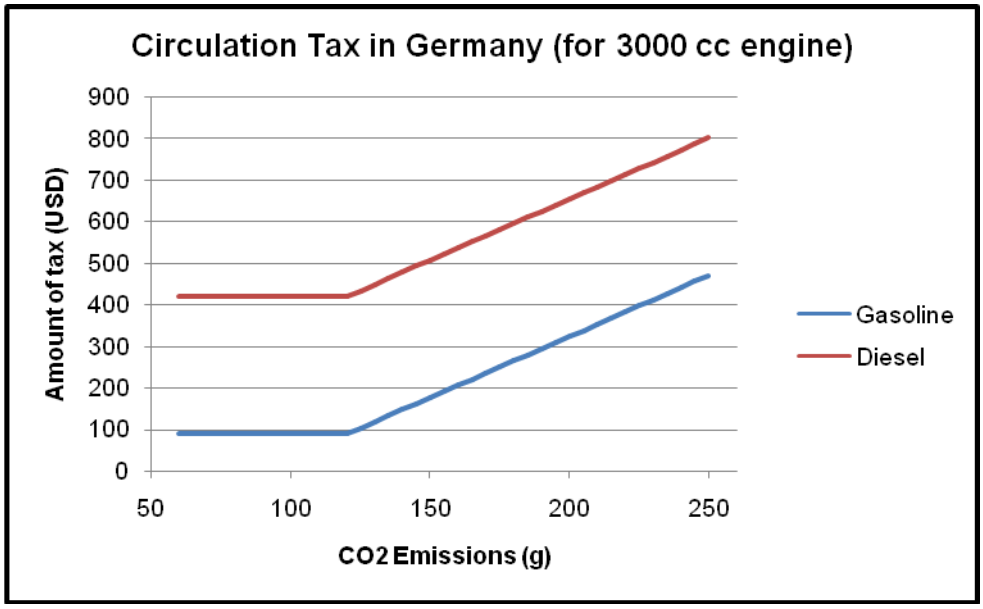


Figure D 12 Circulation tax in Germany (ACEA, 2009)

Figure D12 shows the current structure of the circulation tax for a vehicle with a 3000cc engine. In addition to the circulation tax, vehicles in Germany are subject to a 19% VAT at the time of purchase. This applies to both commercially sold new and used vehicles.

Administration and Implementation

The recent change to include a CO2-based portion of the circulation tax on passenger cars was under discussion since 1999. According to Axel Friedrich, former head of the Environment, Transport, and Noise Division of the Federal Environmental Agency in Germany, after two failed attempts to pass such a policy, the current tax system was ratified in early 2009 and took effect on July 1, 2009. The German government implemented this change as a complementary policy to fuel economy and emissions standards already in place and did not intend to replace these standards.

In order to add the CO2 component of the circulation tax, the engine size component of the tax, which had existed since 1953, was reduced. This was done to make the resulting amount of tax approximately the same, so the change was not punitive (Friedrich, 2009). Unlike the fuel tax, revenue from the circulation tax is not officially earmarked. Vehicles initially registered between November 5, 2008 and June 30, 2009 fall under the new circulation tax policy if it is more advantageous than the tax based on engine size. Vehicles registered prior to November 5, 2008 are subject to the engine-size-based circulation tax until 2013, when all vehicles will be subject to the combined CO2/engine size tax.

Policymakers encountered several obstacles in attempting to make this change to the tax system. The first issue was the difference in the fuel tax between gasoline and diesel. It was not initially clear how to make a CO2-based circulation tax work in this situation. Politicians also did not understand how the tax would work and the costs of implementing and administering the tax were overestimated. Further delays were caused by reports that the changes would result in higher vehicle taxes and uncertainty about how the existing fleet would fare under the new tax policy.

Despite these obstacles the new circulation tax policy was passed. Several factors contributed to this success. Automakers pushed for a defined policy because they saw customers being reluctant to purchase vehicles due to uncertainty about the circulation tax. Since a policy had not been decided upon, the customers would not know how much circulation tax they would be required to pay. Since this is an annual fee, consumer uncertainty was a significant problem. In addition, the strong lobby of the Allgemeiner Deutscher Automobil-Club (ADAC), the equivalent of the American Automobile Association, had a major influence on the successful passage of the CO2 tax policy (Friedrich, 2009).

Dealers are required to display the vehicle emissions and the corresponding amount of the circulation tax at the point of sale. This is intended to make the system easier to understand, since the division of the tax into CO2 and engine size components is perceived as complex and difficult for consumers to comprehend.

Impacts and Reactions

Since Germany's new circulation tax policy has only been in effect for a short time, knowledge about the impacts of the policy is limited. According to Axel Friedrich, there was no rush to buy higher-emitting vehicles prior to the enactment of the tax. This is probably due to it being a circulation tax and the retroactive implementation of the tax such that it affects vehicles registered up to eight months before the July 1, 2009 start date.

The first half of 2009 saw a reduction in the average CO2 emissions of new vehicle sales in Germany. However, this may also be due to the concurrent accelerated scrappage program that

was in place. The scrappage program offered €2500 ($3675) toward the purchase of a new vehicle to owners of vehicles older than 9 years.

Reactions to the change in the circulation tax were varied. Consumers did not appear to have a strong reaction one way or the other. However, the ADAC, which with approximately 70 million members represents about half of the car driving population, was strongly in favor of the introduction of the CO2 component of the tax. Environmental groups were also in favor of this change, though they pushed for even more stringent rates and a non-linear functional form. Their reason for wanting non-linearity was to have a much higher rate for larger, higher-emitting vehicles, particularly diesels, due to the view that these vehicles are driven more than other vehicles. Automakers, on the other hand, were opposed to anything other than a linear function and were especially against a step function. In the end, automakers backed the current policy because they grew tired of the long debate and what they viewed as a negative effect on sales due to consumer uncertainty (Friedrich, 2009).

Lessons and Insights

The long debate over this tax policy change in Germany emphasizes the need to have a well-defined policy structure. In order to do this, it is necessary to identify potentially contentious changes that such a policy change could cause, such as the effect on the existing fleet and on cost of ownership of a vehicle.

D.5. The Netherlands

Structure

During 2009 the Netherlands had both a registration tax and a feebate system for passenger cars in place. The registration tax is based on the net-of-tax market price of a car and is charged upon the first registration of the vehicle in the Netherlands. There are no large car manufacturers in the Netherlands, so the tax revenue is collected by the central government from the official car importers and goes to the general fund. About 500,000 new passenger cars were sold in the Netherlands in 2008. In 2007, the revenue from this tax was €3.4 billion ($5 billion), about 1.5% of the country's total tax revenue. Beginning on January 1, 2009, diesel cars with CO2 emissions of 95 g/km or lower and gasoline cars with CO2 emissions of 110 g/km or lower became exempt from this registration tax.

Since 2001, the Netherlands has had a system for labeling new cars based on CO2 emissions ranging from A to G, with A being the most efficient. The label, shown in Figure D13, follows the basic design of the EU green label. This label is displayed on the car at dealerships and is also used for advertising purposes. The purpose of the labeling system is to inform consumers about the fuel efficiency of the cars and to encourage them to buy more fuel-efficient vehicles.

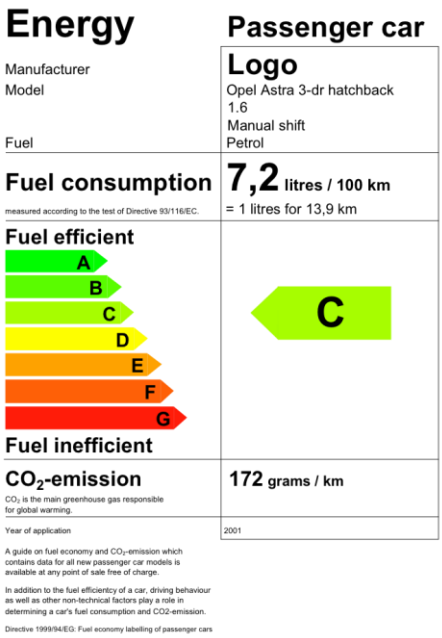


Figure D 13 Netherlands Vehicle Label

On the label, a car is categorized according to its CO2 emissions relative to both the emissions of other cars with the same footprint and the average CO2 emissions of all new cars, with the former weighing more heavily in the rating. In accordance with European Union regulations, the label also gives information about the fuel consumption (in L/100 km) and CO2 emissions of the car. Diesel and gasoline cars are treated separately when determining the label.

In January 2002, the Dutch government introduced subsidies for vehicles in classes A and B of €1000 and €500, respectively. Then, in July 2006, the Netherlands added a full feebate system into the registration tax policy. However, taxes on cars in the Netherlands are high enough that a net rebate is unlikely. The feebate serves to increase or decrease the amount of tax paid to the government. The current structure of the feebate, which has been in place since February 2, 2008, is based on the labeling system shown in Table D3 and Figure D14.

Table D 3 Netherlands Feebate Structure (ACEA, 2009)

Class	Feebate (Rebates<0)		Criteria
	Euros	Dollars	(relative to average CO2 in size class)
A	-€1400	-$2058	<20% below
B	-€700	-$1029	10-20% below
C	€0	$0	0-10% below
D	€400	$588	0-10% above
E	€800	$1176	10-20% above
F	€1200	$1764	20-30% above
G	€1600	$2352	>30% above

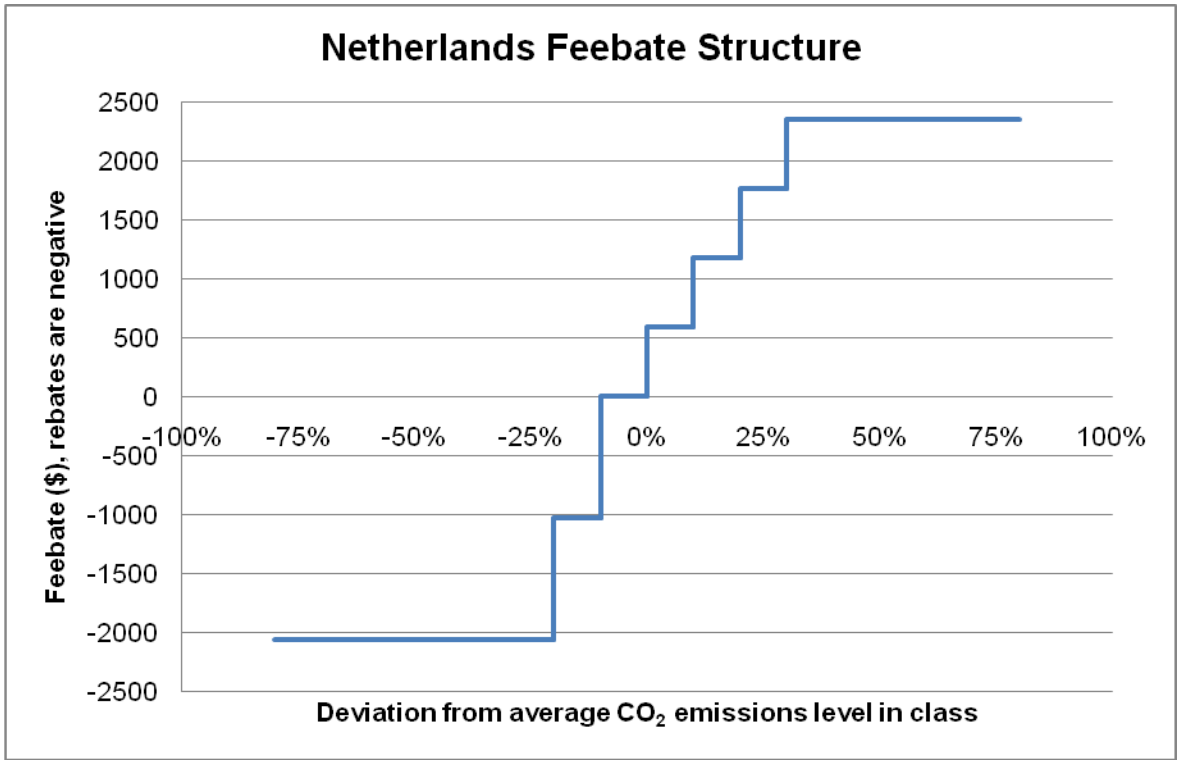


Figure D 14 Netherlands Feebate Structure (ACEA, 2009)

An additional tax of €125 ($184) per g/km above a specified threshold is levied on cars with high emissions. The threshold for gasoline cars is 205 g CO2/km and the threshold for diesel cars is 170

g CO2/km (ACEA, 2009). A special benefit is provided for hybrid cars. Hybrids with an energy efficiency label of "A" (e.g. Toyota Prius, Honda Civic) benefit from a rebate of up to €6400 ($9408), and those with a label of "B" (e.g. Lexus GS) can receive a maximum rebate of €3200 ($4704). The hybrid rebate is in effect until July 1, 2010 (ACEA, 2009)

Implementation and Administration

The Dutch government's stated goal of the feebate system introduced in 2006 is to encourage consumers to buy a more fuel-efficient passenger car. The philosophy behind structuring the feebate system to have the amount of the fee or rebate based on how much a car's CO2 emissions deviate from the average emissions of cars in its size class is based on the view that consumers will generally be choosing among cars in a specific class or set of classes. The introduction of the feebate system was announced six months prior to its start date to give car importers and dealers time to react.

The central government collects all taxes from the official car importers, who in turn pass the tax along to consumers. Consumers are informed about the tax via the labeling system on the new car in the showroom. The government's intention was to adjust the label annually to track the development of average CO2 emissions of new sold cars. However, the label has not been adjusted since 2007 due to difficulties with the formula, so there are a greater number of green label (Class A, B, and C) cars than before. The problems with the formula have since been resolved and the labeling system will be adjusted again in 2010 (Government of Netherlands, 2009).

The government of the Netherlands intended the feebate system to be revenue neutral, but the spending on the rebates has been higher than the revenue of the fees. In response to this, the government raised the general car registration tax. On February 1, 2008, the fee and rebate amounts were also increased to the current levels ranging from a €1400 rebate to a €1600 fee.

Impacts and Reactions

We obtained some information on the impacts of the feebate policy on the vehicle market in the Netherlands from the Dutch Government. Figure D15 shows the share of total sales of vehicles by CO2 emissions class A-G.

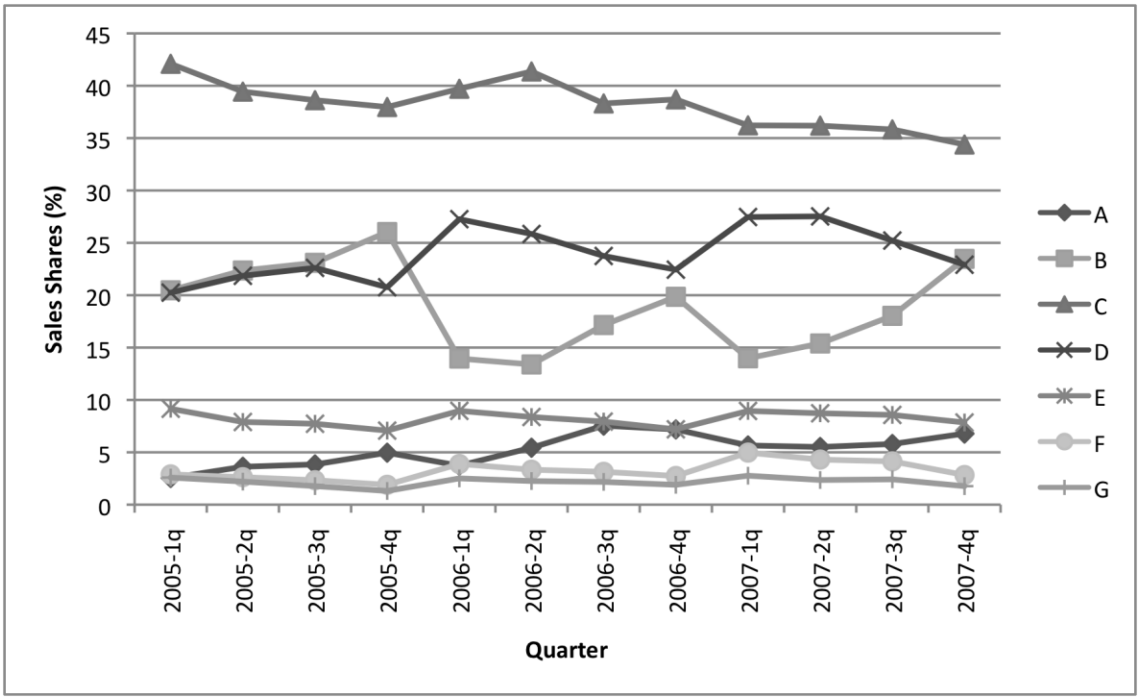


Figure D 15 Sales Mix Shifts by Efficiency Class (Figure 3.2, Government of Netherlands, 2008)

The sales share of the vehicles with an A or B label increased from the first half of 2006, before the feebate policy was introduced, through the end of the fourth quarter of 2006. Shortly after the feebate was introduced, the price of gasoline (benzine) and diesel dropped. Figure D16 shows the fuel prices in the Netherlands from 2000 to 2008, with the introduction of the feebate system indicated by the vertical line on the graph. Though a variety of factors had an influence on sales shifts in the Netherlands, at least some of the increase in the sales share of cars in classes A and B can be attributed to the feebate system, and the subsequent drop in share seems to be partially explained by the drop in fuel prices later in 2006. Fuel prices rose in 2007 while the feebate policy remained unchanged, so the growth in the share of class A and B cars was likely due in part to the fuel price increase (Government of Netherlands, 2008).

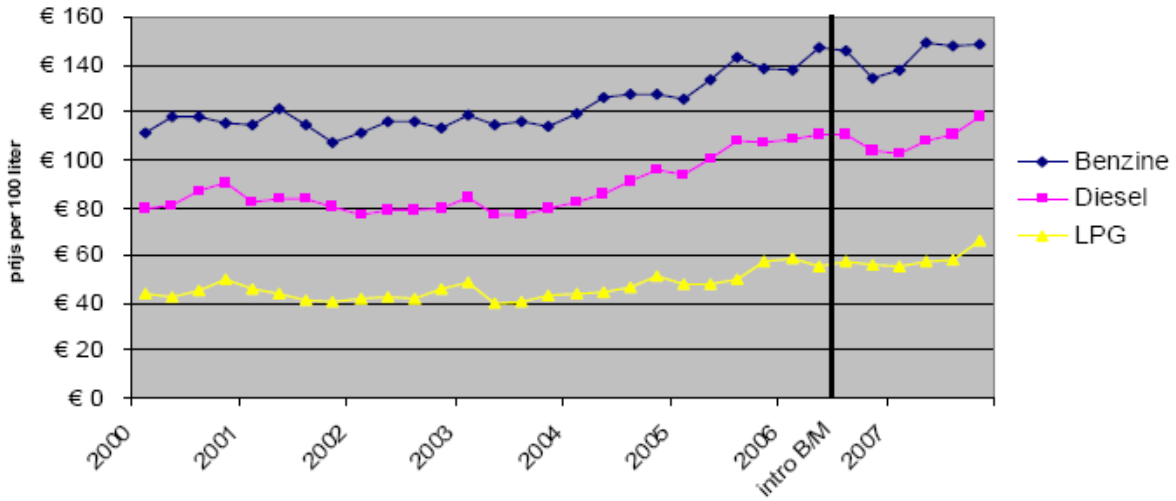


Figure D 16 Fuel Prices in the Netherlands, 2000-2008 (Figure 3.10, Government of Netherlands, 2008)

It is interesting to note that the Netherlands has no large-scale domestic auto manufacturers, so the key players in the industry are the car importers and the dealers. A Dutch consulting firm, DHV, sent questionnaires about the feebate system to the car importers in the Netherlands, 31 of whom responded. These 31 respondents represent 39 brands and 94% of the cars imported into the country. DHV also conducted in-depth interviews with six of the automakers whose vehicles are sold in the Netherlands. A few responses focused on the use of the labeling system. DHV found that importers believe the relative part of the labeling system, which compares a vehicle to others with a similar footprint, is suitable for informing the public. In their experience, consumers were not generally aware that the ratings were based on footprint (Government of Netherlands, 2008). The Dutch government has also acknowledged that a downside of the size-class based system is that it difficult to explain to consumers that a large car with high absolute CO2 emissions can receive a rebate, while a small car with low absolute CO2 emissions is subject to a fee.

In reaction to this, the government has proposed a change to this system. In 2010, the feebate system and the registration tax will be based on the absolute CO2 emissions of the car (i.e. a tax per g/mi) (Government of Netherlands, 2009). The plan is to gradually change the system from one that depends on net vehicle price to one that depends exclusively on absolute CO2 emissions. Lower-emitting vehicles with emissions below a given threshold (e.g., 110 g/km for petrol cars, and 95 g/km for diesel) will pay no registration tax. In effect, the system will cease to be a feebate system.

The Dutch version of the AAA, ANWB, commissioned an online survey of Dutch consumers who bought a car in 2007 or planned to buy a car in 2008 regarding their attitudes toward vehicle energy use. Three-quarters of the car buyers surveyed were familiar with the labeling system. ANWB found that consumers look to the label for information on fuel economy and emissions, but once again did not fully understand the ranking system based on footprint. Seventy-five percent of consumers surveyed prefer the use of an absolute scale for comparison, but twenty percent disagree because this would entail comparing dissimilar vehicles (i.e. “apples and oranges”). Two-thirds of car buyers wanted information about the financial consequences of their vehicle purchase,

including fuel costs and the change in the purchase tax from the feebate. The majority of these consumers also wanted information on criteria pollutants (e.g. NOx and PM) included on the label. Three-quarters of the car buyers considered energy use to be an important factor in selecting a vehicle, and more than 60% of car buyers considered the environmental impacts to be an important concern in spite of ranking it 15th in the list of acquisition criteria (Government of Netherlands, 2008).

Lessons and Insights

The automobile market in the Netherlands is significantly different from that in California and the rest of the United States. However, one important lesson that can be learned from the Dutch is that a class-based system can lead to consumer confusion due to the counterintuitive result of a higher-emitting vehicle getting a rebate while a lower-emitting vehicle pays a fee. This could be alleviated by not publicizing the amount of the fee or rebate on a label at the dealership, but the Dutch apparently considered consumer knowledge of the feebate system to be an important strategy in encouraging the purchase of lower-emitting vehicles. It is therefore important that any labeling or consumer education strategy be focused on presenting information in a clear, understandable format.

D.6. Norway

Structure

Vehicles in Norway are subject to both registration and circulation taxes. The registration tax essentially doubles the cost of a new vehicle to the consumer.1 The high cost of new vehicles results in 80-90% of households purchasing used vehicles, which in turn causes slower fleet turnover. In addition to the one-time purchase tax on new vehicles, all vehicle owners pay an annual circulation tax of at least 2,740 NOK per year ($457). For diesel vehicles without particulate filters, the tax is 450 NOK ($75) higher.

In 2007, the Norwegian government established sector-specific CO2 emissions targets for 2012 with a goal of 1 MT reductions through the introduction of low-emission vehicles, which is about a quarter of the reductions that are required to come from the transport sector. A national average emissions target for new vehicles was set at 120 g CO2/km (192 g/mi) by 2012 (Torper, 2009). To highlight the stringency of the Norwegian standard, the current Pavley standard requires PC/LT1 vehicles to average 205 g/mi in 2016 and LT2 vehicles to average 332 g/mi. The main instrument proposed to achieve this emissions target was a vehicle purchase tax differentiated by CO2.

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[1] According to a local Norwegian, a new Toyota Prius in Norway costs US$65,000 and the Lexus 400h costs US$200,000!

Prior to 2007, 50% of the registration tax was based on vehicle weight, 30% on cylinder volume, and 20% motor effect or power. Under this system, the cylinder volume component favored gasoline vehicles. In January 2007, the cylinder component was replaced with a CO2 component in an effort to make the tax neutral with respect to fuel. The proposal was made to Parliament in October 2006, which resulted in a spike in purchases of higher emitting vehicles in November and December prior to the new system taking effect and then a drop in average emissions beginning in 2007 (see Figure D17). Rates for all components of the tax are listed in Table D4.

Table D 4 Norway's Registration and Annual Circulation Tax Rates (1 USD = 6 NOK)

Category of indirect tax	Rate in 2008	Rate in 2009	Change in pct.
Motor vehicle registration tax			
Passenger cars, etc. Tax category a[2]			
Weight tax, NOK/kg			
Initial 1 150 kg	34.02	35.04	3.0
Next 250 kg	74.15	76.37	3.0
Next 100 kg	148.31	152.76	3.0
Remainder	172.48	177.65	3.0
Motor effect tax, NOK/kW			
Initial 65 kW	123.73	127.44	3.0
Next 25 kW	515.53	531.00	3.0
Next 40 kW	1 237.27	1 274.39	3.0
Remainder	2 577.65	2 654.98	3.0
CO_2-emissions, grams/km			
Initial 120 grams	41.25	0	-100.0
Next 20 grams	195.90	526.00	168.5
Next 40 grams	515.53	531.00	3.0
Next 70 grams	1 443.48	1 486.78	3.0
Remainder	1 443.48	2 500.00	73.2
Deduction per grams emission below 120 grams/km. Only for vehicles with emissions below 120 g/km	-	-500	-
Annual tax on motor vehicles, NOK/year			
Ordinary rate			
Diesel vehicles without factory installed particle filter	3 090	3 185	3.1
Petrol vehicles and diesel vehicles with factory installed particle filter	2 660	2 740	3.0

Source: Norway Budget 2009

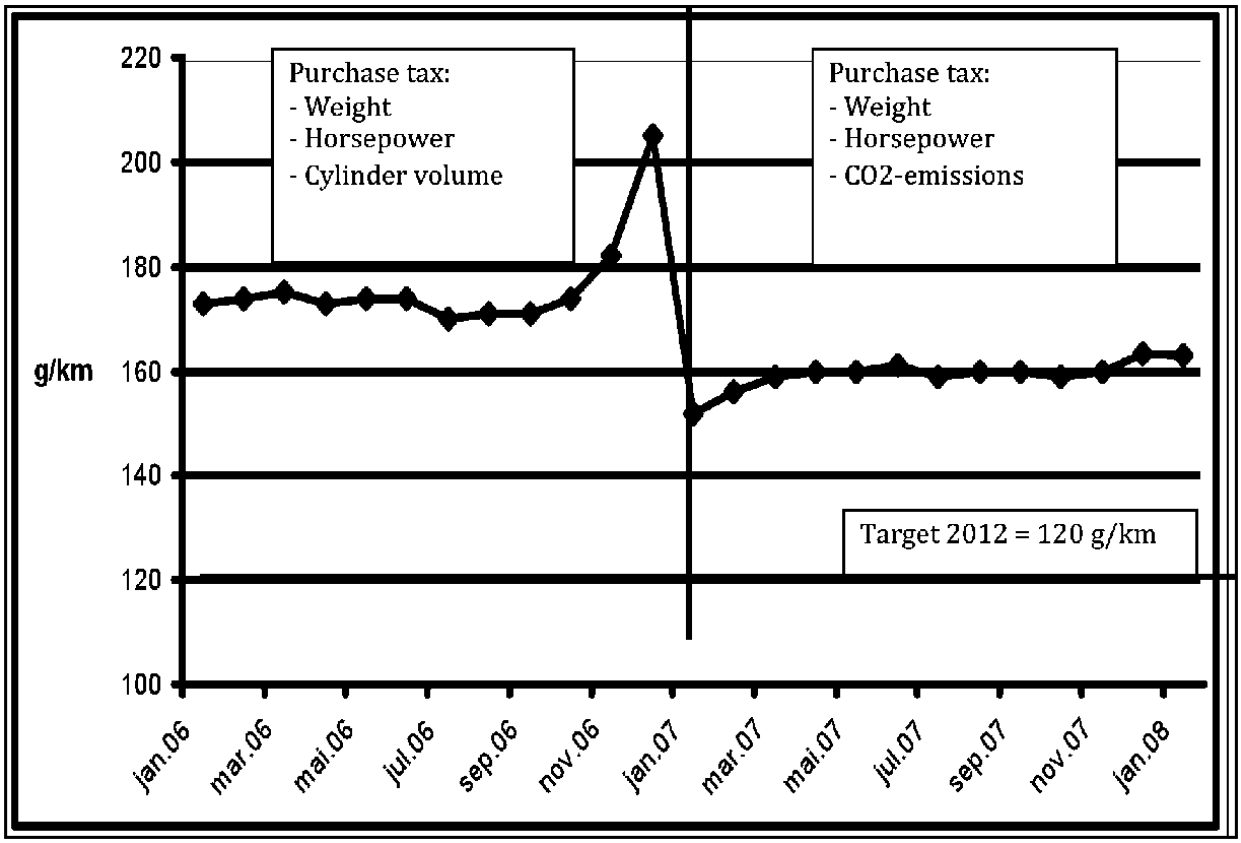

Figure D 17 Average CO2 Emissions of New Vehicles Sold in Norway by Month

Courtesy of Per-André Torper, Norwegian Department of Transport

Beginning in 2009, the rates at the high and low end of the tax schedule were adjusted to provide greater disincentives to higher emitting vehicles and greater incentives for the lowest emitting vehicles, making the system similar to a feebate program (Figure D18). Vehicles that emit less than 120 g CO2/km qualify for a discount of 500 NOK ($83) per gram/km below 120 (approximately $52 per gram per mile). For example, a vehicle emitting 100 g CO2/km would save 10,000 NOK ($1700). However, given all the other vehicle taxes this does not result in a payment to the consumer, but instead a reduced net vehicle price.

Vehicles emitting more than 120 g CO2/km are subject to increasing marginal rates for 120-140 g/km, 140-180 g/km, 180-250 g/km, and >250 g/km. At the extreme, vehicles with emissions exceeding 250 g CO2/km pay 2,500 NOK ($415) for every gram/km above 250 g/km, almost double the preceding marginal rate. This extreme rate is approximately $258 per gram per mile or $23,500 per .01 gallon per mile, which is almost 16 times the US gas-guzzler tax rate. Even the lowest marginal tax for vehicles emitting between 120 and 140 g CO2/km is equivalent to $4800 per .01 gallon per mile, over 3 times the U.S. Gas Guzzler tax rate. New vehicles in Norway average 155 g CO2/km, which at this emissions rate would be subject to a $3000 tax.

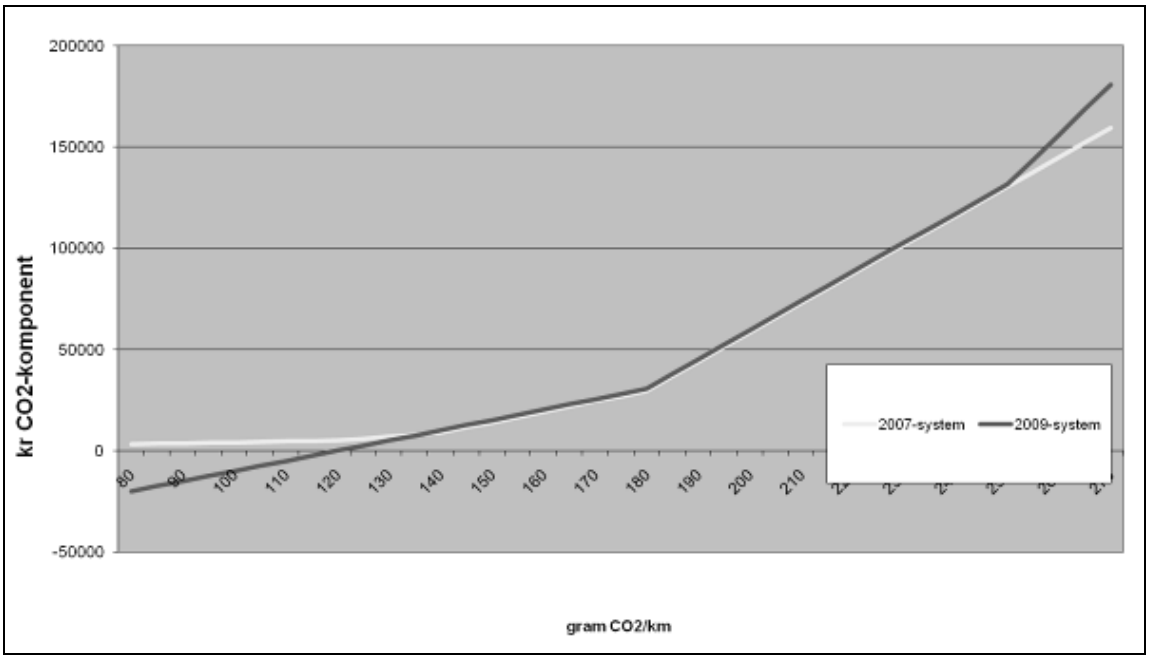

Figure D 18 CO2-component Tax Changes for 2009

Courtesy of Per-André Torper, Norwegian Department of Transport

Certain alternative fuel vehicles are also eligible for discounts. Pure electric vehicles are exempt from registration tax, VAT, annual circulation tax, fuel taxes, parking charges, tolls and are granted access to HOV lanes. It is important to note that only 1500 of the 2 million vehicles in Norway are electric vehicles due to their small size and limited range, which confines them to intracity use. Vehicles that can run on E85 receive a 10,000 NOK ($1700) purchase tax discount, while biodiesel users do not pay a fuel tax.

Implementation and Administration

As mentioned previously, the Norwegian CO2-based vehicle tax policy took effect in January 2007. The Ministry of Finance administers all taxes in Norway. The purpose of the taxes is to internalize the external costs associated with fuel use and transport as well as to generate revenue. For 2009, the Ministry of Finance estimates that vehicle and fuel taxes will total 45 billion NOK (US$7.7 billion), which accounts for 3.5% of total government revenue and equivalent to about one-quarter of the revenue generated by income tax. There are no earmarks for the revenue collected for any of the vehicle-related taxes. For perspective, during FY2007-2008, California projected collecting $5.532 billion in fees on its 25+ million vehicles, only $26 million of which went to the general fund. The remainder was directed to special funds.

According to Norwegian marketing law, the price listed on the vehicle must include all applicable taxes. The price displayed is a single number and does not break out the various components. However, showroom stickers and advertisements must display the grams of CO2 per km, which would provide some information to consumers about the relative differences in vehicle prices.

Impacts and Reactions

As shown in Figure D19, greater numbers of lower-emission vehicles were sold in 2009 than in previous years, though it is not clear that the entire shift in emissions was caused by the change in the purchase tax rates in light of the global recession and volatile fuel prices. The 2009 changes overall have not been as great as the 2007 change, though there has been marked improvement in gasoline vehicle emissions.

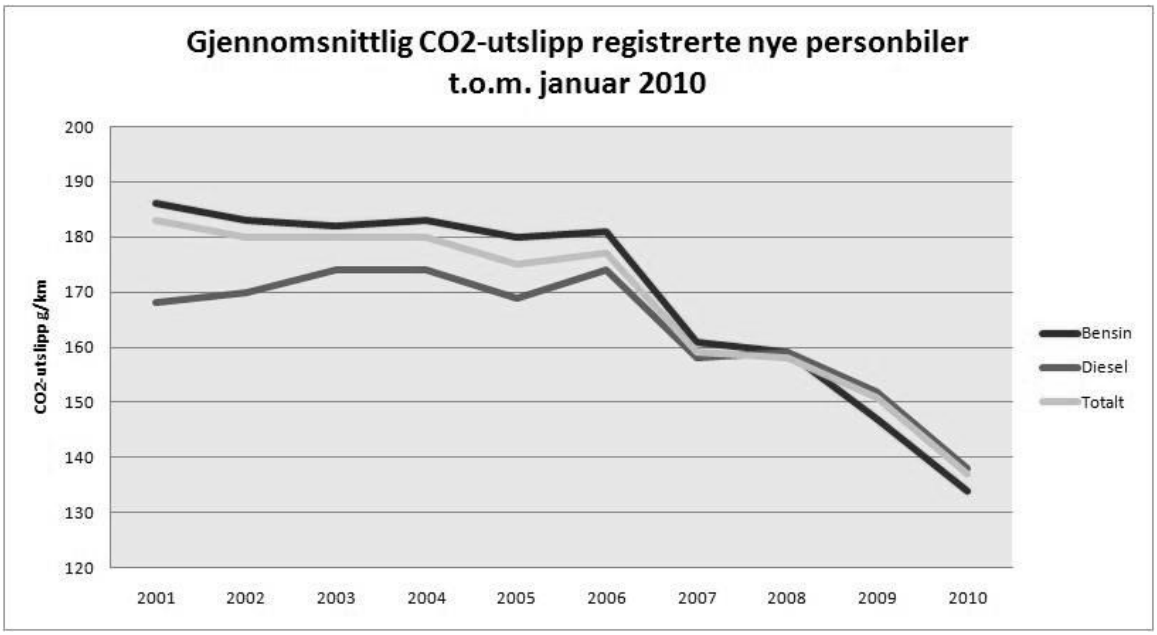

Figure D 19 Effect of 2009 Tax Change - Average CO2 Emissions of New Vehicles Sold in Norway by Year (Bensin = Gasoline)

Courtesy of Per-André Torper, Norwegian Department of Transport

Both the initial and revised CO2 emissions taxes were generally supported by the public, including the auto sector. The proposal was released in a report and then presented at a public hearing with minimal fanfare. Recently there has been a push to remove the motor effect/power component so that the automobile tax would be based equally only on weight and CO2.

A recent Organization for Economic Cooperation and Development (OECD) report examines CO2 emissions taxes based on lifetime CO2 emissions in tonnes, assuming a 200,000 km vehicle lifetime (OECD, 2009). The report shows that vehicles with emissions over 170 g CO2/km are subject to very high penalties in Norway relative to other countries. The report suggests that this tax structure may not be economically efficient since it implies that the environmental damage caused by the next tonne of CO2 emitted is greater than the previous tonne.

Lessons and Insights

The CO2 emissions based tax system was preceded by a spike in the average emissions of new vehicles sold once the program was announced. Once the policy took effect, the average CO2 emissions settled to a lower level than the level preceding the announcement of the tax.

The tax appears to have had the desired effect of reducing CO2 emissions of new vehicles. It is difficult to disentangle the effect of the CO2 emissions-based tax from the global recession and spike in fuel prices, which would tend to reinforce the reduction in CO2 emissions. The piecewise linear functional form with varying rates is of some interest. This more complicated structure does not seem to have led to any more or less confusion from the public. Another lesson is that consumers seem to have reacted to this tax in spite of the fact that the charges are not explicitly itemized; only the total price of the vehicle is shown. Finally, it appears that a reduced fee can be as effective as providing the consumer with a rebate in shifting sales toward lower-emitting vehicle.

D.7. Spain

Structure

Spain has a complex system for vehicle taxation. New vehicles purchased in Spain are subject to a 16% VAT. Used vehicles sold by individuals are subject to a 4% property transfer tax and used vehicles sold by car dealers are subject to the VAT provisions on second-hand goods, with a minimum tax equal to 10% of the resale value. In 2008, the registration tax revenue from all regions of Spain was €89.45 million ($133.45 million) (Agencia Tributaria, 2009).

In addition to the VAT, Spain has a vehicle registration tax that was implemented in December, 1992. The first time a new or used vehicle is registered in Spain, a registration tax, known as the Special Tax (Impuesto Especial sobre Determinados Medios de Transporte), must be paid. Taxable vehicles are divided into the following categories:

1) Vehicles whose emissions do not exceed 120 g/km CO2.

2) Vehicles with CO2 emissions greater than 120 g/km but less than 160 g/km.

3) Vehicles with CO2 emissions greater than 160g/km and less than 200 g/km.

4) Vehicles with CO2 emissions equal to or greater than 200 g/km.

5) Boats, planes, other vehicles not included in categories 1-4.

6) Motorcycles with emissions less than 80 g/km.

7) Motorcycles with emissions greater than 80 g/km and less than 100 g/km.

8) Motorcycles with emissions greater than 100 g/km and less than 120 g/km.

9) Motorcycles with emissions greater than 120 g/km OR any motorcycle with engine power greater than 74Kw (100HP).

Based on these categories, different levels of the Special Tax are applied to vehicles registered in Spain. Table D5 shows the structure of the Special Tax, which varies by region.

Table D 5 Rates of Spain's Special Tax (ACEA, 2009)

Vehicle Category	Tax Rate		
	Peninsula & Baleares Islands	Canary Islands	Cueta and Melilla
1) and 6)	0%	0%	0%
2) and 7)	4.75%	3.75%	0%
3) and 8)	9.75%	8.75%	0%
4) and 9)(1)	14.75%	13.75%	0%
Others(2)	12%	11%	0%

1) This rate applies to taxable vehicles whose emissions have not been tested and class N2 and N3 motorhomes, quad-type vehicles, and nautical motorcycles (jet skis)

2) Vehicles not included in other categories, ships and vessels for pleasure or sports, planes, and other aircraft.

For new vehicles, the basis of the Special Tax is the same as the basis for VAT – the market price of the new vehicle. For used vehicles, the tax basis is equal to one of the following: the market value, official tables published by the government, or individual valuation by tax authorities. Regional governments have the authority to increase the tax rates in Table D5 by up to 15% (e.g. 4.75%->5.4%); however, up to now this power has not been exercised. Not all vehicles are subject to the special tax. The following vehicles are exempt from the tax (Table D6):

Table D 6 Vehicles exempt from Special Tax (ACEA, 2009)

Category N1, N2, N3 vehicles (for carrying goods). N1 only exempt if used for economic activity at least 50% of the time.
Category M2 and M3 vehicles (passenger vehicles with more than 8 seats)
Vehicles made exclusively for industrial, commercial, or agricultural use as approved by tax authorities
Moped with 2-3 wheels and light quadricycles
Motorcycles and 3-wheeled vehicles with an engine capacity <250cc
Special vehicles that are not "quad" vehicles
Multi-purpose vehicles over 1.8 meters tall that are used on-road at least 50% for economic activity
Government vehicles
Surveillance, defense, and security vehicles for government and regional institutions
Ambulances and other emergency vehicles
Taxis
Vehicles used by driving schools or rental services
Vehicles registered by disabled persons (subject to special requirements)
Vehicles used exclusively for diplomatic and similar services

The exemptions above essentially leave passenger cars, motorcycles, and certain light trucks as the primary taxable road vehicles. The Special Tax also has provisions that reduce the tax in certain circumstances. The first such circumstance is the "large family" incentive, which reduces the tax by 50% when a family with 3 or more children buys a vehicle (passenger car or 4WD) with 5 or more seats. A 30% reduction in the tax is applied to motorhomes or other vehicles designed to be used as housing.

The average price of vehicles first registered in Spain in 2008 was €16,152 ($23,905). Figure D20 shows the structure of the Special Tax for an automobile with the 2008 average price.

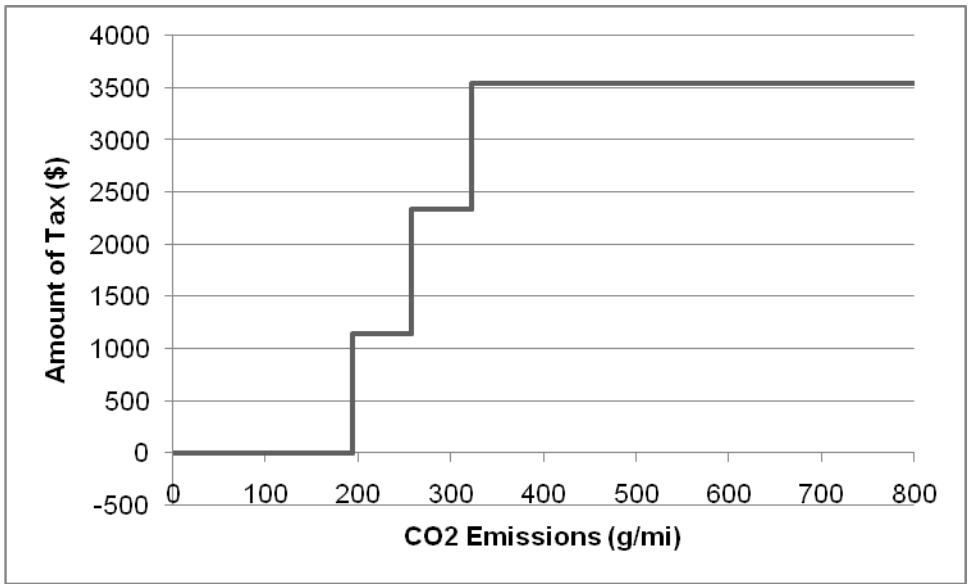

Figure D 20 Spain's Special Tax based on average vehicle price in 2008 (€16,152)

Some regional governments in Spain also provide incentives for hybrid, electric, or fuel cell vehicles. These incentives differ by region and are shown in Table D7.

Table D 7 Alternative-fuel Vehicle Incentives in Spain (ACEA, 2009)

Regional Government	Fuel Type	Maximum Amount of Incentive
Andalucia	Hybrid	Up to 20% of the value of the vehicle
Aragon, Asturias	Hybrid, Natural Gas, LPG	€2000
	Electric, Fuel Cell	€6000
Castilla y Leon	Hybrid	€4800
	Electric	€5700

Implementation and Administration

The Spanish Government implemented the Special Tax on Certain Means of Transport in December, 1992. This was done to offset the loss in tax revenue caused by the reduction in the rate of VAT from 28% to 16%.

Impacts and Reactions

We have very limited information on the impacts of this tax policy. Table D8 shows the distribution of vehicles in Spain according to CO2 emissions in 2008 (excluding motorcycles).

Table D 8 Distribution of Vehicles in Spain by Emissions Level (Agencia Tributaria, 2009)

CO2 Emissions	2008 Sales	2008 Share	2008 Average Emissions
Emissions <= 120 g/km (Emissions <=193 g/mi)	233,652	21.76%	118 g/km (189.9 g/mi)
120 g/km < Emissions < 160 g/km (193 g/mi < Emissions < 257.5 g/mi)	571,390	53.22%	144 g/km (231.8 g/mi)
160 g/km <= Emissions < 200 g/km (257 g/mi <= Emissions < 321.9 g/mi)	197,744	18.42%	177 g/km (284.9 g/mi)
Emissions >= 200 g/km (Emissions >= 321.9 g/mi)	70,889	6.60%	237 g/km (381.4 g/mi)
Total	1,073,675	100%	150 g/km (1) (241.4 g/mi)

(1) The EU standard for 2012 is 130 g/km (209.2 g/mi).

Lessons and Insights

Because of limited data availability, it is difficult to draw any conclusions. The Special Tax has been in place since 1992, but it is unclear how and at what point the tax became a function of CO2 emissions levels. The tax is an interesting case in that the amount of tax is based on the vehicle's market value rather than CO2 emissions-levels alone.

D.8. Sweden

Structure

All new and used car sales in Sweden are subject to a 25% VAT. Sweden has no registration tax for new vehicles and instead administers only an annual vehicle ownership tax. Since 2006, the variable part of this circulation tax has been based on CO2 emissions. Prior to this, the variable

component of the tax was based on weight. The motivation for replacing weight with CO2 was to incorporate the environmental impacts of motor vehicles while maintaining tax revenues (Government of Sweden, 2004). No studies or formal analyses were conducted to support the change. The following vehicles are subject to the new tax: model year 2006 or later, older vehicles meeting Euro 4 standards, electric cars, and hybrid vehicles.

For gasoline-powered vehicles (including hybrids), the ownership tax consists of a fixed fiscal component of 360 SEK (US$48) and a variable component of 15 SEK (US$2) for each gram that exceeds 100 g CO2/km. For diesel-powered vehicles, the tax is adjusted by a factor of 3.15. This adjustment factor has two components. The first component is a fuel factor of 3, which is intended to compensate for the lower diesel fuel tax; this factor is based on the average annual VMT and fuel consumption of diesel vehicles. An additional 0.15 is added to the fuel factor to penalize diesel vehicles for their higher NOx and PM emissions. A gasoline vehicle that emits 150 g CO2/km would pay an annual tax of US$148 while a diesel vehicle with the same emissions level would pay US$465 each year (Figure D21).

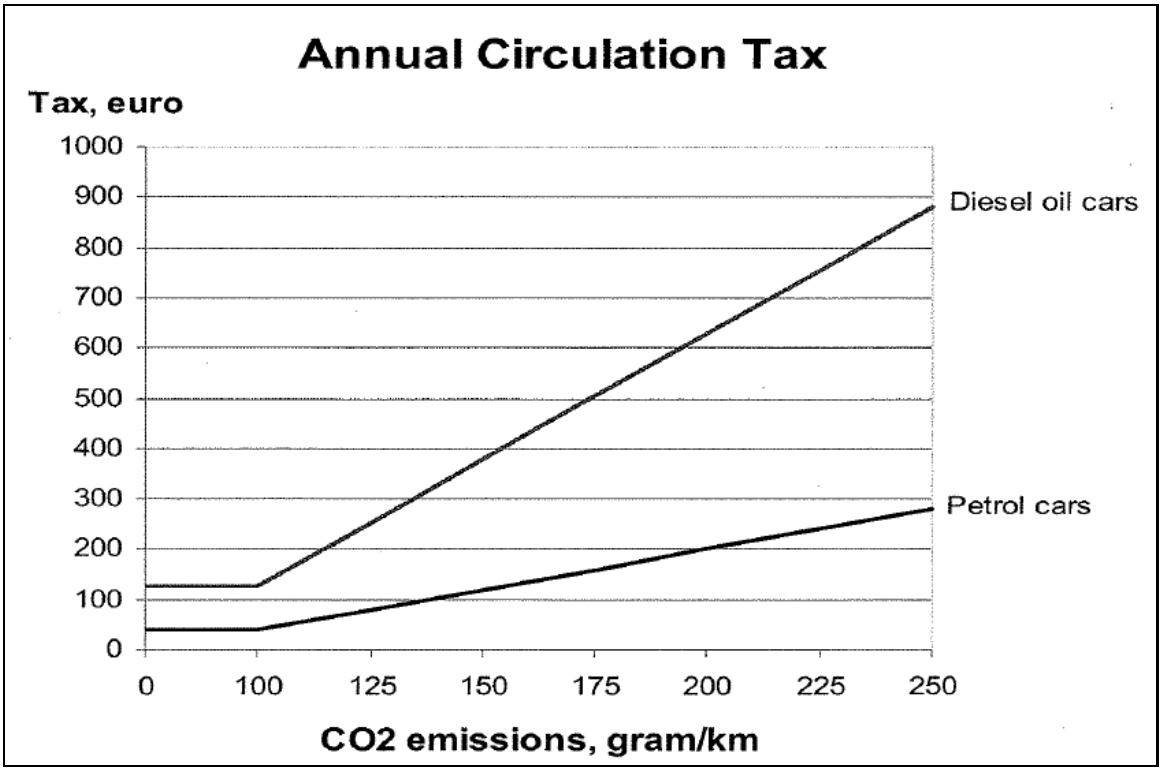

Figure D 21 Annual Circulation Tax in Sweden for Gasoline and Diesel LDVs

(1 EUR ≈1.4 USD) Courtesy of Jan Larsson, Swedish Ministry of Finance

Vehicles that run on alternative fuels such as E85 pay only 10 SEK ($1.32) per gram above 100 g/km and the diesel fuel and environmental damage fees do not apply to them. Until July 2009, certain clean cars also qualified for a 10,000 SEK (US$1300) incentive. Eligible vehicles include conventional-fuel cars with emissions less than 120 g/km, and alternative-fuel vehicles.

Implementation and Administration

The Swedish Ministry of Finance is responsible for drafting tax legislation and providing forecasts of tax revenues, but the responsibility for the operational aspects of tax administration lies with the Swedish Tax Agency (Government of Sweden, 2009). In 2006, the Swedish government replaced the variable weight component of the circulation tax with a variable CO2 component. The purpose of this was to make the environmental impacts of driving more visible in the tax. The rate for the CO2 component was set such that the revenues from the tax would be approximately equal to the revenues prior to the change.

Diesel fuel vehicles are subject to a higher tax rate. Prior to 2008, the diesel fuel factor was 3, plus an environmental component of 0.30 for a total multiplier of 3.30. However, the government determined that diesel vehicles from 2008 had NOx and particulate emission rates that were more similar to their gasoline counterparts than in previous years, so the environmental component was reduced to 0.15, making the new diesel multiplier 3.15 (Larsson, 2008). The higher rate still applies to vehicles that were purchased prior to 2008.

A new version of the tax will change the rate of the variable component of the tax from 15 to 20 SEK per gram beginning in 2011 to adjust for inflation. In addition, the Swedish government will include light buses and light-goods vehicles and replace the diesel environmental component of the tax with a fixed fiscal component (Government of Sweden, 2009).

In 2007, the annual circulation tax totaled more than 10 billion SEK (US$1.4 billion), which accounted for almost 1% of total tax revenues and is equivalent to about 1/3% of Sweden's GDP. There are no earmarks on the revenue collected, which is all directed to the general fund.

Impacts and Reactions

To date, there has not been any opposition to the CO2 component of tax. The portion of the tax attracting the greatest outcry has been the diesel fuel factor adjustments. Vehicle owners who recently switched to diesel vehicles would see a large increase in their annual circulation tax. About half of new vehicle sales in Sweden are now diesel, comprising about 20% of the total fleet.

To gather information on the Swedish vehicle tax we interviewed Mr. Jan Larsson, Deputy Director of the Tax and Customs Department in Sweden's Ministry of Finance. In Mr. Larsson's assessment, the CO2 tax component is such a small share of the overall taxes related to vehicle use (including fuel taxes) that they serve more of an informational role than a behavior-changing one. Although the tax has a limited effect on purchase decisions, it creates a framework that can be adjusted later to increase the contribution of these types of fiscal policies for environmental or revenue-generating purposes or to maintain consistency with other EU countries. However, due to the large size of Sweden and the presence of a domestic automobile industry, the Swedish government is unlikely to increase vehicle-related taxes to such a high level as to discourage vehicle ownership or limit mobility.

Lessons and Insights

The main lesson from Sweden is that the public is happy when vehicle fees are low. Given the public opposition to the diesel fuel factor, it seems that similar special cases should either be well explained or avoided entirely. Rather than use the diesel fuel factor to adjust the circulation tax for the lower taxes on diesel fuel, it may have been preferable to increase the diesel fuel tax directly. However, since diesel is also used for freight and the CO2 tax is only meant to affect passenger cars, this structure makes some sense in this case. This emphasizes the importance of educating the public so the reasoning behind the structure of the tax or feebate is clear.

D.9. United Kingdom

Structure

The United Kingdom has had a CO2 emissions-based circulation tax on cars since March 1, 2001 (ACEA, 2009). This tax, also referred to as the vehicle excise duty (VED), applies only to cars first registered on or after March 1, 2001; cars first registered before that date are subject to a tax based on engine size. Since this is a circulation tax, both new and used vehicles are subject to it. The rates of the VED are revised annually. Initially, the tax schedule was introduced with just four bands. This was later increased to six bands in 2005 and seven in 2006. The current system, announced in November 2008, is based on a step function with 13 bands (Table D9).

Table D 9 CO2 circulation tax rates in the United Kingdom (£1 = $1.66)

New band (from 01/05/09)	CO_2 g/km	Standard rate* 2008-09	2009-10	2010-11	First year rate 2010-11
A	Up to 100	£0	£0	£0	£0
B	101-110	£35	£35	£20	£0
C	111-120	£35	£35	£30	£0
D	121-130	£120	£120	£90	£0
E	131-140	£120	£120	£110	£110
F	141-150	£120	£125	£125	£125
G	151-165	£145	£150	£155	£155
H	166-175	£170	£175	£180	£250
I	176-185	£170	£175	£200	£300
J	186-200	£210	£215	£235	£425
K**	201-225	£210	£215	£245	£550
L	226-255	£400	£405	£425	£750
M	Over 255	£400	£405	£435	£950

Source: ACEA Tax Guide, 2009

The standard rate jumps up significantly for vehicles emitting over 225 g CO2/km. Averaged over the range from 100 g/km to 225 g/km, the rate for 2009-10 is approximately equivalent to a linear tax rate of $155 per .01 gallon per mile per year. Over a 15-year lifetime, this annual rate would be equivalent to a one-time payment of $2325 per .01 gallon per mile, without discounting. For contrast, the U.S. Gas Guzzler tax is equivalent to a rate of $1800 per .01 gallon per mile.

The first-year rate shown in Table D9 will affect only new vehicles purchased on or after April 1, 2010. After the first year, these vehicles would be subject to the standard rate. This separate tax schedule is intended to send a stronger price signal to consumers about the environmental implications of their car purchases and it seems to be intended to perform the policy role of a feebate by shifting more of the incidence of the tax to occur at the time of initial purchase. Alternative-fuel vehicles, which include vehicles powered by natural gas, gasoline/natural gas, and hybrids, receive an ongoing £10 reduction in the VED (UK Directgov, 2009).

Impacts and Reactions

To the best of our knowledge, there have been no formal studies that isolate the effects of the CO2 emissions-based VED on vehicle emissions from other possible factors (e.g. fuel prices). Figure D22, obtained from a report by the Society of Motor Manufacturers and Traders (SMMT) shows that average CO2 emissions of new cars have decreased significantly since 1997 (SMMT, 2009). The

observed drop in emissions may be due in part to the VED. The SMMT reports that the reduction may be due to several factors, including increasing fuel prices, introduction of lower-emitting cars, the global economic recession, and sales mix shift toward lower-emitting cars. However, separating these factors from one another is problematic.

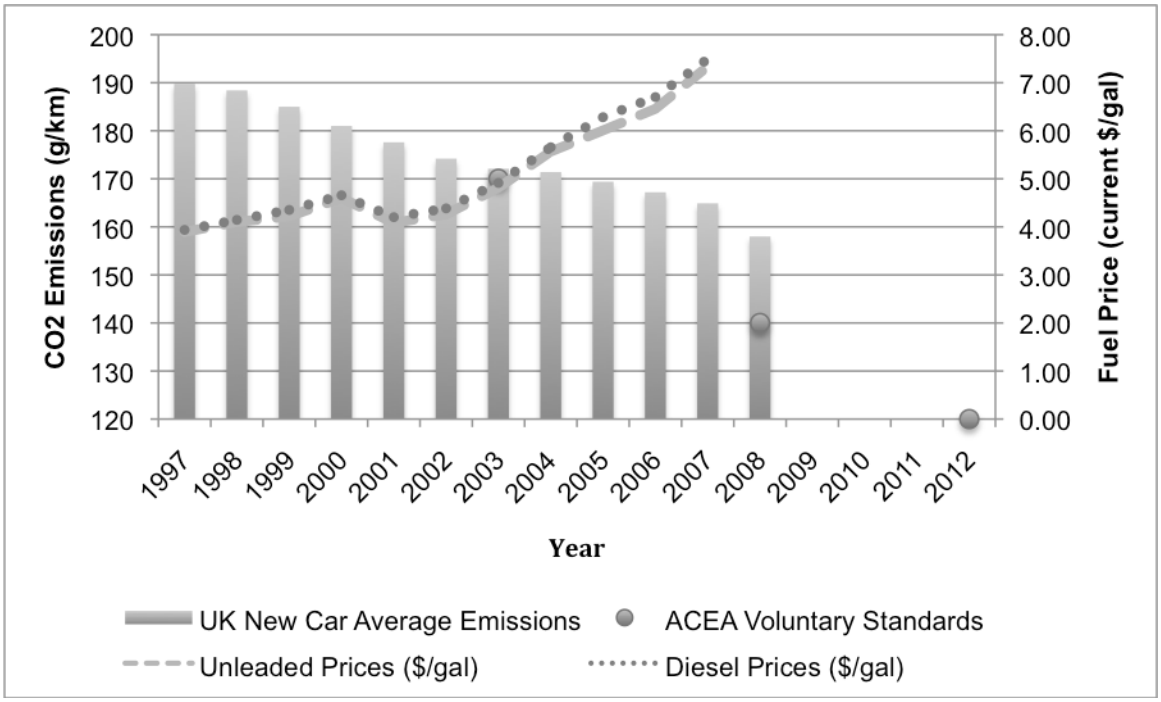

Figure D 22 Average new car CO2 emissions in UK (SMMT, 2009, Chart 1)

The SMMT observed a significant shift of the new car market to lower CO2 emitting cars, which are subject to a lower VED. The change in the numbers of vehicles in each VED band from 2007 to 2008 is shown in Table D10.

Table D 10 New car market by (old) vehicle excise duty band

VED band	Volume	Market share			
	2008	2008	2007	1997	All
A (sub-100g/km)	3,917	0.2%	0.0%	0.0%	0.0%
B (101-120g/km)	230,216	10.8%	5.3%	0.0%	4.0%
C (121-150g/km)	803,756	37.7%	32.7%	7.8%	30.3%
D (151-165g/km)	435,979	20.5%	24.6%	15.1%	23.4%
E (166-185g/km)	331,588	15.6%	17.4%	32.0%	17.9%
F (186-225g/km)	240,750	11.3%	13.7%	32.3%	16.2%
G (over 225g/km)	85,589	4.0%	6.2%	12.8%	8.3%

Source: SMMT, 2009, Table 6

Based on the introduction to their report, the Society of Motor Manufacturers and Traders seems to be generally supportive of CO2 emissions-based tax policies that "create an environment in which low carbon automotive manufacturing can prosper…" (SMMT, 2009). It should be noted that SMMT member manufacturers are required to meet emissions standards and incentives help this process. The RMI National Franchised Dealers Association reacted negatively toward the proposal of the changes to the VED that increased the number of bands and introduced the first-year rate (Just-Auto, 2008). The association argued that the changes in the tax unfairly penalized consumers that require larger vehicles and that the small difference in the tax at lower bands was unlikely to have an effect on consumers' decisions. The SMMT was also against certain aspects of the change, particularly the high first-year tax for vehicles emitting over 165 g/km, which they see as an additional tax on high-value vehicles (Just-Auto, 2008).

Lessons and Insights

The adjustment over time of the UK CO2 emissions-based circulation tax demonstrates that legislators found it important to be able to review and alter the tax structure over time. It also appears that ongoing fees can have a similar effect on average vehicle CO2 emissions as a one-time fee at the time of purchase.

The inclusion of the higher first-year rate for vehicles emitting over 155 g CO2/km beginning in 2011 will implement a strong price signal at the time a consumer purchases a vehicle. This change appears to be an attempt to perform the policy role of a feebate by shifting more of the incidence of the fee to the initial cost of the vehicle, similar to how a registration tax would work.

D.10. United States Gas Guzzler Tax

Structure

The U.S. Gas Guzzler Tax was established by the Energy Tax Act of 1978. It applies only to new model year passenger cars and not light trucks. Cars failing to meet the minimum fuel economy level of 22.5 mpg pay a tax ranging from $1,000 up to $7,700 (Table D11).

Table D 11 The Gas Guzzler Tax on New Cars (current dollars per vehicle)

Vehicle fuel economy (mpg)	1980	1981	1982	1983	1984	1985	1986–90	1991+
Over 22.5	0	0	0	0	0	0	0	0
22.0–22.5	0	0	0	0	0	0	500	1,000
21.5–22.0	0	0	0	0	0	0	500	1,000
21.0–21.5	0	0	0	0	0	0	650	1,300
20.5–21.0	0	0	0	0	0	500	650	1,300
20.0–20.5	0	0	0	0	0	500	850	1,700
19.5–20.0	0	0	0	0	0	600	850	1,700
19.0–19.5	0	0	0	0	450	600	1,050	2,100
18.5–19.0	0	0	0	350	450	800	1,050	2,100
18.0–18.5	0	0	200	350	600	800	1,300	2,600
17.5–18.0	0	0	200	500	600	1,000	1,300	2,600
17.0–17.5	0	0	350	500	750	1,000	1,500	3,000
16.5–17.0	0	200	350	650	750	1,200	1,500	3,000
16.0–16.5	0	200	450	650	950	1,200	1,850	3,700
15.5–16.0	0	350	450	800	950	1,500	1,850	3,700
15.0–15.5	0	350	600	800	1,150	1,500	2,250	4,500
14.5–15.0	200	450	600	1,000	1,150	1,800	2,250	4,500
14.0–14.5	200	450	750	1,000	1,450	1,800	2,700	5,400
13.5–14.0	300	550	750	1,250	1,450	2,200	2,700	5,400
13.0–13.5	300	550	950	1,250	1,750	2,200	3,200	6,400
12.5–13.0	550	650	950	1,550	1,750	2,650	3,200	6,400
Under 12.5	550	650	1,200	1,550	2,150	2,650	3,850	7,700

Source: Davis, Diegel and Boundy, 2008, table 4.20.

The U.S. gas-guzzler tax illustrates how the benchmark and rate of a graduated fuel consumption tax can be changed systematically over time. The benchmark was gradually raised from 14.5 to 22.5 MPG and the steps were made steeper (Figure D23). The rate increases exceed what would be expected if the tax were just keeping pace with inflation, so the changes were punitive.

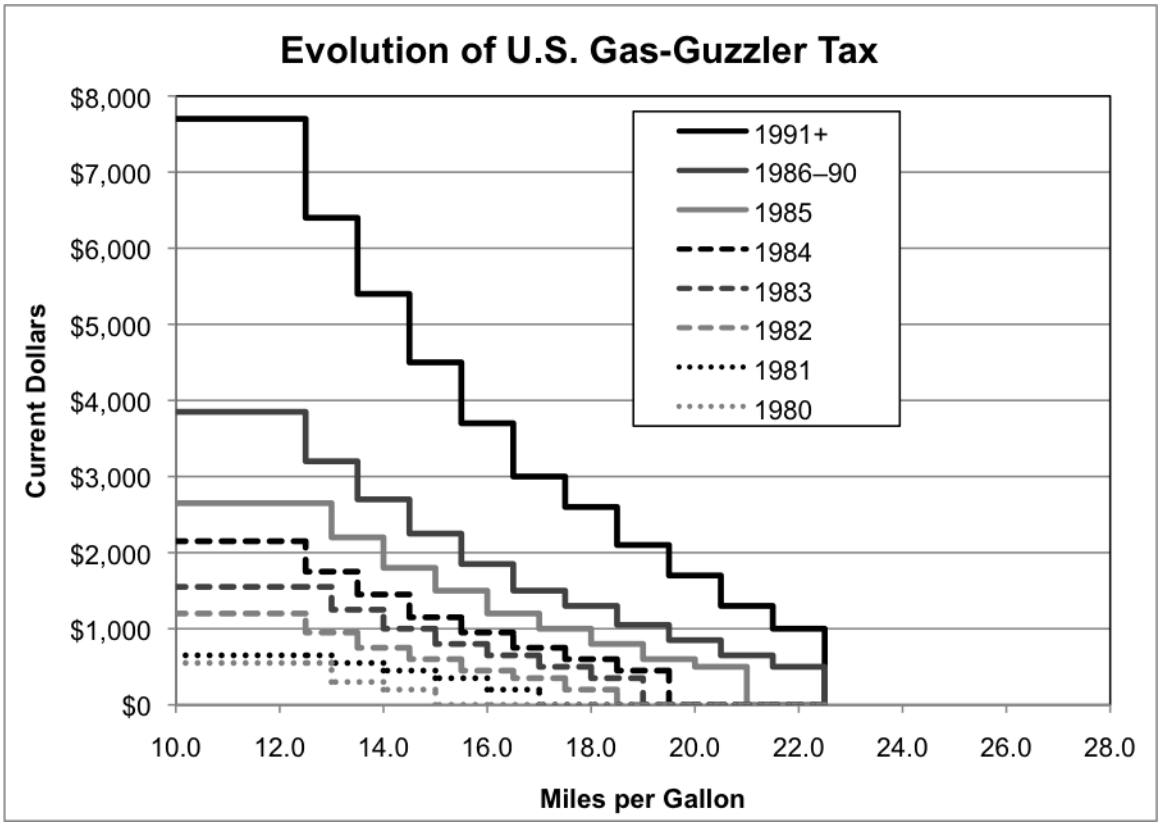

Figure D 23 Evolution of the U.S. Gas-Guzzler Tax2

Although the gas-guzzler tax is a step function, the steps are relatively small so that it is approximately linear. Averaged over the range 12.5 to 22.5 MPG, the current rate of the tax is $770 per MPG per vehicle. This is quite large in comparison to the fine for failure to meet the CAFE standards: $55 per MPG per vehicle. In terms of dollars per .01 gallon per mile, the gas-guzzler tax now stands at $2,166 (Figure D24). The final step is larger than the others, however. Measured up to the penultimate step, the rate is $1,800 per 0.01 gallons per mile, about 10% higher than the French Bonus/Malus feebate system described elsewhere in this report.

[2] Over the time period in this chart, CAFE standards for passenger cars started at 20 mpg and increased to 27.5 mpg

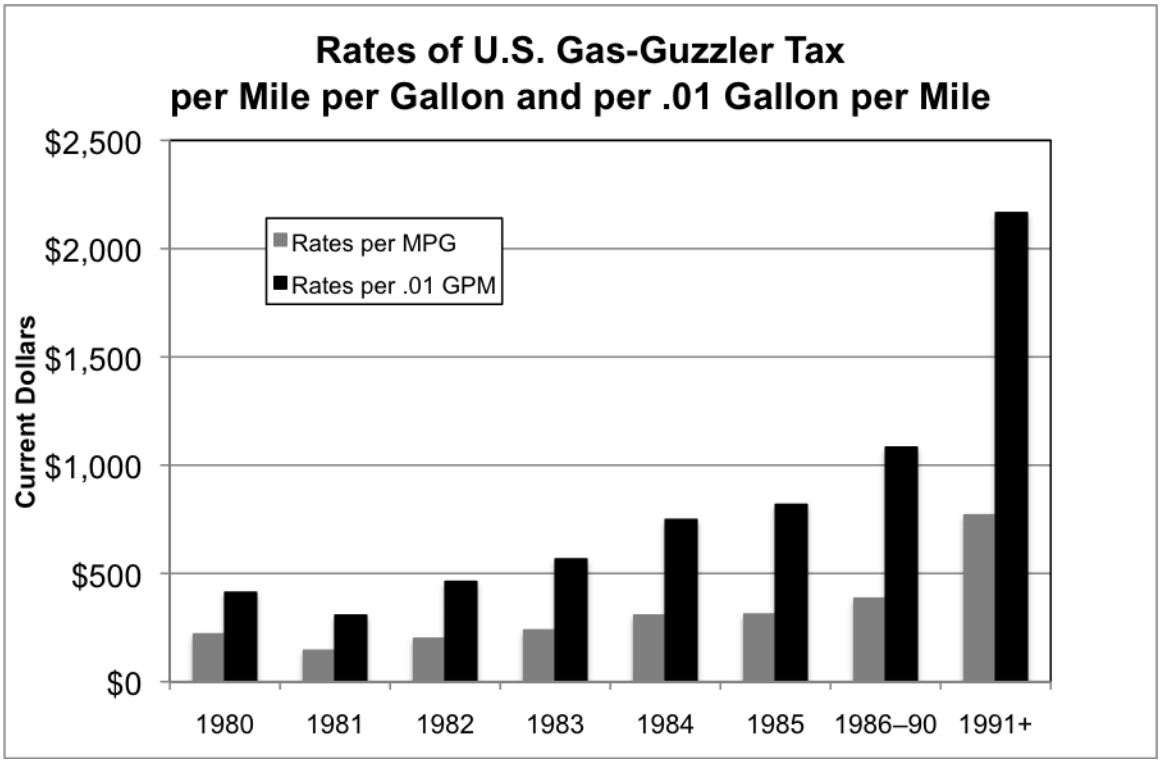

Figure D 24 Average Rates of the U.S. Gas-Guzzler Tax

If Figure D23 were plotted in terms of constant dollars, the step function between 1986-1990 and 1991-present would compress along the vertical axis. It is notable that the increases in the tax do outpace inflation, so the adjustments were punitive. Similarly, Figure D24 in constant dollars would show the rate decreasing from 1986-1990 and 1991-present.

Implementation and Administration

Enacted in 1978, the gas-guzzler tax went into effect two years later in 1980. The purpose of the tax is to discourage the production and purchase of passenger cars with low fuel economy. The tax is collected by the Internal Revenue Service, but cars are certified as liable for the tax by the Environmental Protection Agency. The amount of tax for which a vehicle is liable must be displayed on the window-sticker fuel economy label of each vehicle that incurs the tax (EPA, 2009).

The Gas Guzzler tax is normally paid by the manufacturer or importer after production has ended for the model year according to the number of gas guzzler vehicles sold in the United States. Since its implementation in 1980, the gas-guzzler tax has been adjusted eight times. Initially, it was adjusted annually, first by increasing the MPG threshold for taxation and later increasing the rate of taxation per MPG. The tax schedule has been frozen since 1991. The revenue from the gas-guzzler tax is not earmarked.

Impacts and Reactions

The gas-guzzler tax appears to have received no formal evaluation. A simulation of its impacts supported the view that it was sufficiently stringent relative to the cost of fuel economy technology to persuade all manufacturers to improve the fuel economy of their vehicles sufficiently to avoid the tax (Greene et al., 2005)

Receipts from the gas-guzzler tax have averaged just under $120 million per year since 1980 (Figure D25), a relatively modest amount. This is because those vehicles that are subject to the tax tend to be expensive vehicles with low sales volumes (EPA, 2008). The gas-guzzler tax revenue is significantly lower than the state and federal fuel tax revenue of approximately $36 billion in 2006 (Tax Policy Center, 2008). Sixty out of ninety-nine vehicles subject to the gas-guzzler tax in 2009 were products of Aston Martin, Lamborghini, Bentley, Ferrari, Maserati, Mercedes Benz or Rolls Royce. Others were high performance vehicles manufactured by BMW or Audi, and rare customized vehicles like the Roush RPP Mustang. In general, since the inception of the tax mass-market vehicle manufacturers have adopted whatever engineering and design changes were needed to avoid the tax.

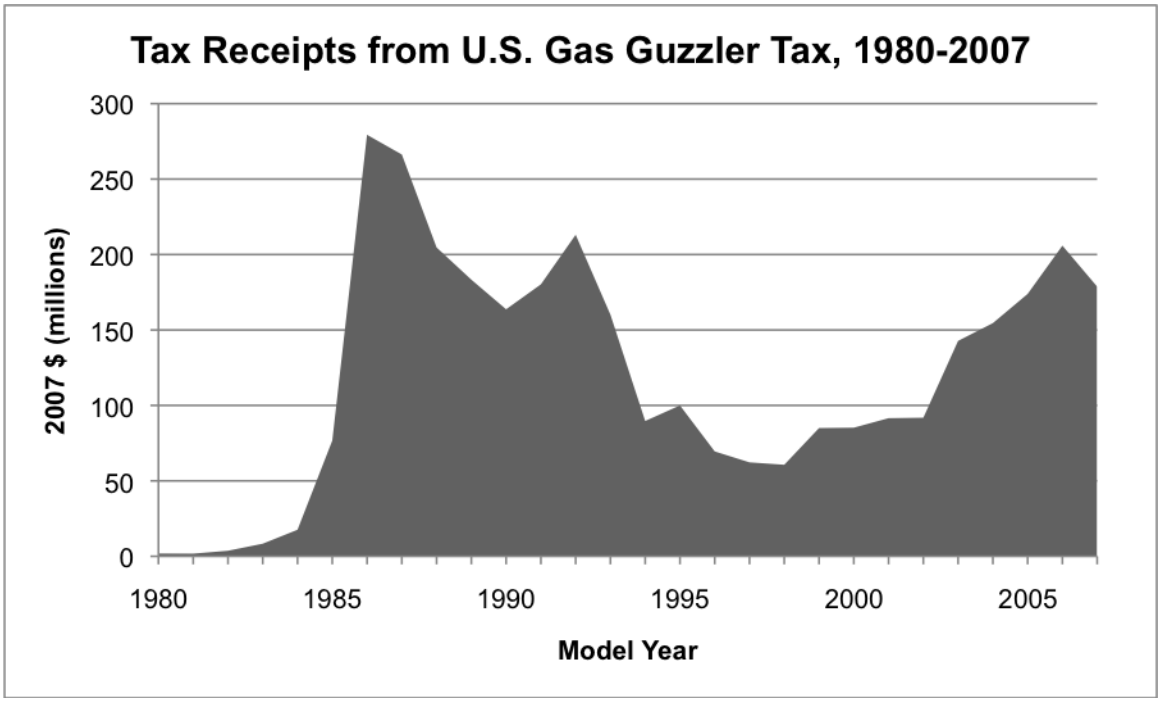

Figure D 25 Tax Receipts from the U.S. Gas-Guzzler Tax, 1980-2007.

Source: Davis, Diegel & Boundy (2009) Table 4-24.

Figure D26 shows that, in 2005 and 2007, the vast majority of passenger cars sold in the U.S. were not subject to the Gas-Guzzler Tax. Specifically, 0.32% of cars were subject to the tax in 2005, and 1.34% of cars were subject to the tax in 2007. This again reinforces the conclusion that automobile manufacturers have taken steps to avoid the gas-guzzler tax by whatever means necessary.

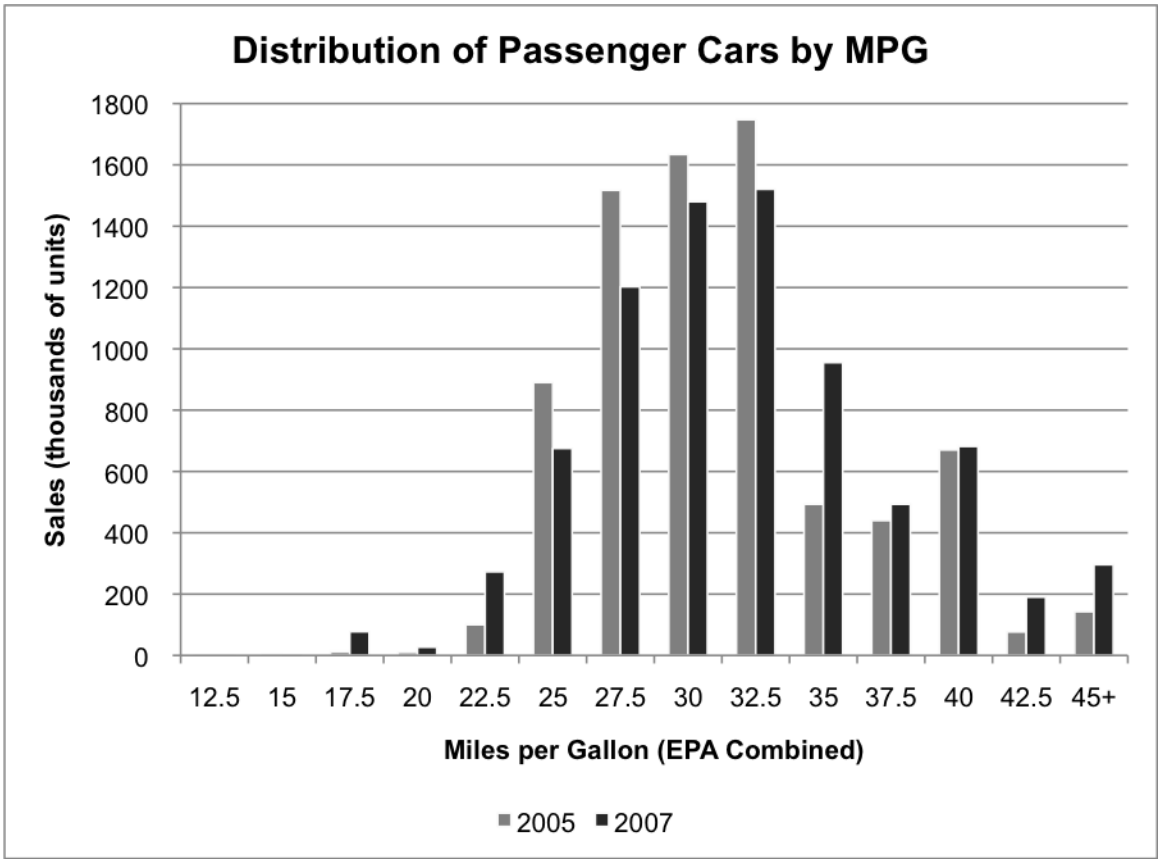

Figure D 26 Histogram of sales of passenger cars in 2005 and 2007

Lessons and Insights

The primary lesson from the Gas Guzzler Tax is that it seems to have worked by providing a consistent price signal to manufacturers. In addition, it demonstrates the feasibility of changing a tax schedule over time. However, the tax schedule hasn't changed in a long time. This may suggest that at tax schedule that depends on Congressional action can be inefficient without specific requirements for adjusting the tax. The main flaws in the tax are that it does not apply to all vehicles and that there is no requirement to update the tax to keep pace with inflation. There is currently no fiscal deterrent that would cause manufacturers to avoid building light trucks with poor fuel economy.

D.11. References

Agencia Tributaria, http://www.agenciatributaria.es/. Accessed October 2009.

Government of Netherlands. Personal communication with Jeanine de Visser and Maikel Kogenhop of the Ministry of Finance and Louis Zuidgeest of the Ministry for the Environment. October, 2009.

Government of Netherlands, "Evaluatierapport: Werkgroep evaluatie energielabel en bonus/malus regeling BPM 2006." May, 2008.

E. CARS ON STERIODS (KNITTEL)

[Appendix begins on the next page.]