

## Potential Impacts of Feebate Programs for New Passenger Vehicles

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California Air Resources Board – Cal/EPA HQ  
Sierra Hearing Room, 1:30 PM  
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### Background & Timeline

- ⌘ 2002: Pavley law enacted
- ⌘ 2004: ARB formulates Pavley regulation (Lawsuits filed)
- ⌘ 2006: California Global Warming Solutions Act (AB 32).
  - ☒ GHG emissions to return to 1990 levels by 2020.
    - ☒ ~ 40% of GHGs come from transportation sector
    - ☒ ~75% of these come from passenger vehicles
  - ☒ If “no Pavley,” requires **alternative options** to achieve reductions.
- ⌘ April 2007: US Supreme Court declares CO<sub>2</sub> a pollutant

## Background & Timeline –cont.-



### ⌘ December 2007

- ☒ Congress passes Energy Independence & Security Act
  - ☒ Requires fuel economy increase to 35 mpg by 2020
- ☒ EPA denies California waiver.
  - ☒ California and 17 other states file suit.

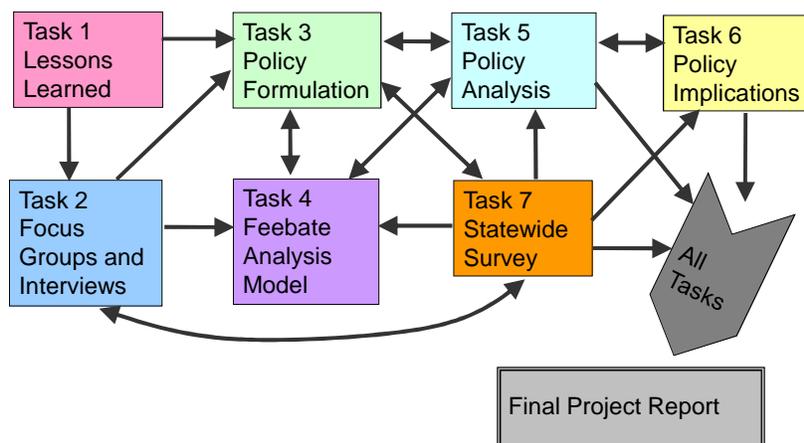
### ⌘ September 2008: ARB solicits **Feebates** research

### ⌘ December 2008: ARB finalizes **Scoping Plan**

### ⌘ January 2009: UC team starts the Research Project

- ⌘ [Also: President Obama orders EPA to review decision on California waiver]

## Task Overview



## Agenda



- ⌘ Background on Feebates
  - ⌘ 'Lessons Learned' Case Studies
  - ⌘ Quantitative Modeling Results
    - ☒ Requirement for Policy Reference Cases
    - ☒ Factors Affecting Feebate Impacts
    - ☒ Description of Feebate Analysis Model
    - ☒ Review of Modeling Scenarios
    - ☒ Numerical Results for Selected Scenarios
  - ⌘ Qualitative Results
    - ☒ Interviews with Automakers and Dealers
    - ☒ Focus Groups with Consumers
    - ☒ Survey of California Household
    - ☒ Policy Implications
  - ⌘ Conclusions and Discussion
- 

## The Feebate Concept



- ⌘ A fiscal policy combining
    - ☒ A **FEE** on inefficient vehicles
    - ☒ A **reBATE** on efficient vehicles.
  - ⌘ (In)efficiency **measure** = Emissions per mile
  - ⌘ **Benchmark (or "pivot point")**
    - ☒ Defines which vehicles get fees / rebates
  - ⌘ **Functional form** (and rate parameter) yields payment amount
    - ☒ Linear, Step functions, Footprint functions
    - ☒ One function for all, versus 'class-based'
  - ⌘ There are also options for:
    - ☒ **Implementation** strategies
    - ☒ **Locus** of monetary transaction
-

## Lessons Learned: Case Studies



- ⌘ Detailed Reports on:
  - ⌘ Canada
  - ☒ Denmark
  - ☒ France
  - ☒ Germany
  - ☒ Netherlands
  - ☒ Norway
  - ☒ Spain
  - ☒ Sweden
  - ☒ United Kingdom
  - ☒ U.S. Gas Guzzler Tax

## Lessons Learned



- ⌘ Background: European Commission Timeline
- ⌘ Voluntary targets in 1998 (agreement with ACEA)
  - ☒ [Data point: 186 gm/km in 1995]
  - ☒ 2008 target = 140 gm/km (39.0 mpg)
  - ☒ 2012 target = 120 gm/km (45.5 mpg)
- ⌘ Observed: 160 gm/km in 2005 (34.1 mpg)
- ⌘ April 2009 => Move to mandatory targets
  - ☒ 2012 target = 130 gm/km (for 65% of sales?)
  - ☒ 2015 target = 130 gm/km (42.0 mpg)
  - ☒ 2020 target = 95 gm/km (57.5 mpg)

## CO<sub>2</sub>-Related Economic Incentives in the EU



### ⌘ Terminology

- ☒ **Registration Tax** = One-time only tax when vehicle is *first registered*
- ☒ **Circulation Tax** = Annual vehicle ownership fee

### ⌘ Remarks

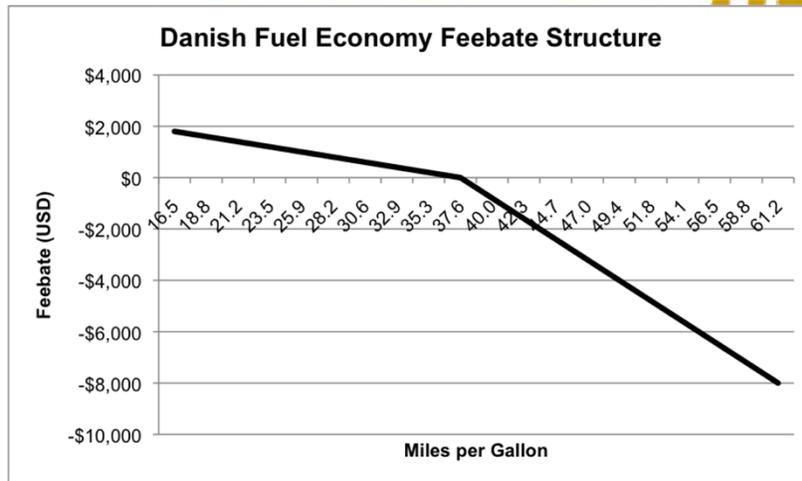
- ☒ Some systems use A-G (or similar) **labels** on vehicles
  - ☒ [But, the criteria can differ by country and ≠ EU labeling scheme]
- ☒ *Most* of the incentive systems are simply **tax policies** (no rebates)
  - ☒ Note: Later, we focus on four “true feebates”
  - ☒ [Denmark, France, the Netherlands, Norway]
- ☒ Some systems use **multiple criteria** (not just CO<sub>2</sub> emissions)
- ☒ Some systems are modifications of earlier systems
  - E.g., Engine size is replaced by CO<sub>2</sub> emissions
  - ☒ These seem to be reactions to the “umbrella” EU policies.
  - ☒ A lot of these modifications seemed to happen in **2007**

## Quick Overview: Policies including CO<sub>2</sub>

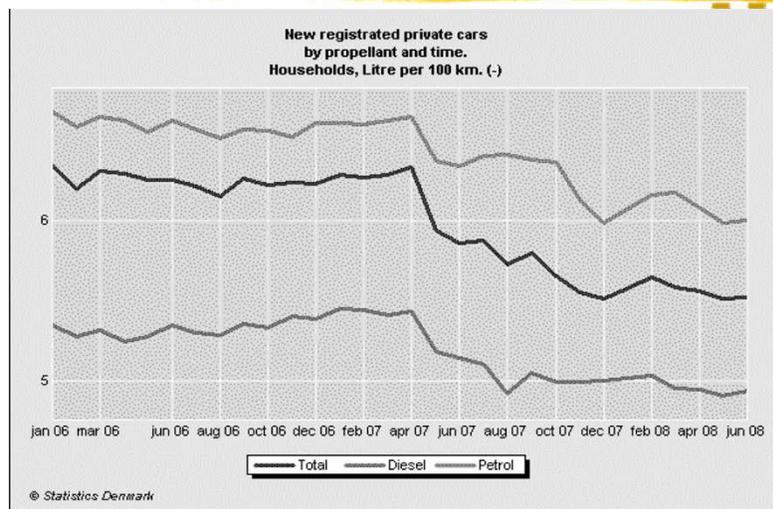


	Circulation Tax	Registration Tax	Feebate
Sweden	2006 Fixed + CO <sub>2</sub>		
United Kingdom	2001	2010 separate tax rate for first year of new vehicle	
Norway		2007 ->	2009 Added a rebate component
Denmark	1997 Dec 2008 start shifting to this		June 2007 Dec 2008 shift away
France			January 2008
Canada		In 2009 CO <sub>2</sub> fee remains	March 2007 Rebate dropped in 2009
Spain		[1992? 2001?]	
Netherlands		Begin 2010	July 2006 Shift to registration tax in 2010?
Germany	July 1, 2009		

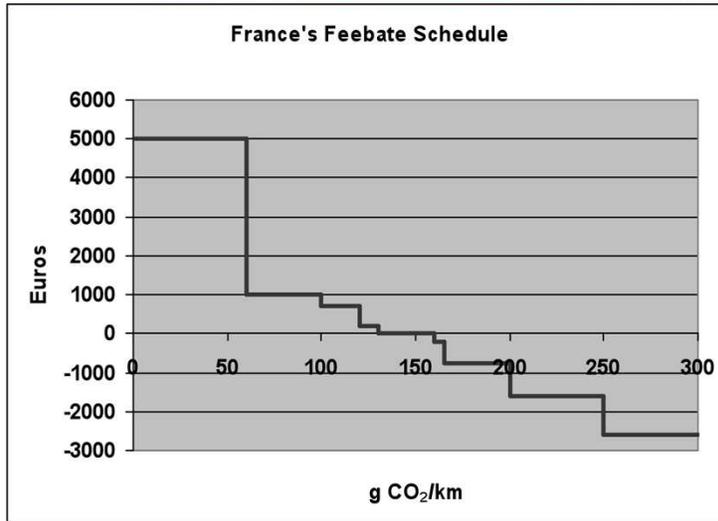
## Denmark Bonus/Malus



## CO<sub>2</sub> Emissions – Denmark (Bonus Malus)



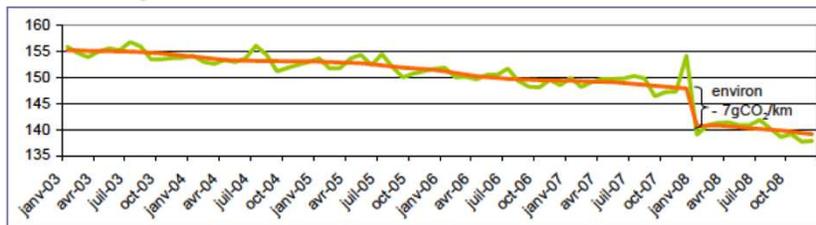
## France Bonus/Malus



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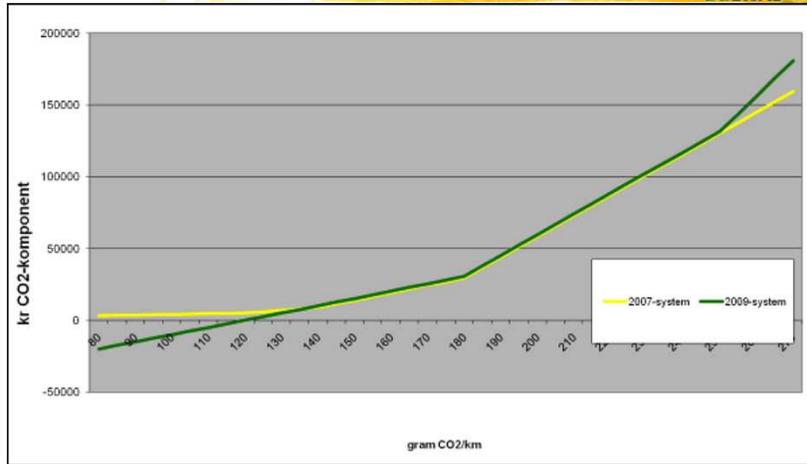
## CO<sub>2</sub> Emissions – France (Bonus Malus)



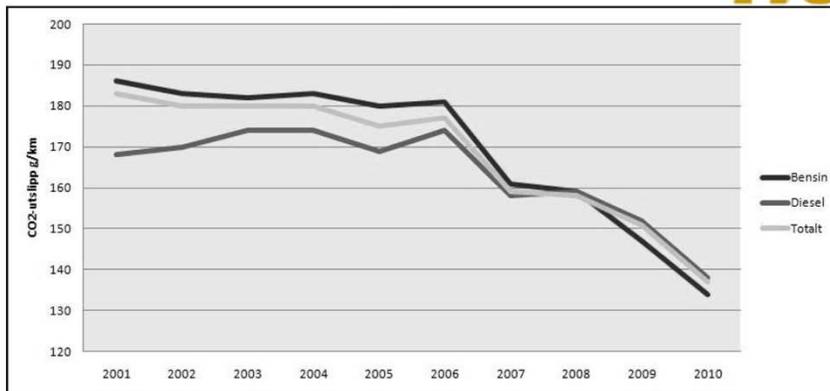
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## Norway Change in Reg Tax to Feebate



## CO<sub>2</sub> Emissions – Norway (Change in Reg Tax)



## Lessons Learned Summary



### ⌘ “Quantitative” Lessons:

- ☒ There is a “before and after” pattern suggesting “effectiveness”.
- ☒ However: There are concerns about contemporaneous events (fuel price increases)

### ⌘ “Qualitative” Lessons:

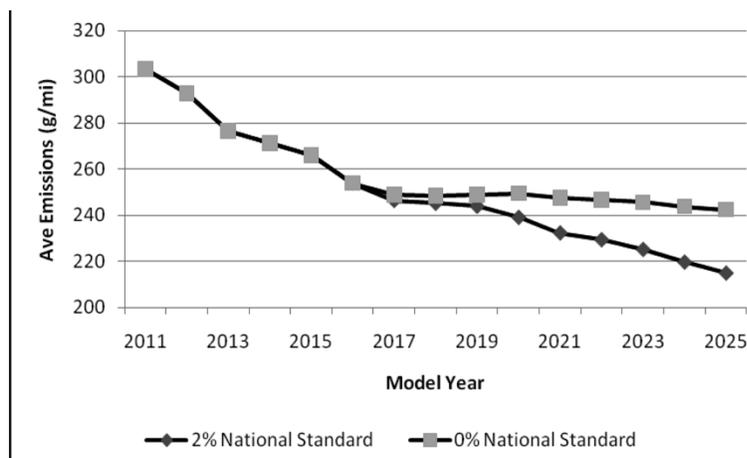
- ☒ Diversity in details across countries (not a surprise)
- ☒ Difficulties with revenue neutrality: France, Netherlands
- ☒ Implementation issues (Netherlands)
  - ☒ Difficulty with managing class-based benchmarks
  - ☒ Difficult to explain “footprint reversals”
- ☒ Two countries with “true feebates” (Denmark and the Netherlands) are now backing off, moving to more standard taxation schemes.
- ☒ European versus US cultural environment

## Quantitative Modeling



### ⌘ Modeling requires establishing Policy Reference Cases

### ⌘ Major factor: National emissions standards



## More generally, impacts of feebates depend on:



- ⌘ The stringency of emissions/fuel economy standards
  - ☒ Annual reductions of 0%, **2%**, 3%, 4%
  - ☒ Degree to which standards constrain market depends on price of fuel
- ⌘ How the market for fuel economy works
  - ☒ Consumers fully value expected, discounted lifetime fuel savings
  - ☒ Consumers require **simple 3-year payback**
- ⌘ The size of the feebate and its geographical coverage
  - ☒ \$15, **\$20**, \$30, \$40/gCO<sub>2</sub>/mile
  - ☒ **California**, CA + Opt-in states, U.S.A.
- ⌘ The design of the feebate system
  - ☒ Single benchmark, Cars vs. Light Trucks, **Footprint Index**
  - ☒ **Linear** (constant value per gCO<sub>2</sub>/mi), step function, non-linear

## Feebate Analysis Model (Overview)



- ⌘ **Total Model = Two-Tiered Modeling Approach**
- ⌘ **Manufacturer Decision Model (MDM)**
  - ☒ **Inputs:**
    - ☒ **Vehicle configurations (base year = 2007)**
    - ☒ **Vehicle technology cost curves (180 curves)**
    - ☒ **Emissions policy assumptions**
    - ☒ **Feebate scenarios**
  - ☒ **Outputs:**
    - ☒ **National Results [Two Regions]**
    - ☒ **Vehicle configurations for 2008-2030**
- ⌘ **California Vehicle Market Simulation Model**
  - ⌘ **Inputs: Vehicle configurations for 2008-2030 [MDM]**
  - ⌘ **Outputs: Detailed results for California [New + Used]**

## Focus on: Features of MDM



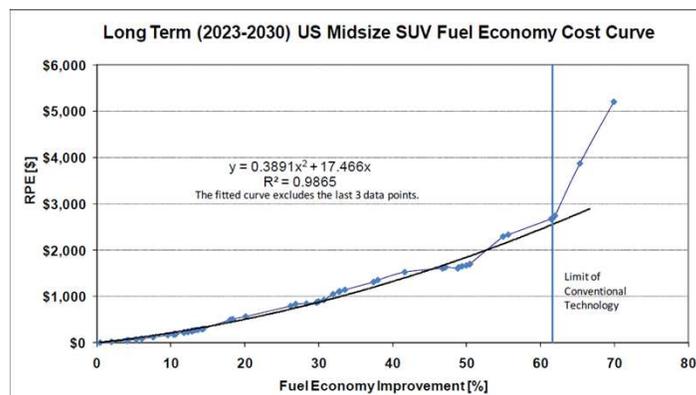
### ⌘ Aggregate Consumer Demand Models

- ☒ Nested MNL demand for multiple regions
  - ☒ California vs. Rest of Nation
  - ☒ “Pavley States” (or, “Opt-in States”) vs. “Non-Pavley States”

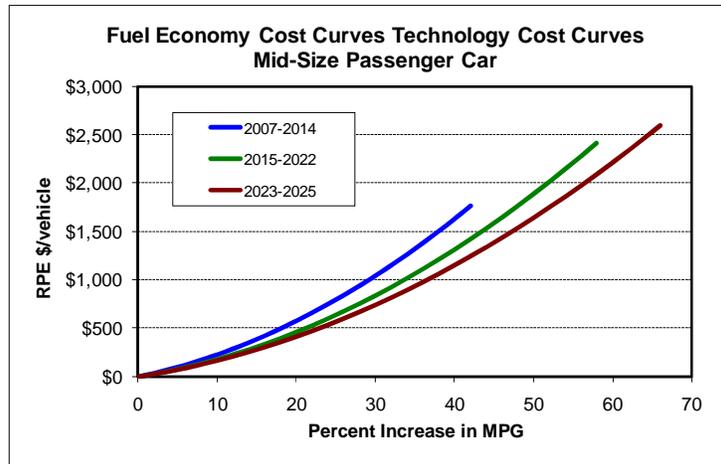
### ⌘ Constrained Optimization Model

- ☒ **Objective function** = Change in Total Consumer Surplus (CS)
- ☒ **Decision variables** (Explicit)
  - ☒ % improvement in vehicle emission rate
  - ☒ Vehicle pricing to induce sales-mix shifts
  - ☒ Conversion of conventional vehicles to hybrids
- ☒ **Other decisions** (Implied)
  - ☒ Trading and banking of credits
- ☒ **Constraints** = CAFE/Emissions Targets
- ☒ **Dynamic vehicle database** for 2008-2013 to include product plans

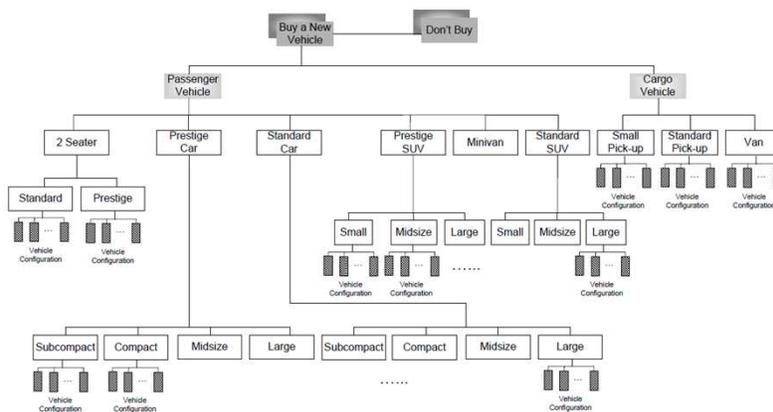
The MDM contains 180 Technology Cost Curves: 3 time periods, 20 vehicle classes, 3 power train technologies (gasoline, hybrid & diesel).



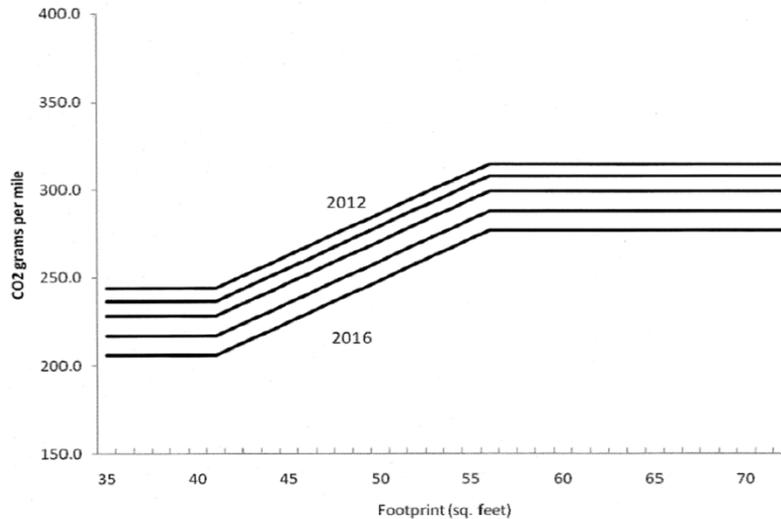
The reference case reduction in CO2 emissions is near the limits of the fuel economy costs curves.



The vehicle choice model estimates consumer choices among 20 vehicle classes and more than 800 individual vehicle configurations, as well as to buy a new vehicle or not.



Most feebate systems analyzed were benchmarked to the federal footprint function.



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56 cases analyzed a comprehensive set of feebate designs in various contexts.



- ⌘ 13 cases analyzed differences in
  - ☒ Feebate rate: \$10/\$20/\$30 per gram per mile
  - ☒ Geographical coverage: CA, CA + opt-in states, All of US
  - ☒ Benchmark: footprint, single, car or truck
  - ☒ Functional form: linear or step function
- ⌘ 22 sensitivity cases considered the effects of
  - ☒ Fuel prices
  - ☒ Technology costs
  - ☒ How consumers value fuel savings
  - ☒ Other parameters
- ⌘ 17 additional cases considered alternative post 2016 standards
- ⌘ 4 more cases assessed whether feebates could replace the CA standard, plus the effects of banking emissions credits.

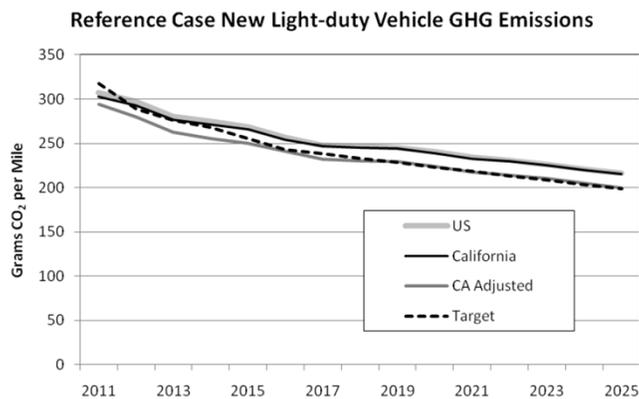
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The reference case included the 2016 national standards and a 2%/yr decrease thereafter.



☒ Calibrated to EIA AEO 2009 Reference Case

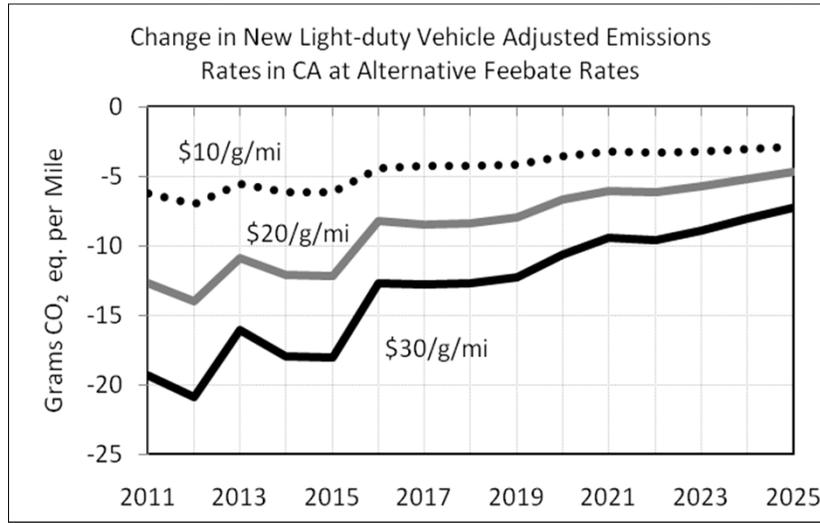


Several criteria were used to evaluate the impacts of feebate policies.

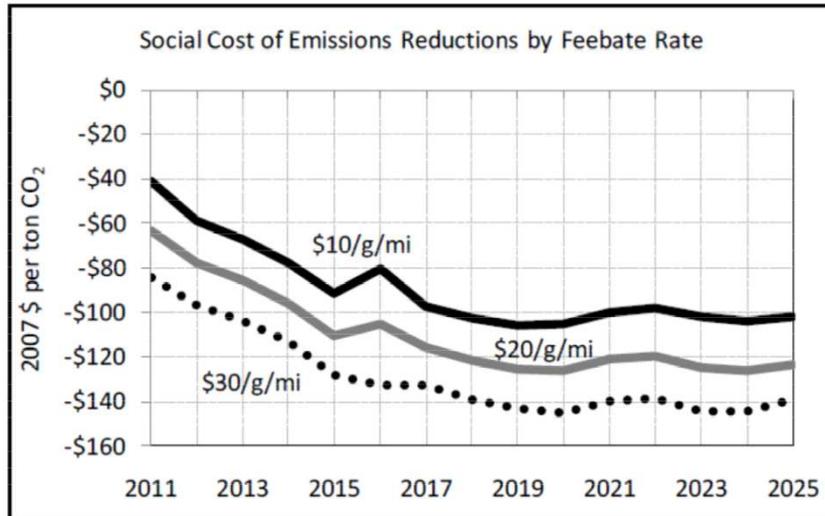


- ⌘ New vehicle salesweighted emissions averages
- ⌘ Impact on sales mix and sales levels
- ⌘ Effect on consumer welfare
- ⌘ Total reduction of CO<sub>2</sub>
- ⌘ Social costs and benefits of feebates

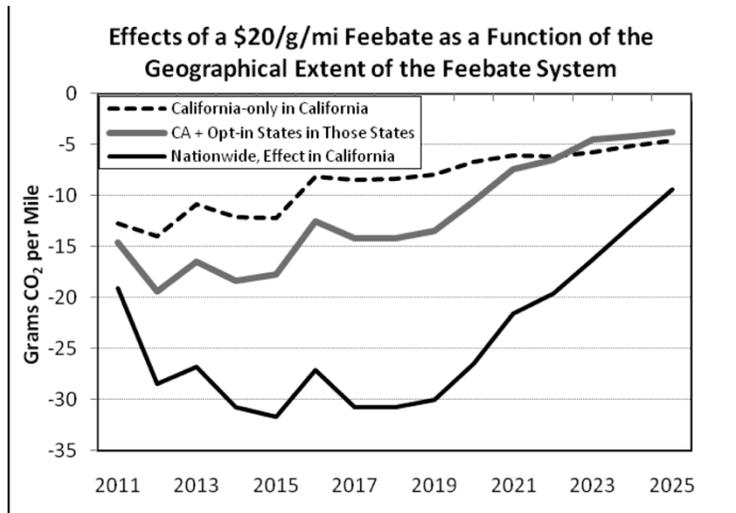
**The impact of a CA feebate system increases almost linearly with the size of the feebate rate.**



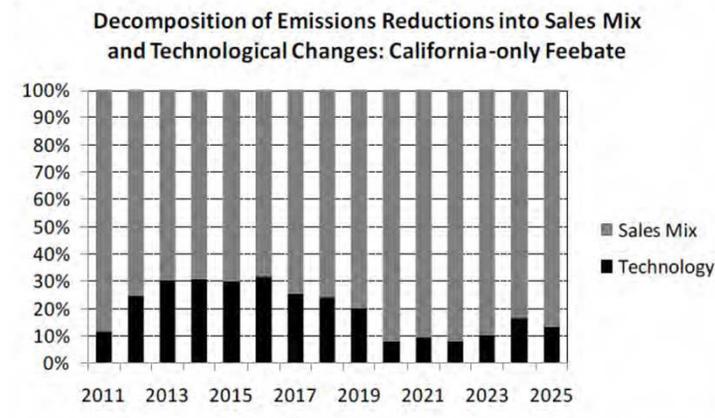
**Considering the full value of fuel savings, the full costs per ton of CO<sub>2</sub> avoided are negative.**



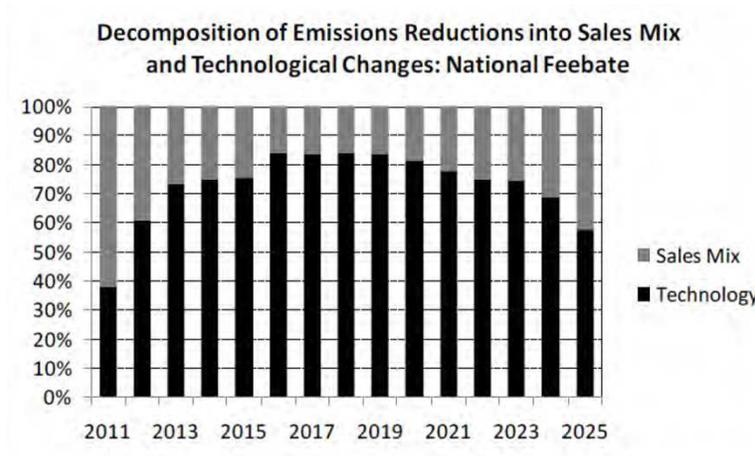
The greater the market coverage of the feebate system, the greater its impact on emissions.



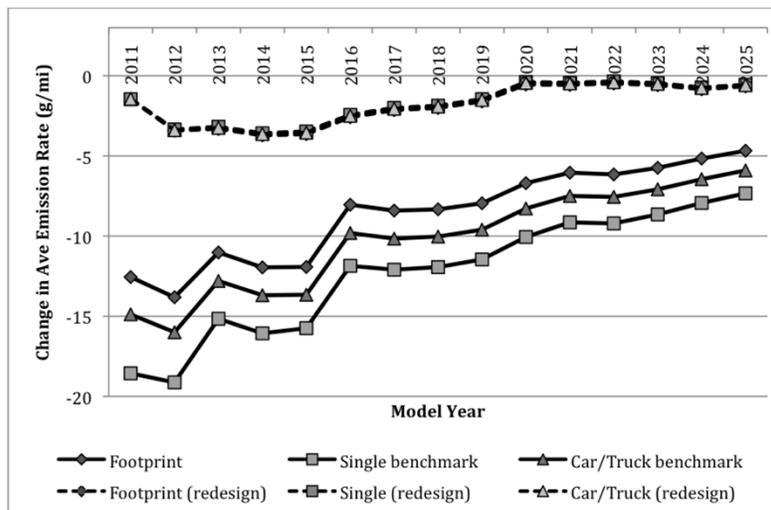
For a California feebate, most of the impact is due to sales-mix shifts, less to increased use of technology.



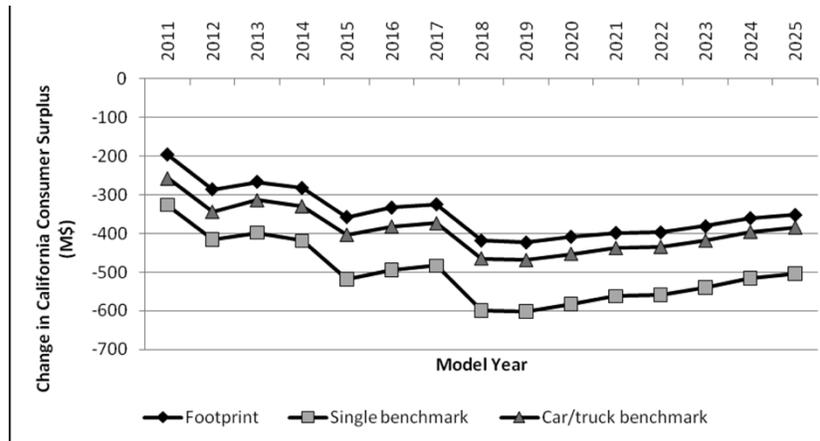
For a nationwide feebate system, most of the impact is due to increased use of fuel economy technologies.



The feebate benchmark structure affects sales but does not affect the adoption of technologies.



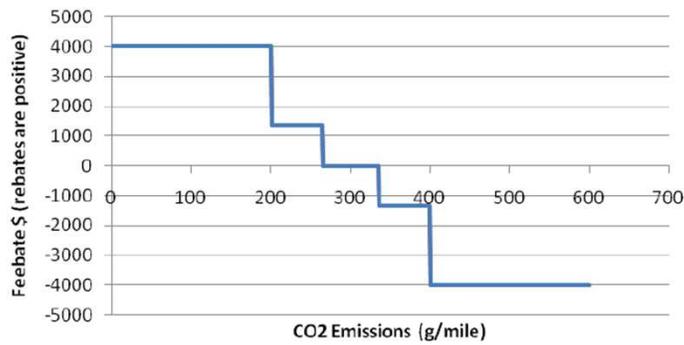
The footprint benchmark has the smallest impact on consumers' surplus. (Assuming consumers really do value only three years of fuel savings.)



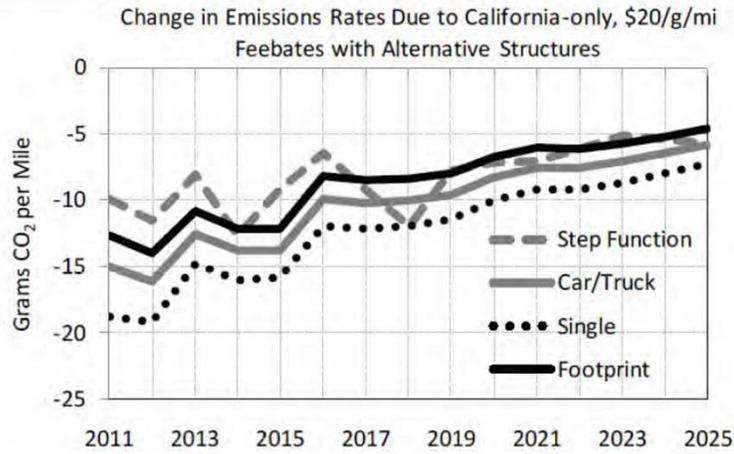
A step function (single benchmark) similar to France's Bonus Malus system was also tested.



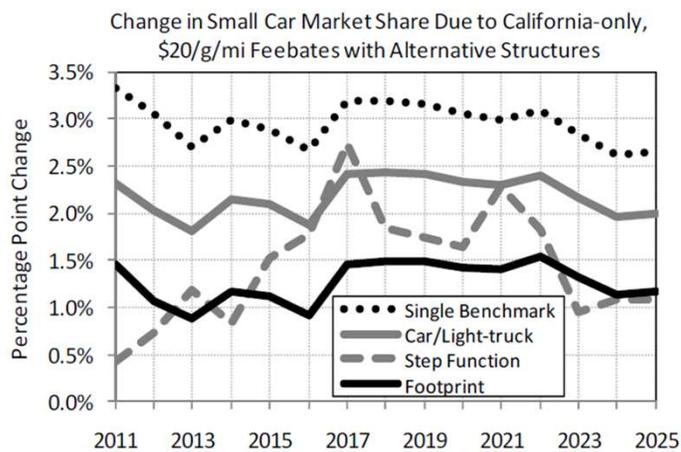
### Step Function Feebate



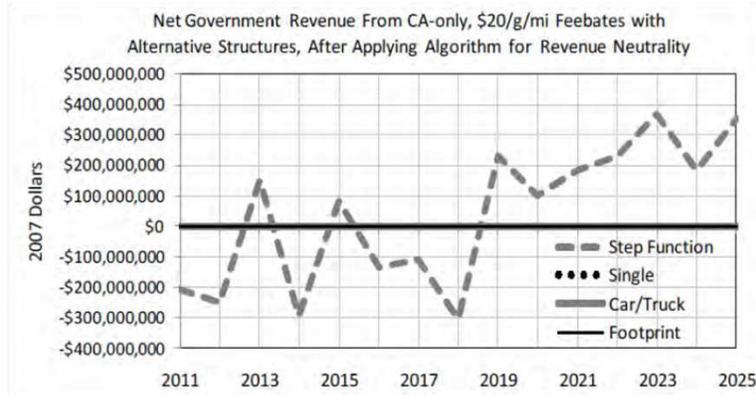
Step function and linear feebate produce similar reductions in emissions (compare to "Single").



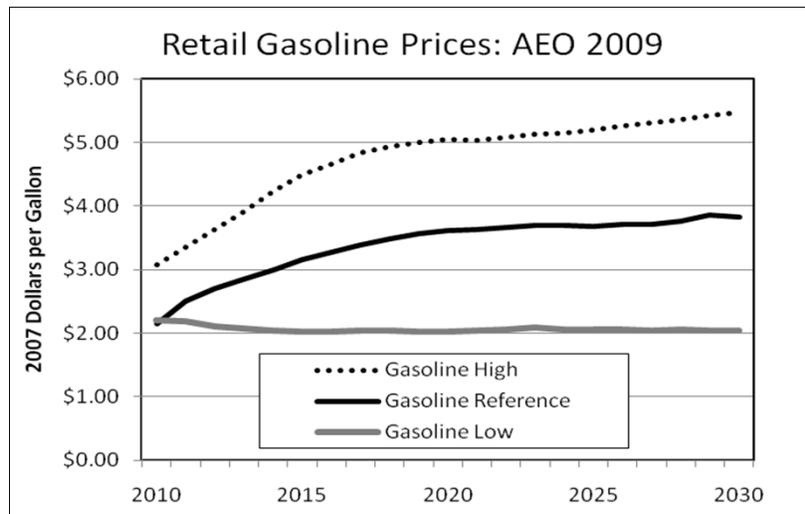
The step function is more prone to produce erratic market shifts (more difficult to control revenues).



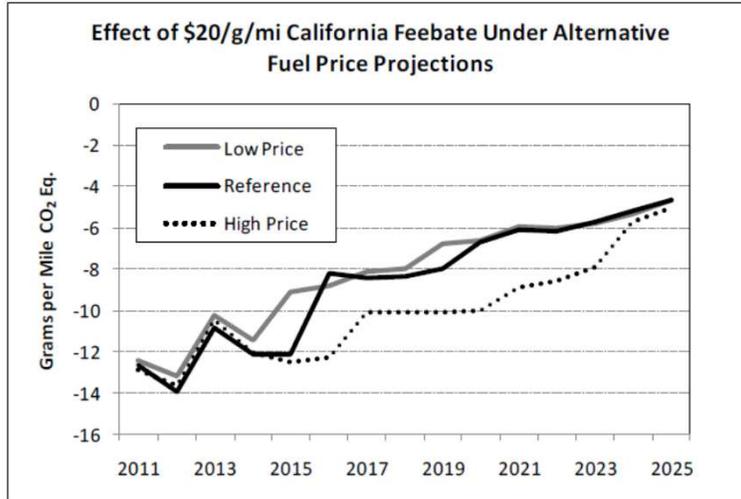
Even our computer algorithm had a tough time achieving revenue neutrality for the step function.



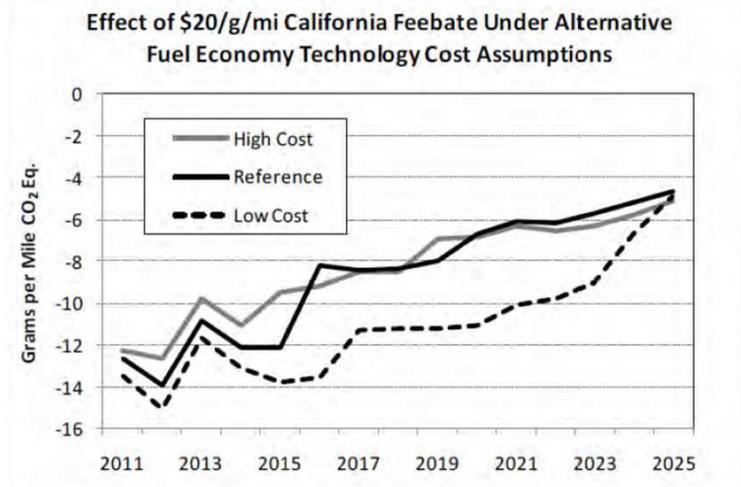
The 2009 AEO High, Reference and Low Oil Price Cases were used to test the sensitivity of the results to fuel prices.



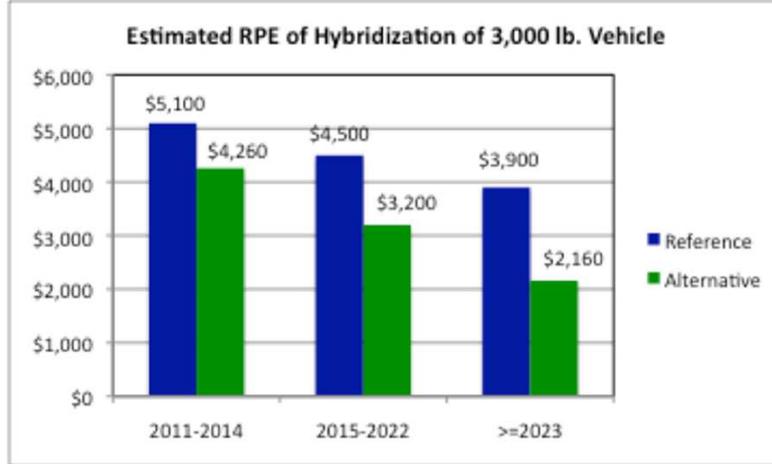
The impact of feebates is relatively insensitive to fuel prices. (At higher fuel prices, manufacturers do less “internal feebate pricing”.)



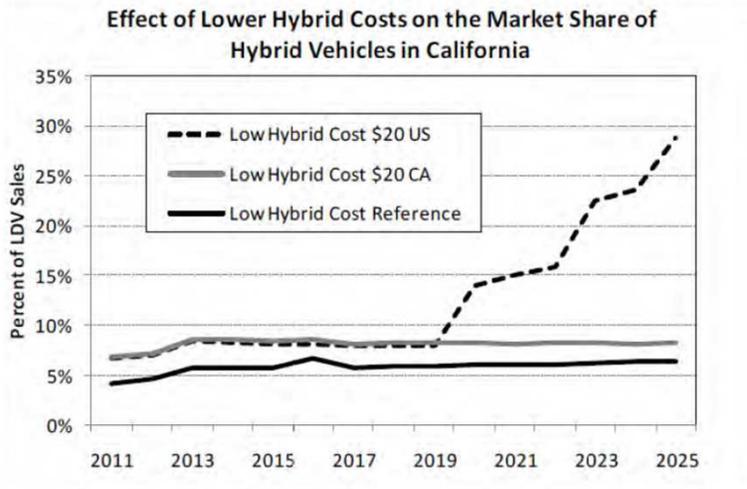
Similarly, if fuel economy technology is inexpensive feebates will have a larger impact.



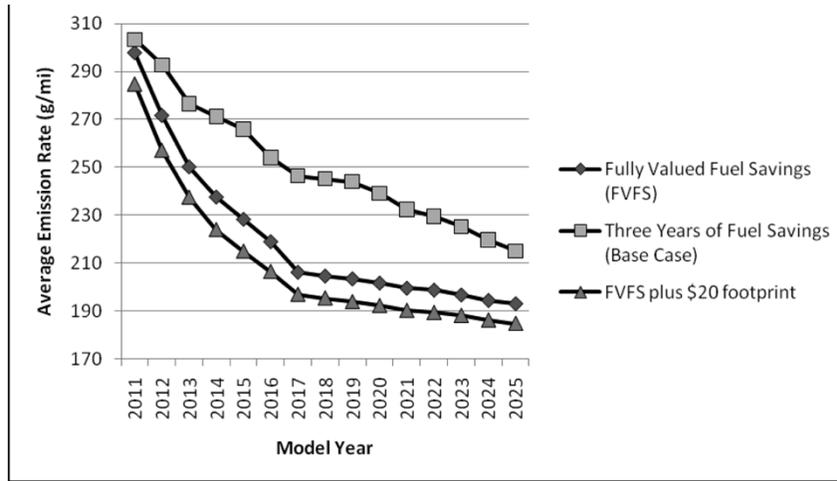
An alternative to relatively costly hybridization, based on achieving the MIT 2035 estimates 10 years early was tested.



Feebates could increase the market penetration of hybrid vehicle if by 2020 costs came down to levels anticipated by MIT's "On the Road in 2035" study.



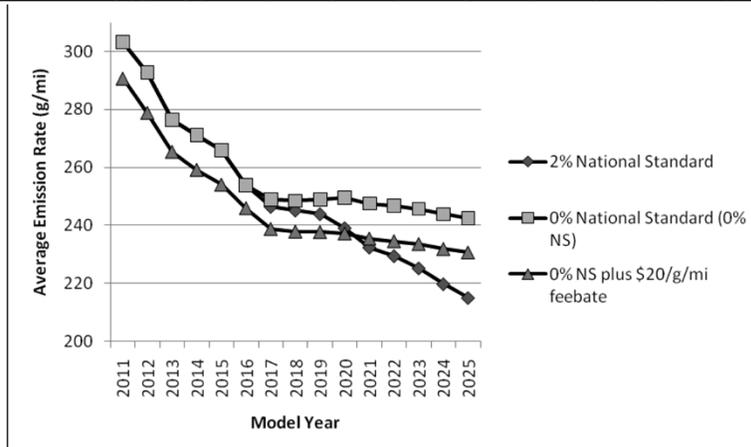
If consumers fully value lifetime fuel savings, feebates still have a similar impact on emissions, but the standards are not a binding constraint on manufacturers.



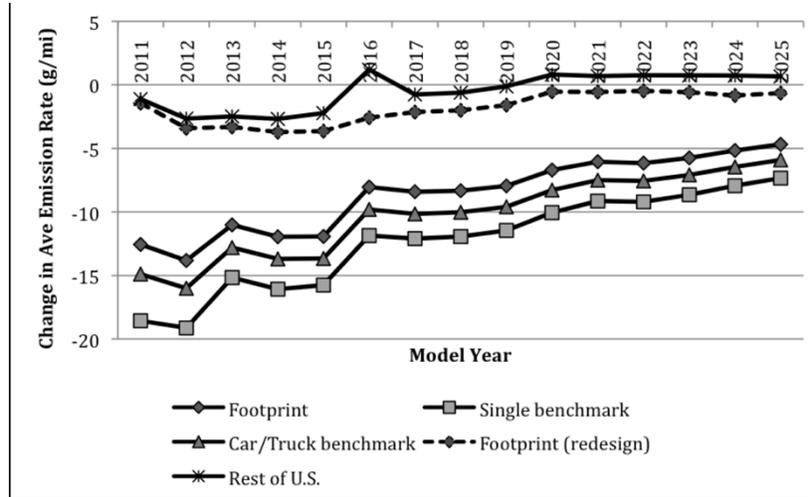
Feebates could replace the LEV III-GHG standard but they would have to increase over time.



Model Year	2017	2018	2019	2020	2021	2022	2023	2024	2025
Feebate rate (\$/g/mi)	5	5	5	10	15	20	30	35	40



Whether a California feebate system would produce spillover or leakage effects in the rest of the US depends on the stringency of the national emissions standards.



### Summary of Quantitative Analysis Findings



- ⌘ With emissions standards in effect, feebates will further reduce LDV GHG emissions depending on many factors.
- ⌘ Reductions of 5 to 20 g/mi occur immediately, depending on the size of the feebate rate (\$10 to \$30).
- ⌘ Reductions are obtained at negative cost, assuming car buyers typically undervalue future fuel savings.
- ⌘ Impacts will diminish over time if standards are very strict and technological progress is slow.

## Summary of Quantitative Analysis Findings (cont)



- ⌘ Feebates could have a very large impact on hybrid vehicle sales, depending on future costs of hybrids.
- ⌘ A national feebate would likely have 3 times the impact of a California-only feebate.
- ⌘ A linear feebate system will likely be easiest to manage.
- ⌘ A footprint feebate will have a smaller impact on consumer satisfaction and on GHG emissions, as well.

## Qualitative Analysis - Interviews



- Task 2: Interviews with experts, dealers, and OEMs
- Key experts on legislative staff and interest groups were consulted
- **Eight auto dealers** were interviewed
  - Dealers have had mixed and often negative experiences with other types of grant and incentive programs (e.g., Cash for Clunkers) that come with state reporting requirements.
  - Highly critical/negative of the program, both “ideologically” and in terms of resistance to additional administrative burden
  - Some (but not all) dealers are concerned with potential revenue losses under a feebate program. This concern is generally confirmed by quantitative modeling results.



## Task 2: Interview Findings –cont.-



- Six OEM interviews conducted
- The automakers are generally knowledgeable about feebates
- Less opposed than dealers, but not generally supportive
- They expressed a clear preference for a national rather than individual state programs.
- Want 3-4 years of lead time to plan before regulation would take effect
- Had a preference for linear as opposed to "step based" programs, and a mixed response to footprint and class-based programs
  - Footprint-based would be well harmonized with CAFÉ, but,
  - Either type would be too complicated for consumers to easily understand and thus not "transparent" enough.



## Task 2: Focus Group Approach



- Twelve focus groups conducted in two rounds in various parts of the state over a six-week period
- Locations included: Bay Area (2), Fresno (3), Los Angeles (3), Sacramento (2), San Diego (2)
- One Spanish language version in each round in Fresno and Los Angeles
- Protocol was modified slightly between Rounds 1 and 2 to probe some additional Feebate Program issues
- Focus groups were two hours long, with 8-10 participants
- Compensation was a \$100 gift card



## Task 2: Focus Groups - Findings



- General reaction to a basic feebate type program was mixed, but more negative than positive
- Seems “asymmetrical” in that negative reactions to fees seemed to dominate positive reactions to rebates
- Key finding that people seem readily able to understand the program fairly quickly
- Concerns expressed about fairness for large families and people who need larger vehicles for business
- “Class-based” type system seems more fair to some, but others found hard to understand
- Desire expressed for some lead time (weeks to several months) to avoid “buyers remorse”



## Task 2: Focus Groups - Findings (cont'd)



- Incentive levels of \$500 to \$1,000 appear insufficient to engender a significant consumer reaction when applied at the retail level
- Participants cited \$1,000 to \$5,000 as the range where their behavior would be affected or sometimes “around 10% of the purchase price”
- “Cash for clunkers” program active at the time may have influenced this finding (with rebates up to \$4,500)
- Participants would want rebates applied immediately and would in some cases use the funds to buy a better or “more loaded” vehicle



## Task 2: Focus Groups - Findings (cont'd)



- Participant familiarity was higher with “global warming” than with “greenhouse gas emissions”
- Highly variable belief in climate change as a real problem or that is partly caused by humans -- with clear patterns by state geography
- People were more familiar with air pollution and smog
- Considerable sensitivity expressed to vehicle purchases based on gasoline prices (e.g., recent purchases of more efficient vehicles, remorse over larger vehicle purchases during 2008 high gas prices, etc.)
- Concern/skepticism expressed about feebate revenue neutrality: “What if lots of people go after the rebates?”



## Task 7: Statewide Survey - Overview



- Target reached of “n = 3,000” completed statewide surveys with total of 3,072 completed surveys
- Conducted by phone and RDD by Ewald and Wasserman in English and Spanish (total of 281,060 calls placed!)
- Final survey went through extensive review and pre-testing
- Focus groups helped to develop key survey questions
- Sample was generally representative of state demographics but was weighted slightly to be more representative, and further “re-weighted” to be more geographically representative as well
- Full project report contains detailed analysis of survey results



## Task 7: Statewide Survey - Overview



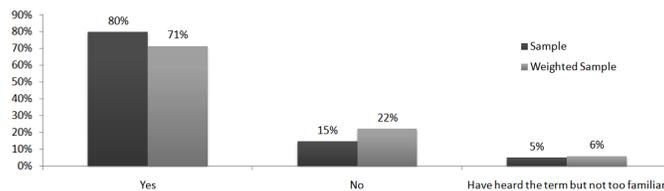
- Definition of program read to respondents:

“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.”

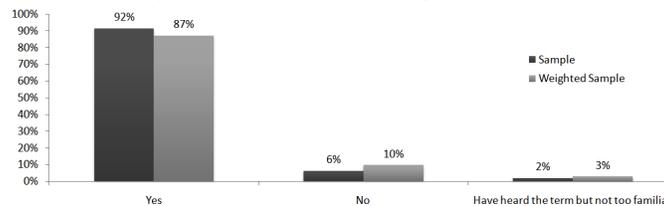
## Task 7: Statewide Survey - Findings



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



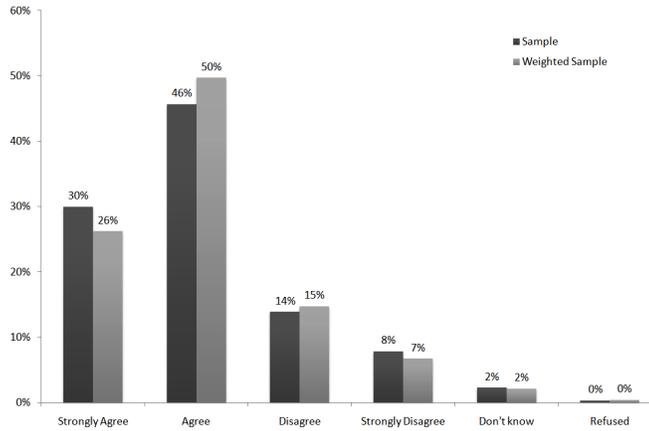
Were you familiar with the term "climate change" before the survey?



## Task 7: Statewide Survey - Findings



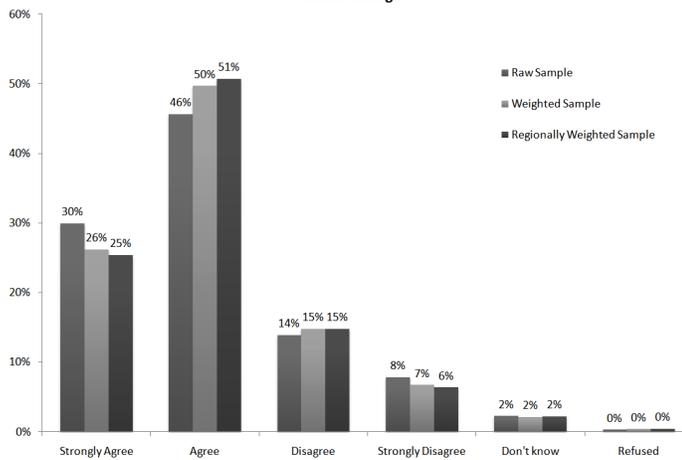
I would generally be supportive of this kind of program to help slow the rate of climate change.



## Task 7: Statewide Survey - Findings



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



# Task 7: Statewide Survey - Findings

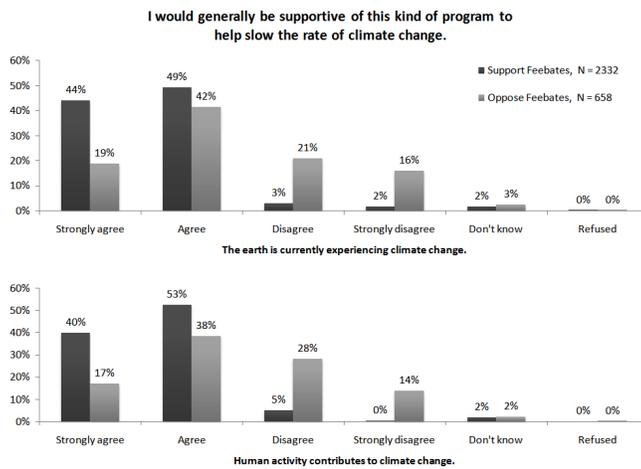


(a) Household Income	Support Feebates	Do not support Feebates	(b) Race	Support Feebates	Do not support Feebates
Less than \$10,000	6%	1%	Caucasian or White	31%	13%
\$10,000 to \$25,000	11%	1%	Hispanic	32%	5%
\$25,000 to \$35,000	7%	1%	African American	5%	1%
\$35,000 to \$50,000	10%	3%	Asian	5%	1%
\$50,000 to \$75,000	15%	3%	Native American or Alaskan Native	2%	0%
\$75,000 to \$100,000	10%	4%	Hawaiian or Pacific Islander	1%	0%
\$100,000 to \$150,000	11%	5%	Other	2%	1%
More than \$150,000	8%	4%	Refused	0%	0%
Total	78%	22%	Total	78%	22%

(c) Education	Support Feebates	Do not support Feebates	(d) Age	Support Feebates	Do not support Feebates
Did not complete high school	15%	2%	18 - 24	10%	3%
High school graduate	18%	6%	25 - 34	15%	4%
Some college	16%	6%	35 - 44	17%	4%
2-year college degree	6%	2%	45 - 54	15%	4%
4-year college degree	14%	4%	55 - 64	11%	3%
Graduate degree	8%	2%	65 - 74	6%	2%
Total	78%	22%	75 or over	4%	2%
			Total	78%	22%

# Task 7: Statewide Survey - Findings



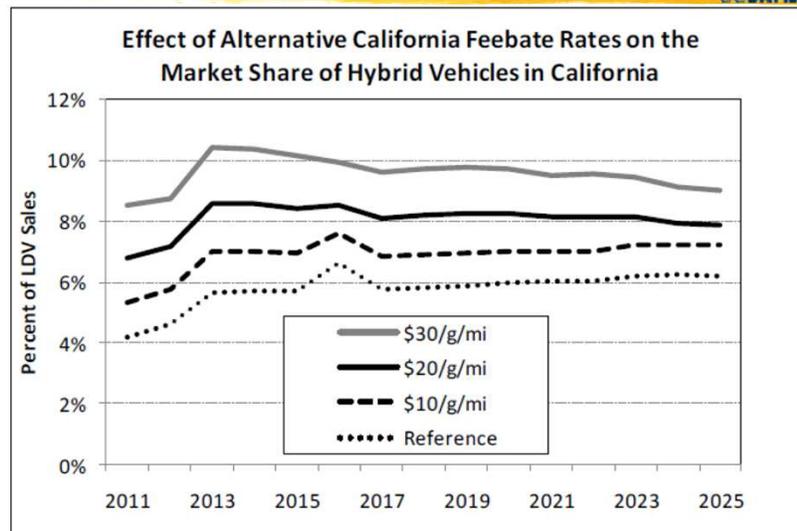
## Task 6: Policy Implications - Overview



- Task addressed various policy implications of Feebates Program:
  - Overall program efficacy
  - Program efficacy depending on assumptions of consumer value of fuel savings
  - Social equity – assessment of program “incidence” on demographic groups
  - Program admin. costs – varies somewhat by program design but were on the order of 1% of total fees collected
  - Interaction with other policies and programs
  - Potential surprises and exogenous factors: e.g., gas prices, prolonged economic downturn, major climate change events, etc.



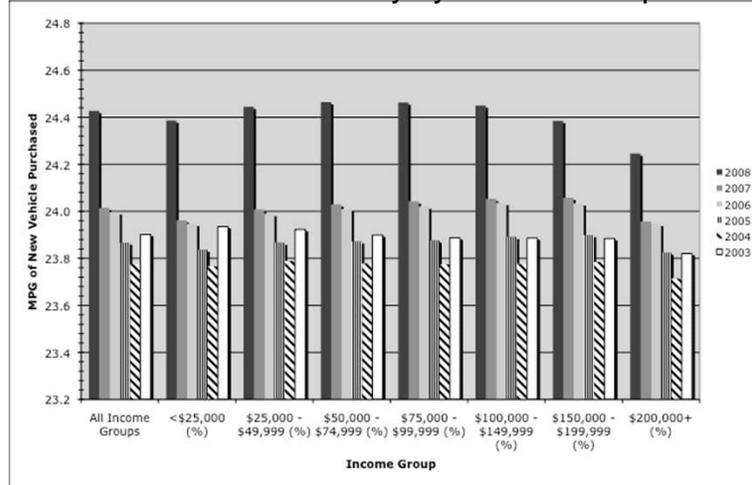
## Effect of Rate on Hybrid Vehicle Sales



## Task 6: Policy Implications



### New Vehicle Fuel Economy by Income Group in U.S.



## Task 6: Policy Implications - Equity



- Previous slide presented U.S.-based patterns, that differ somewhat from California patterns as projected in CARBITS
- CARBITS is California specific and also captures projected changes in automobile industry from 2011-2025
- In CARBITS, lowest income group has highest fuel economy for new vehicle purchases and average fuel economy decreases as income rises
- Profile for held vehicles more closely resembles previous pattern for U.S., suggesting lower income households may tend to have older vehicles with lower fuel economy in their fleets
- Since feebates program would apply to new vehicle purchases only, it does not appear to be a regressive policy



## Summary of Qualitative Analysis Findings



- Dealers are generally opposed to feebates
- OEMs have a mixed and more nuanced view, but have clear preference for the geographical level of feebates (national) and type of functional form (linear vs. step-based).
- Overall response to feebate programs was weakly or strongly negative in the focus groups. Although focus groups cannot yield statistically significant conclusions, this outcome is qualitatively different from the survey results and should not be summarily dismissed.
- However in the statewide survey (n=3072), a total of 76% of survey respondents either strongly agreed (26%) or agreed (50%) that they "would generally be supportive of this type of program to help slow the rate of climate change."
- Analyses of the impact of feebate policies on different income groups suggest that these policies are not regressive.



## Summary of Conclusions



1. There is evidence from case studies in four European countries to suggest that feebate programs can be effective in lowering the average emissions rates of new vehicles.
2. Quantitative models suggest that, under the right conditions, feebates can be used to reduce greenhouse gas emissions from new vehicles in California below national emissions standard levels. In addition, results indicate that feebates yield net positive social benefits aside from greenhouse gas reductions.
3. The ability to affect vehicle design decisions is one of the frequently stated benefits of feebate programs. However, because California is about 10% of the domestic market, feebate policies based in California alone would only have a limited effect on vehicle design decisions.



## Summary of Conclusions –cont.-



- 4. Quantitative models suggest that a single benchmark system (i.e. one that is not indexed to vehicle size or class) would yield the largest reduction in greenhouse gas emissions, but also the largest reduction in consumer welfare (measured by Consumer Surplus). However, when future fuel savings are taken into account, a single benchmark system would yield the largest net social benefit.
- 5. Quantitative models suggest that, under the right conditions, feebates could be used to reduce greenhouse gas emissions in lieu of more stringent performance-based standards beyond 2016. A properly designed feebate program could be used as a substitute for increasingly stringent GHG standards for new vehicles beyond 2016 (i.e. LEV III-GHG). This would require raising the feebate rate over time, from \$5/g/mi up to \$40/g/mi by 2025.
- 6. Although a single benchmark system would yield the largest net social benefit, issues of equity and fairness among stakeholders could require consideration of alternatives.



## Summary of Conclusions –cont.-



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- 6. Although a single benchmark system would yield the largest net social benefit, issues of equity and fairness among stakeholders could require consideration of alternatives.



## Summary of Conclusions –cont.-



- 7. Model results suggest that there would be a decline in new vehicle sales under all feebate programs, with an associated 1% drop in industry revenue for the California market. Although this is small in percentage terms, it is significant in terms of dollar amounts.
- 8. Feebate systems have an impact on sales patterns. All systems increase the demand for non-prestige cars (particularly small ones) and decrease the demand for all other vehicle types, particularly SUVs. However, there are differences across systems. A footprint-based system yields the smallest increase in small car demand, the single benchmark yields the largest, and a two-benchmark (car/truck) system lies in between.
- 9. Because product portfolios vary across manufacturers, they are affected differently by sales-mix shifts.



## Summary of Conclusions –cont.-



- 10. Analyses of the impact of feebate policies on different income groups suggest that these policies are not regressive.
- 11. Results from a large statewide survey (sample size of 3,000) indicate that consumers in California are generally concerned with anthropogenic climate change and energy independence, and would be supportive of a feebate system.
- 12. Automobile dealers are generally opposed to feebate programs due to concerns about administrative burdens, lost revenues, and broader “ideological” opposition to government policies that are perceived to reduce consumer choice.
- 13. Automobile manufacturers are mixed in their support or opposition to feebate programs, some citing it as being in line with their corporate stance for “environmental stewardship” but others being concerned about potential negative effects on sales revenues that also could impact dealers.



## Summary of Conclusions –cont.-



- 14. Administrative costs for feebate programs are estimated to range from \$4.6 to \$6.5 million annually (plus \$2-\$4 million in startup costs). This cost is relatively small when compared to the volume of revenue flow in a feebate program, is on the order of 1% of total fees collected, and is consistent with the level of administrative burden that is typical of state programs of this sort.
- 15. The potential effectiveness of feebate programs is affected by future events that in some cases can be unpredictable, such as gasoline price changes, cost evolutions for new technologies, or changes in automobile market structure. The future stringency of fuel economy or greenhouse gas emission standards is also found to be a key factor in the incremental benefits of a California-level feebate program. Policymakers should be aware of the potential for these events to interact with feebate program implementation and potentially affect overall effectiveness.

