

Vehicle Feebates for States

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Air Innovations Conference
September 8, 2006



Feebate defined

- A feebate is a mechanism to incentivize the production and purchase of low-emissions (here, low-GHG) vehicles.
- Consists of a sliding scale of fees and rebates imposed on new vehicles, where the size of the rebate or fee is determined by the vehicle's emissions relative to those of a baseline vehicle.



Why feebates?

- Potentially large benefits
- Market-based
- Eliminates a market failure: car buyers allegedly value only 3 years of fuel savings
- Provides continuing incentive for improvement
- Can be revenue-neutral and self-adjusting



History

- CA (early 90s) – Drive+ passed legislature but vetoed by governor
- MD (early 90s) – Feebate signed into law, Bush I administration raised objections
- CT (last year) - Legislature required DEP to evaluate feebate options, but ultimately adopted a program of labeling + rebates
- No feebates in place in U.S. today (but much interest)



Current setting

- Many states eager to take steps toward greenhouse gas reduction
- States adopting CA vehicle GHG standards want a market-based complement
- U.S. Congress interested as well (anything but CAFE standards!)



Feebate design

- Simplest design is to make fee/rebate proportional to GHG emissions or fuel consumption, relative to some “zero point”
- Qs to answer:
 - Zero point = ?
 - Varies by vehicle class?
 - Rate (\$ per mile per gallon)?



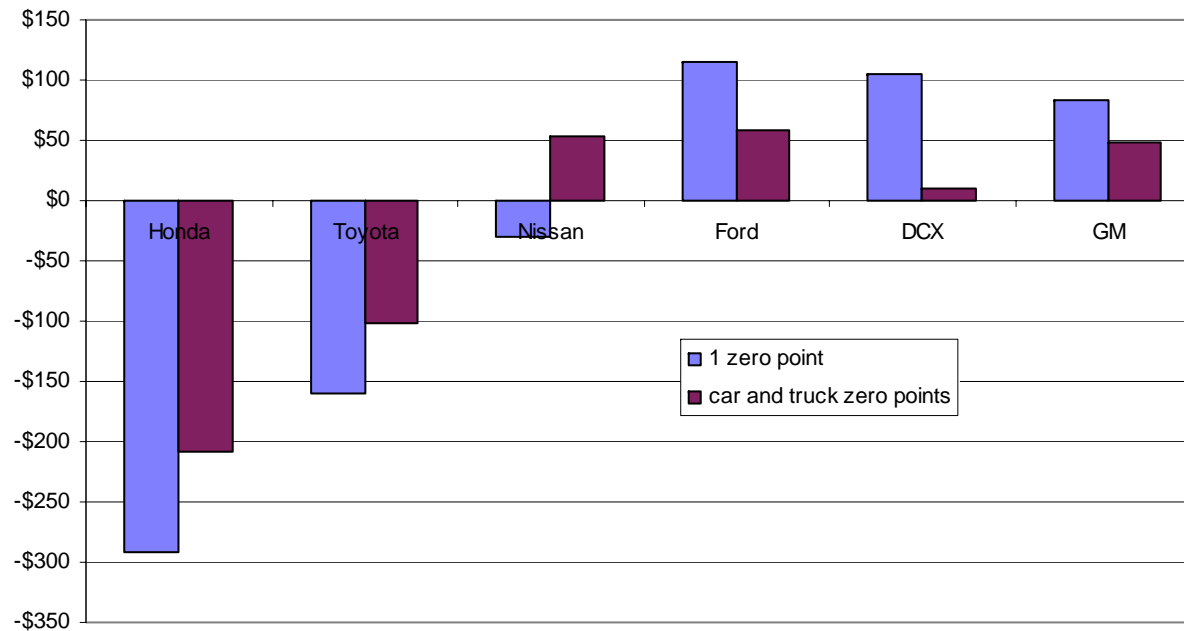
Should zero point vary by vehicle class?

- Using a zero point that depends on vehicle class is a way to reduce differential impacts among manufacturers
- But lowers emissions reductions and can result in a low-emitting vehicle in one class receiving a rebate smaller than rebate for a higher-emitting vehicle in another class
- Decision need to be based on context and objectives



Feebate - \$500 per gallon per 100 miles

Average Per-Vehicle Fee by Manufacturer



Source: ACEEE analysis based on data from the National Highway Transportation Safety Administration 2003 CAFE database



Fees and rebates for most popular vehicles and hybrids at \$1,000 per gallon per 100 miles

		Est. MPG (lab 55/45)	Single zero point	Separate car and truck zero points
Cars				
Toyota	Camry	31.4	\$880	\$275
Honda	Accord	30.7	\$808	\$203
Honda	Civic	38.9	\$1,494	\$890
Nissan	Altima	29.8	\$709	\$105
Chevrolet	Impala	28.1	\$506	-\$99
Toyota	Corolla	39	\$1,501	\$896
Ford	Taurus	26.3	\$263	-\$342
Chevrolet	Cobalt	33.1	\$1,044	\$439
Chevrolet	Malibu	31	\$839	\$234
Ford	Focus	32.9	\$1,026	\$421
Toyota	Prius	65.8	\$2,545	\$1,940
Honda	Civic Hybrid	56.3	\$2,289	\$1,684
Trucks				
Ford	F-150	18.2	-\$1,198	-\$568
Chevrolet	Silverado	19.1	-\$743	-\$113
Dodge	Ram	17.5	-\$1,370	-\$740
Ford	Explorer	18.3	-\$1,143	-\$513
Dodge	Caravan	24.8	\$33	\$663
GMC	Sierra	19.2	-\$743	-\$113
Chevrolet	TrailBlazer	18.4	-\$1,116	-\$487
Jeep	Grand Cherokee	20.5	-\$630	\$0
Chrysler	Town & Country	24.3	-\$50	\$580
Honda	Odyssey	25.7	\$174	\$804
Ford	Escape Hybrid	36.7	\$1,533	\$2,163

Negative numbers are fees.

Effects of a feebate

- Effects are not known
- LBNL analysis in 1995
 - Used a “discrete choice model”
 - Assumed manufacturers will put in new vehicles any technology that is less expensive than change in feebate value they would produce
 - Concluded 90% of effect is improvement in vehicle tech (not change in consumers’ choices)
- ORNL analysis in 2005
 - Similar approach
 - **Concluded 16% increase in fuel economy for \$500 feebate, 29% for \$1000 feebate**



Effects (cont.)

- Effect on GHG or fuel economy is independent of location of zero point.
- At the national level, improvement is due almost entirely (90%-95%) to manufacturer response.
- Do these models capture consumer behavior reasonably well?
 - Valuation of fuel savings
 - Response to fee/rebate



Effects at the state level

- How would the effect of a feebate change if adopted at the state level?
 - Manufacturers will respond less, but
 - Consumers will respond somewhat more



Effects at state/regional level

- Preliminary ACEEE analysis using variant of the Oak Ridge model, adapted by Transport Canada for submarket analysis, indicates that a feebate (rate: **\$1000** per gallon per 100 miles) in the Northeast would **reduce vehicle emissions by 8%** (relative to the reference case) once technologies available today are phased in.



Current activity

- In California, feebate bill passed Assembly, not Senate; to be re-introduced in 2007
- Canada conducted an analysis indicating that emissions reduction (per vehicle) from a Canada-only feebate would be on the order of ½ US reduction; program on hold
- Several U.S. Senators interested, but thus far have decided to back a rebate-only version



Issues for states

- Except for the largest states, unilateral action leads to modest direct benefits
- Caveat: Consumer response may be far greater than expected; model is based on “rational” consumer decisionmaking
- Will be cast as a tax, even if program is revenue-neutral
- Business community may require special attention



Recommendations for states

- The design should be simple. There must be a clear association between feebate value and choice of vehicle at the time of sale.
- Maximize, don't minimize, consumer attention to the program. Consumer awareness may be the primary benefit of most single-state programs.
- Moderate the feebate impacts through the choice of feebate rate, not by setting "cut-off" points or exempting certain vehicle classes



What are prospects for state feebates?

- Not an easy measure for states to adopt, but a single well-designed program may spur several states to act
- Environmental benefits substantial, minimal fiscal burden
- Predict a state or regional feebate within three years

