

Climate Change Measure A.1.iii – Provide Incentives for Early Vehicle Retirement

Description

This is analysis of the potential impact of the “Accelerated Retirement of Inefficient Vehicles Act of 2009” proposed in the US Senate on January 14, 2009 by Senators Feinstein, Collins and Schumer. The bill provides a financial incentive to replace “high fuel consumption automobiles” with a “fuel efficient automobile.” Vouchers are awarded over a four year period (beginning January 1, 2009) and are valid for up to two years. The program will last for six years.

Eligibility

A “high fuel consumption automobile” can be a vehicle of any model year before 2008 for which the original certified measured fuel economy level is less than 18 mpg.

A “fuel efficient automobile” achieves a measured fuel economy that exceeds by 25 percent the fuel economy standard prescribed by the Secretary of Transportation.

Voucher Redemption Values

A voucher issued under the program during the 4-year period beginning on January 1, 2009, may be applied to offset the purchase price of a new fuel efficient automobile by

- \$ 4,500 if the eligible high fuel consumption automobile was manufactured for a model year that is 7 or fewer years less than the calendar year in which the voucher was issued;
- \$ 3,000 if the eligible high fuel consumption automobile was manufactured for a model year that is 8 to 10 years less than the calendar year in which the voucher was issued;
- \$ 2,500 if the eligible high fuel consumption automobile was manufactured for a model year that is 11 or more years less than the calendar year in which the voucher was issued;

Analysis Approach

- Use sketch planning analysis to calculate emissions reductions which result from the program implementation by estimating emissions with the old versus the new vehicles.

Assumptions

- This analysis only considers vehicles from a subset of the region using 2008 vehicle registration data for Montgomery County, the District of Columbia, and Fairfax County.
- Vehicles will be purchased with the vouchers over six years (2009 -2014).

- 2% of all eligible vehicles will be replaced each year and 12% of all eligible vehicles will be retired within 6 years.
- While the bill has provisions for purchasing either a new or used vehicle, this analysis only addresses the purchase of a new vehicle.
- The fuel efficiency of vehicle classifications comes from Mobile 6 with adjustments made by a consultant to reflect increasing CAFÉ not reflected in Mobile 6.
- Based on the average fuel efficiency of each vehicle class, it is assumed for this analysis that 50% of LDT2 vehicles and 80% of LDT3&4 vehicles would achieve less than 18 mpg.
- Fuel savings are based on vehicles traveling 10,000 miles per year.
- CO2 estimates are based on 8,788 grams CO2/gallon of gasoline.

Impact

Travel

No travel impacts as the VMT is assumed to be the same

Emissions

The CO2 emissions reductions for all the vehicles are estimated to be 158,586 tons in the first year (2009) of the program. The cumulative CO2 emissions reductions are estimated to be 2,420,825 tons after the sixth year (2014) of the program.

Cost

The cost is estimated to be \$ 24,372,062 in the first year (2009) of the program. The cumulative cost is estimated to be \$ 128,824,139 after the sixth year (2014) of the program.

Cost Effectiveness

The cost effectiveness for the first year of the program is estimated to be \$154 per ton of CO2 in 2009 and the cost effectiveness for the last year of the program is estimated to be \$53 per ton of CO2 in 2014.

(See attached tables for details)

Table a. High Fuel Consumption Automobiles in DC, MC, and FFX

	<= 7 years old	8-10 years old	11+ years old	All Vehicles
2009	188,516	64,713	70,457	323,686
2010	160,812	73,898	88,976	323,686
2011	130,281	82,152	111,253	323,686
2012	93,662	94,854	135,170	323,686
2013	61,037	99,775	162,874	323,686
2014	29,646	100,635	193,405	323,686

Table b. Vehicles Participating in the program

	<= 7 years old	8-10 years old	11+ years old	All Vehicles
2009	3,770	1,294	1,409	6,474
2010	3,216	1,478	1,780	6,474
2011	2,606	1,643	2,225	6,474
2012	1,873	1,897	2,703	6,474
2013	1,221	1,996	3,257	6,474
2014	593	2,013	3,868	6,474

Table c. Cumulative Annual Fuel Savings (gallons)

	<= 7 years old	8-10 years old	11+ years old	All Vehicles
2009	9,234,094	3,255,713	3,881,027	16,370,834
2010	26,357,329	10,158,444	12,651,915	49,167,688
2011	46,614,606	19,027,274	24,226,686	89,868,567
2012	68,803,559	29,849,504	38,692,794	137,345,857
2013	92,097,336	42,472,697	56,184,828	190,754,862
2014	115,908,889	56,850,564	77,142,289	249,901,742

Table d. Cumulative Annual CO2 Reduction (tons)

	<= 7 years old	8-10 years old	11+ years old	All Vehicles
2009	89,452	31,538	37,596	158,586
2010	255,326	98,406	122,560	476,293
2011	451,561	184,319	234,687	870,567
2012	666,508	289,155	374,821	1,330,484
2013	892,157	411,438	544,269	1,847,863
2014	1,122,822	550,718	747,286	2,420,825

Table e. Cumulative Cost of the Program

	<= 7 years old	8-10 years old	11+ years old	All Vehicles
2009	\$ 16,966,439	\$ 3,882,780	\$ 3,522,844	\$ 24,372,062
2010	\$ 31,439,516	\$ 8,316,649	\$ 7,971,647	\$ 47,727,812
2011	\$ 43,164,785	\$ 13,245,758	\$ 13,534,311	\$ 69,944,854
2012	\$ 51,594,327	\$ 18,937,023	\$ 20,292,805	\$ 90,824,154
2013	\$ 57,087,621	\$ 24,923,545	\$ 28,436,499	\$ 110,447,665
2014	\$ 59,755,743	\$ 30,961,643	\$ 38,106,754	\$ 128,824,139

Table f. Cumulative Cost Effectiveness (\$/ton CO2)

	All Vehicles
2009	\$ 154
2010	\$ 100
2011	\$ 80
2012	\$ 68
2013	\$ 60
2014	\$ 53