



DEPARTMENT OF THE NAVY  
HEADQUARTERS UNITED STATES MARINE CORPS  
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IN REPLY REFER TO:

11240  
LFS-24  
FEB 15 2007

MEMORANDUM FOR DEPUTY UNDERSECRETARY OF DEFENSE (INSTALLATIONS  
AND ENVIRONMENT)

Subj: UNITED STATES MARINE CORPS FISCAL YEAR 2006 ALTERNATIVE  
FUEL VEHICLE (AFV) REPORT

Encl: (1) Fleet AFV Program Report For FY 2006

Ref: (a) EO 13149  
(b) Energy Policy Act of 1992

1. As required by ref (a), the enclosure is submitted.
2. The Marine Corps accomplished the following:
  - a. Achieved 199% of the AFV acquisitions requirement identified in ref (b).
  - b. Exceeded Fleet Fuel economy requirement by 3.5 miles per gallon.
  - c. Reduced petroleum fuel consumption by 28.5% compared to the 1999 baseline.
3. The Marine Corps used alternative fuels 27.9% of the time in AFVs but did not meet the greater than 50% requirement per ref (a). This represents an increased use of alternative fuels over the previous five years due to increased infrastructure.
4. Point of contact is Mr. Barry Smallwood, LFS-2, at commercial (703) 695-7010 or DSN 225-7010.

  
C. F. Smith  
By direction

Copy to:  
OASN (I&E)  
DoE Code EE-34, Room 5G086

# U.S. Marine Corps

## Fleet Alternative Fuel Vehicle Acquisition Report

Compliance with EPOA and E.O. 13149 in Fiscal Year 2006

This report summarizes the United States Marine Corps Fiscal Year (FY) 2006 fleet performance in meeting the requirements of the Energy Policy Act (EPOA) of 1992 (Public Law 102-486), section 705 of the EPOA of 2005 (Public Law 109-58) and in meeting the goals of Executive Order (E.O.) 13149, "Greening the Government through Federal Fleet and Transportation Efficiency" (65 FR 24607), which was signed in April 2000 (Exhibit 1).

Authority/ Mandate	Performance Measure	Goal/Requirement	USMC Performance in FY 2006
EPOA	Alternative fuel vehicle (AFV) acquisitions	75 percent of the 344 covered light-duty vehicles (LDV) acquired in FY 2006 must be AFVs	Acquired 460 AFVs, earned 224 additional credits <sup>1</sup> for total of 684 credits; or 199 percent of covered acquisitions
E.O. 13149	Alternative fuel use in AFVs	By FY 2005, increase alternative fuel use in AFVs to a majority of the total fuel used in those vehicles	Achieved 27.9 percent alternative fuel use in AFVs
	Fuel economy of light-duty acquisitions	By FY 2005, increase fuel economy by 3 miles per gallon (mpg) compared to FY 1999 baseline of 17 mpg	Increased to 23.5 mpg, an increase of 6.5 mpg over the FY 1999 baseline
	Petroleum consumption	By FY 2005, reduce covered consumption by 20 percent compared to FY 1999 baseline <sup>2</sup> of 10,527,804 gasoline gallon equivalent (GGE)	Consumed 7,522,559 GGE, a decrease of 28.5 percent from the FY 1999 baseline

<sup>1</sup>Earned credits for acquisition of dedicated light-duty AFVs and biodiesel use.

### Exhibit 1. USMC Performance in Meeting EPOA and E.O. 13149

#### EPOA Compliance

For the eight consecutive year, the Marine Corps exceeded its EPOA requirements in FY 2006. As a result of its AFV acquisitions and biodiesel fuel use, the Marine Corps in FY 2006 earned AFV acquisition credits amounting to 199 percent of its covered vehicle acquisitions, which is 124 percentage points higher than the 75 percent AFV acquisition requirement (Appendix A). In short, the Marine Corps:

- Acquired 460 AFVs - 202 more than the 75 percent compliance requirement of 258 vehicles.
- Received an additional 224 credits through the acquisition of dedicated light-duty AFVs and the use of biodiesel.
- Earned a total of 684 credits (including vehicle acquisitions and additional credits)—199 percent of covered acquisitions.

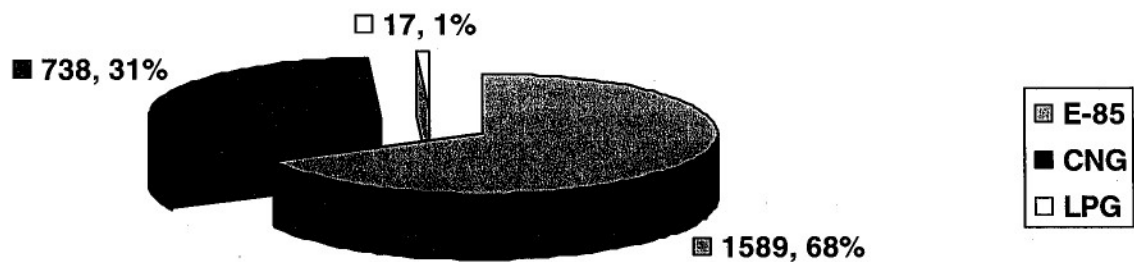
### Credits

In FY 2006, the Marine Corps earned 684 credits. Federal fleets earn one credit for every bi- or flexible-fuel AFV acquired and for every 450 gallons of neat biodiesel (B100) or 2,250 gallons of B20 (20 percent biodiesel and 80 percent petroleum diesel) used. Additional credits are earned for AFVs that operate exclusively on alternative fuels. For this reporting period the Marine Corps earned 460 credits for AFV acquisitions, 129 credits for biodiesel use, and 95 additional credits for purchasing 79 dedicated light-duty and 7 dedicated medium-duty AFVs.

### Vehicles

Flexible-fuel vehicles (FFVs), that run on E85 (85 percent ethanol, 15 percent gasoline) or gasoline, were the AFV of choice in FY 2006. Of the 460 AFVs acquired in FY 2006, 320 of them were FFVs. Also, 140 compressed natural gas (CNG) vehicles were acquired.

FFVs capable of operating on E85 comprise the majority of the Marine Corps AFV fleet (Exhibit 2), with CNG vehicles making up most of the balance. As the availability of CNG vehicle models decreases, these vehicle types will become less prevalent in the Marine Corps fleet. Of the 2,344 AFVs, only 17 are liquefied petroleum gas (LPG) vehicles.



**Exhibit 2. USMC's Total AFV Inventory**

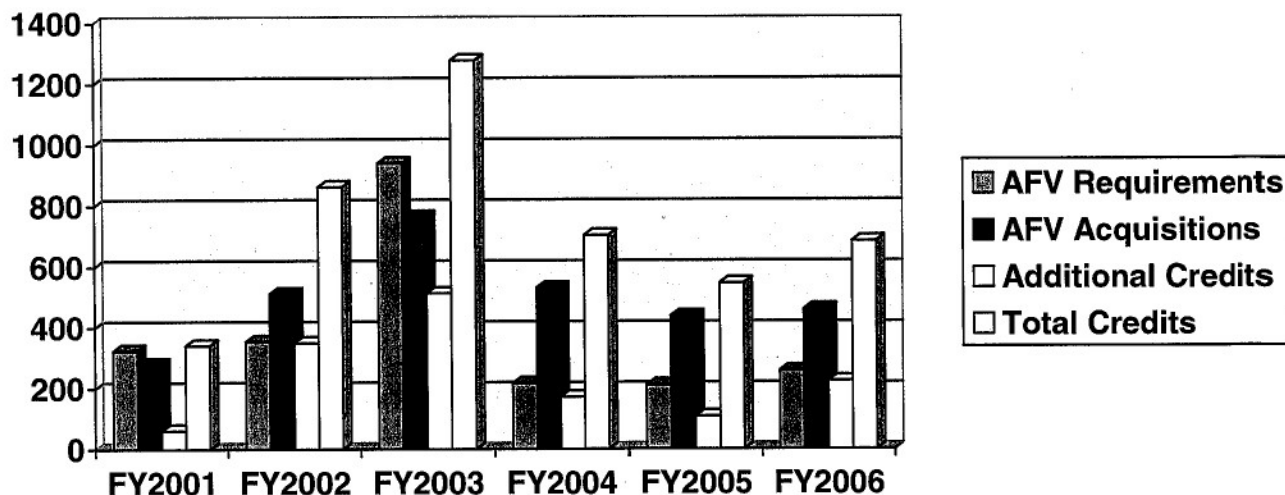
### Exemptions

Of the 1,801 total LDVs acquired by the Marine Corps in FY 2006, 1,457 vehicles (80 percent) were considered exempt from compliance with EPA. Exemptions are granted for fleet size, geographic location or use outside a Metropolitan Statistical Area/Consolidated Metropolitan Statistical Area (MSA/CMSA), and use for law enforcement. In FY 2006, exemptions were granted as follows:

- Fleet Size (1,177)
- Geographic (215)
- Law Enforcement (30)
- Non-MSA/CMSA Operation/Fleet (35)
- Non-MSA/CMSA Operation/Vehicles (0)

### FY 2007/2008 Projected Acquisitions

The attachments to this report offer a detailed look at the Marine Corps' FY 2006 acquisitions and its projected acquisitions for FY 2007 and FY 2008. As illustrated in Exhibit 3, the Marine Corps exceeded EPA requirements since FY 2001 and will continue to exceed these requirements in the next two years (Appendices B and C).



**Exhibit 3. EPA AFV Acquisitions, Credits, and Requirements**

### **E.O. 13149 Compliance**

E.O. 13149 calls for each agency to reduce vehicular petroleum consumption by 20 percent by the end of FY 2005 and specifies three approaches agencies should take to achieve this goal:

- Comply with EPA's annual AFV acquisition requirements (as previously discussed).
- Use alternative fuels in fleet AFVs the majority of the time.
- Increase the fuel economy of LDV acquisitions (excluding AFVs) by 3 mpg by the end of FY 2005, as compared to baseline FY 1999 acquisitions.

### **Use Alternative Fuels in AFVs**

In FY 2006, 27.9 percent of the fuel used in the Marine Corps AFVs was alternative fuels. As more infrastructure becomes available this percentage will continue to increase. The Marine Corps recently invested to build three new alternative fuel stations at Marine Corps locations across the United States. As these stations come on line, more alternative fuel will be available for the bi- and flexible-fuel vehicles that dominate the Marine Corps AFV fleet. We will continue to work toward greater access to alternative fuel for fleet vehicles.

Exhibit 4 compares the Marine Corps' covered fuel use in FY 2006 and FY 1999. Alternative fuels comprise a growing portion of the Marine Corps' covered fuel use, representing 13 percent in FY 2006, up from 0 percent in FY 1999. During this period, the Marine Corps' total covered fuel consumption decreased 17.9 percent, yet the Marine Corps reduced covered petroleum consumption by 28.5 percent, largely by replacing petroleum fuel with alternative fuels including Biodiesel.

#### Improve Fuel Economy

Toward the petroleum reduction goal set forth in E.O. 13149, the E.O. calls for each agency to increase the fuel economy of its LDV acquisitions (excluding AFVs). Each year since FY 1999, the Marine Corps has increased the average fuel economy of its vehicles and achieved a 6.5 mpg improvement in FY 2006.

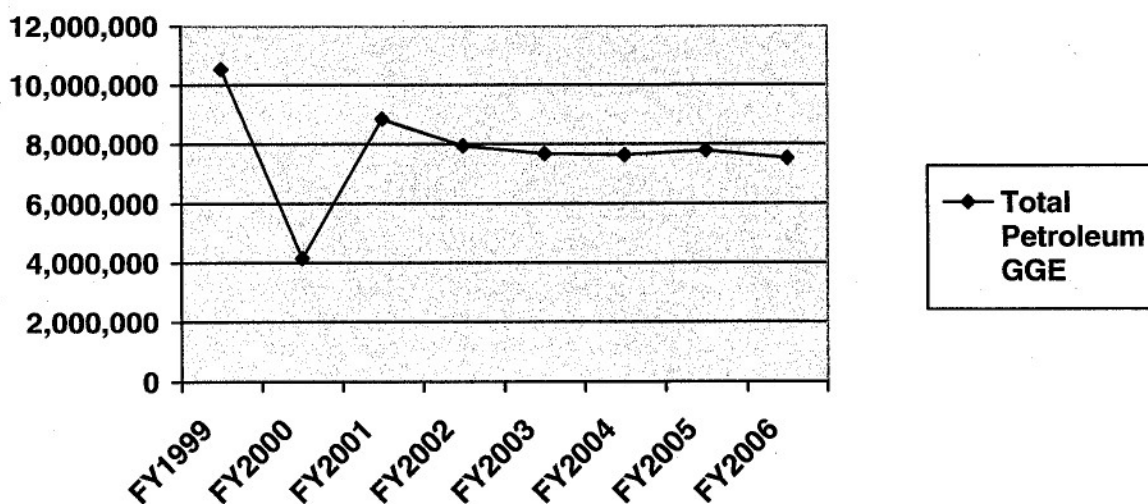
#### Petroleum Consumption Progress Report

In FY 2006, The Marine Corps consumed 1,128,807 GGE of alternative fuels, thereby reducing gasoline and diesel fuel consumption in Marine Corps' vehicles.

Fuel Use	FY 1999 (GGE)	FY 2006 (GGE)
<b>Alternative Fuel</b>		
B100	0	315,343
CNG	0	238,542
E85	0	74,359
Electricity	0	0
LNG	0	0
LPG	0	1,833
Total Alternative Fuel Use	0	630,077
<b>Petroleum</b>		
Diesel	4,968,804	1,585,201
Gasoline	5,559,000	5,937,358
Total Covered Petroleum Use	10,527,804	7,522,559
<b>Total Covered Fuel Use</b>	<b>10,527,804</b>	<b>8,651,366</b>
<i>Alternative Fuel Use as a Percentage of Total Fuel Use</i>	<i>0</i>	<i>13.013</i>

**Exhibit 4. USMC Total Covered Fuel Use**

Exhibit 5 shows that The Marine Corps has reached, and exceeded the 20 percent reduction goal. The Marine Corps has been successful in displacing petroleum fuel consumption. Due to alternative fuel use, covered petroleum consumption was reduced by 3 million GGE.



**Exhibit 5. USMC Vehicular Petroleum Consumption**

## **USMC Fleet Successes**

In FY 2006, The Marine Corps in addition to pursuing more efficient vehicles and operations, we concentrated on expanding our use of alternative fuels, with particular emphasis on compressed natural gas (CNG) vehicles where existing CNG infrastructure is established.

Neighborhood Electric Vehicles (NEVs) have been successfully utilized at several locations for light hauling and administrative purposes. All Marine Corps installations are finding unique ways to utilize NEV's and reduce the number of petroleum burning vehicles. In FY 2006 the Marine Corps increased its NEV fleet by 67.

Throughout the 2006 timeframe, several Bases and Stations were developing the installation of above ground E-85 tanks. MCB Camp Lejeune opened their E-85 fueling site in FY 2005, and MCAS Cherry Point opened in early FY 2006. MCLB Albany GA and MCAS Beaufort SC will open new above ground E-85 tanks in FY 2007. This infrastructure will allow the Marine Corps to concentrate not only on CNG, but E-85 vehicles and to increase the amounts of alternative fuels utilized.

In FY 2006, the Marine Corps' Fleet Management System (Fleet Focus) was consolidated into a single database/server and became accessible via the Internet.

During FY 2006, approximately 85% of the Marine Corps installations continued the use of Biodiesel. As a result, the Marine Corps earned 700 AFV credits of which 129 were credited to FY 2006 FAST report. It is the Marine Corps' goal to utilize Biodiesel in all Garrison Mobile Equipment (GME) diesel powered vehicles in FY 2007.

Marine Corps Base Camp Pendleton has been selected by the Naval Facilities Engineering Service Center for an Environmental Security Technology Certification Program project to test the hydrogen fuel cell vehicles and infrastructure in a real world environment. During Oct. 2005, the Marine Corps began testing the GMT800 Fuel Cell pickup truck from General Motors. This was replaced in September of 2006 by the General Motors Equinox Sport Utility Vehicle and should remain through March of 2007. It is anticipated that the project will continue replacing the Equinox with a next generation Fuel Cell vehicle from General Motors and/or from other manufacturers. By the third quarter of FY 2007, the permanent Fuel Cell maintenance facilities as well as a natural gas to hydrogen fuel reformer will be in operation.



### Summary and Conclusions

In FY 2006, the Marine Corps exceeded its EPA Act FY 2006 AFV acquisition requirements and expects to exceed them in FY 2007 and FY 2008. Pursuing compliance with E.O. 13149, the Marine Corps used alternative fuels in its AFVs 27.9 percent of the time, achieved a 6.5 mpg increase in fuel economy and reduced its petroleum consumption by 28.5 percent as compared to FY 1999. The Marine Corps is continuing its efforts to reduce petroleum consumption through increased alternative fuel usage, accelerated replacement of conventional vehicles with AFVs and acquisition of hybrid and fuel efficient vehicles. Exhibit 6 summarizes The Marine Corps' FY 2006 performance.

	FY 1999 Baseline	FY 2006	Change FY 1999 vs. FY 2006
EPAct	N/A	199 percent	N/A
Alternative Fuel Use in AFVs	N/A	27.9 percent	N/A
Fuel Economy of LDV Acquisitions	17 mpg	23.5 mpg	+6.5 mpg
Petroleum Consumption	10,527,804 GGE	7,522,559 GGE	-28.5 percent

**Exhibit 6. USMC Performance in Meeting its Requirements**

# Appendices



## Appendix A

Actual FY 2006 Light-Duty Vehicle Acquisitions					Total Vehicle Inventory
		Leased	Purchased	Total	
Total number of LDV (8,500 GVWR) - Acquisitions		1,784	17	1,801	7,225
Exemptions	Fleet Size	1,175	2	1,177	3,660
	Geographic	213	2	215	1,283
	Law Enforcement	30	0	30	165
	Non-MSA Operation (fleet)	27	8	35	212
	Non-MSA Operation (vehicles)	0	0	0	(n/a)
EPAct Covered Acquisitions		339	5	344	1,905
Actual FY 2006 AFV Acquisitions					Total Vehicle Inventory
Vehicle		Leased	Purchased	Total	
Sedan	CNG Bi-Fuel Subcompact	0	0	0	24
Sedan	CNG Dedicated Subcompact	1	0	1	24
Sedan	CNG Bi-Fuel Compact	0	0	0	10
Sedan	CNG Dedicated Compact	0	0	0	1
Sedan	E-85 Flex-Fuel Compact	132	0	132	543
Sedan	E-85 Flex-Fuel Midsize	27	0	27	45
Sedan	CNG Dedicated Large	0	0	0	28
Sedan	E-85 Flex-Fuel Large	0	0	0	1
Pickup 4x2	CNG Bi-Fuel	26	0	26	146
Pickup 4x2	CNG Dedicated	51	0	51	119
Pickup 4x2	E-85 Flex-Fuel	21	0	21	392
Pickup 4x2	LPG Bi-Fuel	0	0	0	10
Pickup 4x4	CNG Bi-Fuel	12	0	12	67
Pickup 4x4	CNG Dedicated	27	0	27	45
Pickup 4x4	E-85 Flex-Fuel	35	0	35	57
Pickup 4x4	LPG Bi-Fuel	0	0	0	3
SUV 4x2	E-85 Flex-Fuel	14	0	14	18
SUV 4x4	E-85 Flex-Fuel	18	0	18	83

Minivan 4x2 (Passenger)	E-85 Flex-Fuel	63	0	63	423
Minivan 4x2 (Cargo)	E-85 Flex-Fuel	1	0	1	8
Van 4x2 (Passenger)	CNG Bi-Fuel	0	0	0	1
Van 4x2 (Passenger)	CNG Dedicated	0	0	0	14
Van 4x2 (Passenger)	E-85 Flex-Fuel	8	0	8	15
Van 4x2 (Cargo)	CNG Bi-Fuel	0	0	0	16
Van 4x2 (Cargo)	CNG Dedicated	0	0	0	8
Bus	CNG Dedicated	1	0	1	16
Pickup MD	CNG Bi-Fuel	8	0	8	50
Pickup MD	E-85 Flex-Fuel	0	0	0	1
SUV MD	E-85 Flex-Fuel	1	0	1	3
Van MD (Passenger)	CNG Bi-Fuel	6	0	6	56
Van MD (Passenger)	CNG Dedicated	3	0	3	53
Van MD (Passenger)	LPG Bi-Fuel	0	0	0	4
Van MD (Cargo)	CNG Bi-Fuel	1	0	1	5
Van MD (Cargo)	CNG Dedicated	1	0	1	39
MD 8,501-16,000 GVWR	CNG Bi-Fuel	0	0	0	4
MD 8,501-16,000 GVWR	CNG Dedicated	0	3	3	8
HD 16,001 + GVWR	CNG Bi-Fuel	0	0	0	3
HD 16,001 + GVWR	CNG Dedicated	0	0	0	
<b>Total Number of AFV Acquisitions</b>		<b>457</b>	<b>3</b>	<b>460</b>	<b>2,344</b>
Zero Emission Vehicle Credits		0	0	0	
Dedicated LD AFV Credits		79	0	79	
Dedicated MD AFV Credits		10	6	16	
Dedicated HD AFV Credits		0	0	0	
Biodiesel Fuel Usage Credits - Actual				129	
<b>Total AFV Acquisitions with Credits</b>		<b>546</b>	<b>9</b>	<b>684</b>	
<b>AFV Percentage of Covered LDV Acquisitions</b>				<b>199 %</b>	

## Appendix B

Planned FY 2007 Light-Duty Vehicle Acquisitions				
		Leased	Purchased	Total
Total number of LDV (8,500 GVWR) - Acquisitions		1,297	14	1,311
Exemptions	Fleet Size	0	1	1
	Geographic	0	3	3
	Law Enforcement	14	0	14
	Non-MSA Operation (fleet)	0	2	2
	Non-MSA Operation (vehicles)	261	0	261
<b>EPAct Covered Acquisitions</b>		<b>1,022</b>	<b>8</b>	<b>1,030</b>
Planned FY 2007 AFV Acquisitions				
Vehicle		Leased	Purchased	Total
Sedan	CNG Dedicated Subcompact	13	0	13
Sedan	E-85 Flex-Fuel Compact	129	0	129
Sedan	E-85 Flex-Fuel Midsize	23	0	23
Pickup 4x2	CNG Bi-Fuel	10	0	10
Pickup 4x2	CNG Dedicated	12	0	12
Pickup 4x2	E-85 Flex-Fuel	91	0	91
Pickup 4x4	CNG Bi-Fuel	8	0	8
Pickup 4x4	CNG Dedicated	1	0	1
Pickup 4x4	E-85 Flex-Fuel	3	0	3
SUV 4x4	E-85 Flex-Fuel	14	0	14
Minivan 4x2 (Passenger)	E-85 Flex-Fuel	82	0	82
Pickup MD	CNG Bi-Fuel	7	0	7
Van MD (Passenger)	CNG Bi-Fuel	16	0	16
Van MD (Passenger)	CNG Dedicated	7	0	7
Van MD (Cargo)	CNG Bi-Fuel	2	0	2
Van MD (Cargo)	CNG Dedicated	17	0	17
MD 8,501-16,000 GVWR	CNG Bi-Fuel	0	2	2
HD 16,001 + GVWR	CNG Bi-Fuel	0	5	5
<b>Total Number of AFV Acquisitions</b>		<b>435</b>	<b>7</b>	<b>442</b>
Zero Emission Vehicle Credits		0	0	0
Dedicated Light-Duty AFV Credits		26	0	26
Dedicated Medium-Duty AFV Credits		48	0	48
Dedicated Heavy-Duty AFV Credits		0	0	0
Biodiesel Fuel Usage Credits - Planned				386
<b>Total AFV Acquisitions with Credits</b>		<b>509</b>	<b>7</b>	<b>902</b>
<b>AFV Percentage of Covered Light-Duty Vehicle Acquisition</b>				<b>88 %</b>

## Appendix C

Projected FY 2008 Light-Duty Vehicle Acquisitions				
		Leased	Purchased	Total
Total number of LDV (8,500 GVWR) - Acquisitions		1,300	21	1,321
Exemptions	Fleet Size	1	1	2
	Geographic	0	8	8
	Law Enforcement	14	0	14
	Non-MSA Operation (fleet)	0	1	1
	Non-MSA Operation (vehicles)	261	0	261
<b>EPAct Covered Acquisitions</b>		<b>1,024</b>	<b>11</b>	<b>1,035</b>
Projected FY 2008 AFV Acquisitions				
Vehicle		Leased	Purchased	Total
Sedan	CNG Dedicated Subcompact	13	0	13
Sedan	E-85 Flex-Fuel Compact	129	0	129
Sedan	E-85 Flex-Fuel Midsize	23	0	23
Pickup 4x2	CNG Bi-Fuel	10	0	10
Pickup 4x2	CNG Dedicated	12	0	12
Pickup 4x2	E-85 Flex-Fuel	91	0	91
Pickup 4x4	CNG Bi-Fuel	8	0	8
Pickup 4x4	CNG Dedicated	1	0	1
Pickup 4x4	E-85 Flex-Fuel	3	0	3
SUV 4x4	E-85 Flex-Fuel	14	0	14
Minivan 4x2 (Passenger)	E-85 Flex-Fuel	82	0	82
Pickup MD	CNG Bi-Fuel	7	0	7
Van MD (Passenger)	CNG Bi-Fuel	16	0	16
Van MD (Passenger)	CNG Dedicated	7	0	7
Van MD (Cargo)	CNG Bi-Fuel	2	0	2
Van MD (Cargo)	CNG Dedicated	17	0	17
MD 8,501-16,000 GVWR	E-85 Flex-Fuel	0	3	3
HD 16,001 + GVWR	CNG Bi-Fuel	0	6	6
<b>Total Number of AFV Acquisitions</b>		<b>435</b>	<b>9</b>	<b>444</b>
Zero Emission Vehicle Credits		0	0	0
Dedicated LD AFV Credits		26	0	26
Dedicated MD AFV Credits		48	0	48
Dedicated HD AFV Credits		0	0	0
Biodiesel Fuel Usage Credits - Projected				388
<b>Total AFV Acquisitions with Credits</b>		<b>509</b>	<b>9</b>	<b>906</b>
<b>AFV Percentage of Covered LDV Acquisitions</b>				<b>88 %</b>

## Appendix D

### List of Acronyms

Acronym	Phrase
AFV	Alternative Fuel Vehicle
B100	Biodiesel (100 percent, neat)
B20	Biodiesel (20 percent biodiesel, 80 percent petroleum diesel)
CNG	Compressed Natural Gas
DOE	U.S. Department of Energy
E85	Ethanol (85 percent ethanol, 15 percent petroleum)
E.O.	Executive Order
EPAct	Energy Policy Act
FFV	Flexible Fuel Vehicle
FR	Federal Register
FY	Fiscal Year
GGE	Gasoline Gallon Equivalent
GVWR	Gross Vehicle Weight Rating
HD	Heavy-Duty
INL	Idaho National Laboratory
LD	Light-Duty
LDV	Light-Duty Vehicle
LNG	Liquefied Natural Gas
LPG	Liquefied Petroleum Gas (Propane)
MD	Medium-Duty
MPG	Miles Per Gallon
MSA/CMSA	Metropolitan Statistical Area/Consolidated Metropolitan Statistical Area
SUV	Sport Utility Vehicle