

Department of the Air Force

Fleet Alternative Fuel Vehicle Acquisition Report

Compliance with EPAct 1992/2005 and E.O. 13423 for Fiscal Year 2007

This report summarizes the Department of the Air Force's (USAF) fiscal year (FY) 2007 fleet performance in meeting the requirements of the Energy Policy Act (EPAct) of 2005 (Public Law 109-58) and in meeting the goals of Executive Order (E.O.) 13423 (Exhibit 1).

Exhibit 1. USAF's Performance in Meeting EPAct 2005 and E.O. 13423 Requirements, FY07

Authority/ Mandate	Performance Measure	Goal/Requirement	USAF Performance in FY07
EPAct 2005	Alternative fueled vehicle (AFV) acquisitions	75% of the covered light-duty vehicles (LDV) acquired in FY07 must be AFVs	Met goal - 119% of the covered LDVs acquired in FY07 were AFVs
	Alternative fuel use in AFVs	Utilize alternative fuels 100% of the time in AFVs	Did not meet goal - Utilized alternative fuels 53.5% of the time in AFVs
E.O. 13423	Reduce fossil fuel consumption	Reduce covered consumption by 2% annually compared to FY05 baseline	Did not meet goal - Decreased covered fossil fuel consumption by 0.04%
	Increase alternative fuels consumption	Increase alternative fuel consumption by 10% annually as compared to FY05 baseline	Did not meet goal - Decreased alternative fuel consumption by 3.4%

EPAct 2005 Compliance

For the fifth consecutive year, the USAF exceeded its EPAct requirements for AFV acquisitions (Exhibit 2). As a result of its aggressive AFV acquisition policy and biodiesel fuel use, the USAF in FY07 earned AFV acquisition credits amounting to 119% of its covered vehicle acquisitions, which is 44 percentage points higher than the 75% AFV acquisition requirement (Appendix A). In short, the USAF:

- Acquired 1,765 EPAct-covered LDVs. Of these, 1,445 or 81.9% were AFVs
- Received an additional 662 credits through the use of biodiesel
- Earned a total of 2,107 credits (including vehicle acquisitions and additional credits) or 119% of covered acquisitions

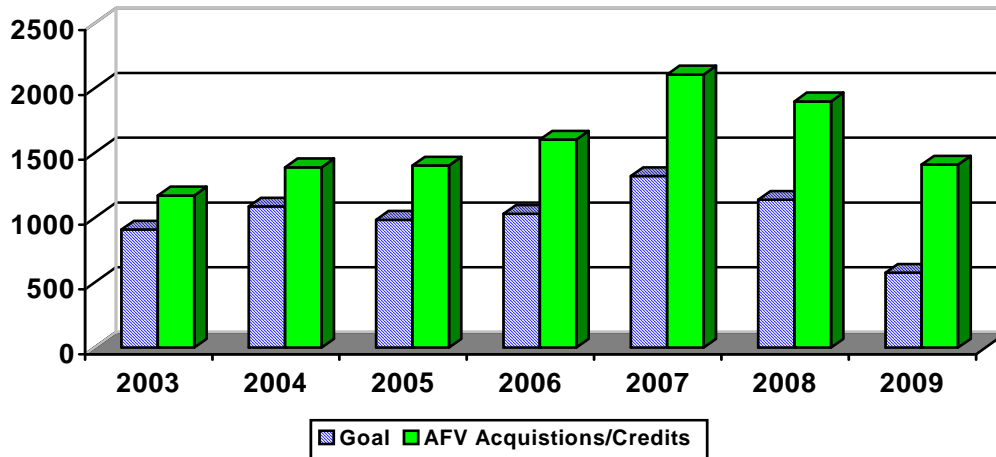
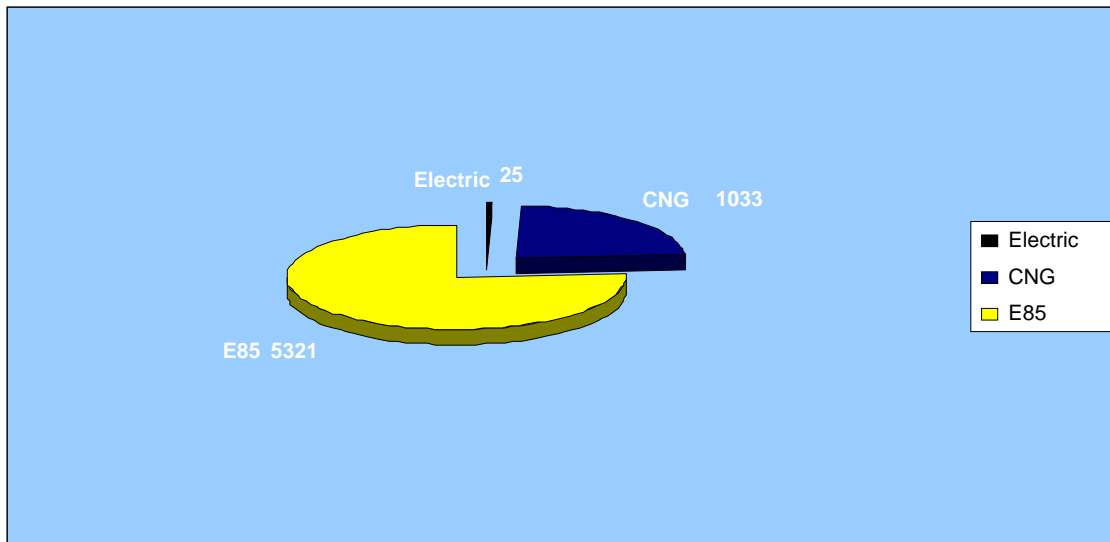


Exhibit 2. EPAct AFV Acquisitions, Credits, and Requirements (Actual and Projected)

Alternative Fuel Vehicles

Flexible-fuel vehicles (FFV) that can run on E85 (85% ethanol, 15% gasoline) or gasoline were the AFV of choice in FY07. Of the 1,445 AFVs acquired in FY07, 1,442 were FFVs and 3 were Compressed Natural Gas (CNG) vehicles. FFVs capable of operating on E85 comprise the majority of USAF's AFV fleet (Exhibit 3), with CNG and electric vehicles making up the balance. As the availability of CNG and electric dedicated and bi-fuel vehicle models decreases, these vehicle types will become less prevalent in USAF's fleet.

Exhibit 3. USAF's Total AFV Inventory



Exemptions

Of the 2,355 total LDVs acquired by the USAF in FY07, 590 vehicles (25%) were considered exempt from compliance with EPAct. 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 FY07, USAF received the following exemptions:

- Fleet Size - 0
- Geographic - 0

- Law Enforcement - 211
- Non-MSA/CMSA Operation (Fleet) - 0
- Non-MSA/CMSA Operation (Vehicles) - 379

FY08/09 Projected Acquisitions

The appendices to this report offer a detailed look at the USAF's FY07 acquisitions (Appendix A) and its projected acquisitions for FY08 and FY09 (Appendices B and C). As illustrated in Exhibit 2, the USAF has exceeded its annual EPA AFV acquisition requirements since FY03 and plans to continue to exceed these requirements over the next 2 years.

E.O. 13423 Compliance

Exhibit 4 compares USAF's covered fuel use in FY07 with the FY06 consumption. E.O. 13423 calls for each agency to reduce vehicular petroleum consumption by 2% a year through FY 2015 using FY05 as a baseline with continued increase of alternative fuel consumption by 10% a year compounded annually. In FY07, the USAF had only a .04% reduction in fossil fuel consumption in comparison to FY06, which did not meet the mandate. However, compared to FY05 the Air Force reduced vehicle fossil fuel consumption by 2.4%. Additionally, the USAF did not meet the goal of increasing alternative fuel consumption by 10% due to significant decreases in Bio diesel, B20 consumption. B20 consumption was lower due to the EPA-mandated conversion from low sulfur diesel fuel, LSD to ultra low sulfur diesel, ULSD fuel throughout the CONUS. As bases converted from LSD to ULSD, no mechanism in the fuels accountability was used to determine if the ULSD contained a 20% biomix or straight diesel. Therefore, some of the LSD B20 may have been converted to straight ULSD, reducing available B20 and lowering consumption, while some of the ULSD B20 may have been mistakenly counted as regular ULSD, further reducing consumption figures. Even though the goal for increasing the use of alternative fuels was not met, the USAF did increase E85 consumption by 61% in comparison to the FY05 baseline (FY05: 258,431 vice FY07: 418,077). We expect continued increase of E85 consumption in the future due to on-going efforts identifying off base availability. Additionally, fuel keys have been locked out for AFVs for use of pure gasoline and diesel at locations with E85 & B20 to ensure 100% use. Finally, guidance has been published mandating the use of alternative fuels in AFVs at locations with available sources within 5 miles or 15 minutes driving time of the base.

Exhibit 4. USAF's Total Covered Fuel Use

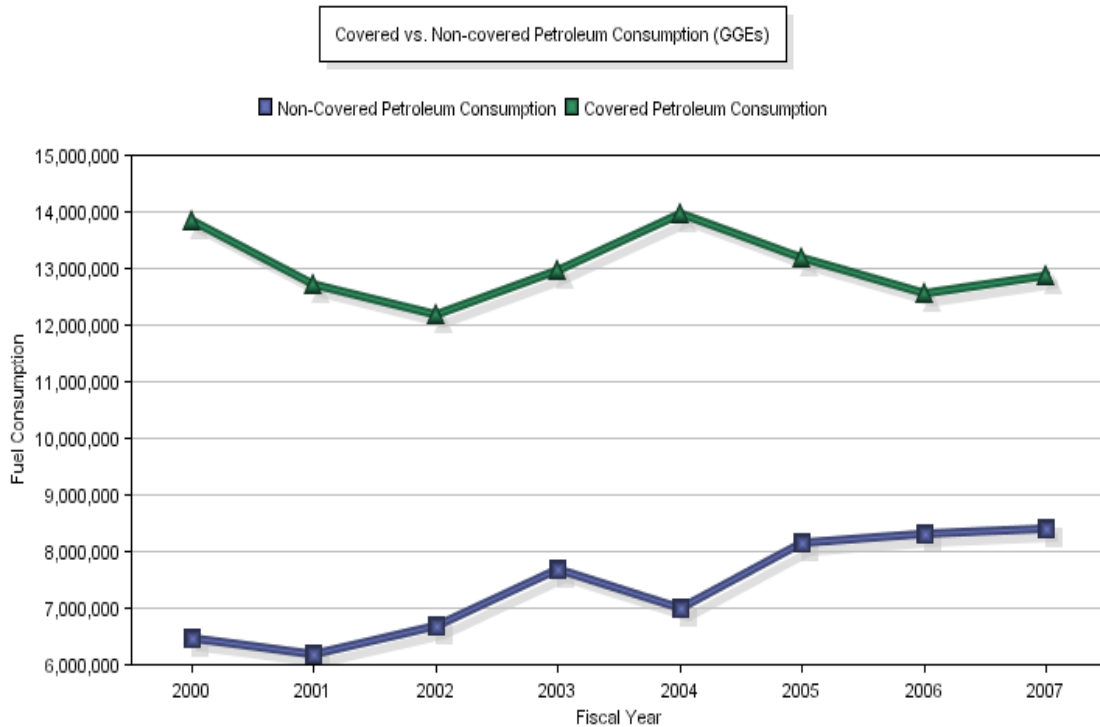
Fuel Use	FY05 (GGE)	FY07 (GGE)
Alternative Fuel		
B100 – Biomass portion of the B20	774,182	605,416
CNG	100,530	70,237
E85	258,431	418,077
Electricity	1,677	2,259
Total Alternative Fuel Use	1,134,973	1,096,020
Covered Petroleum		
Diesel	2,663,296	2,955,202
DSL Component from Biodiesel	1,851,693	1,800,086
Gasoline	8,695,861	8,138,049
Total Covered Petroleum Use	13,210,849	12,893,337

Petroleum Consumption Progress Report

Exhibit 5 shows that although the USAF reduced its covered fuel consumption from the FY05 baseline, it increased non-covered petroleum consumption in overseas locations and fuel used in law enforcement and emergency response vehicles. Our on-base fuel accountability is improving due to specific Air Force guidance for vehicle fuel key coding for better monitoring and depicting covered and uncovered fuel consumption. Also General Services Administration (GSA) is estimating availability of providing fuel

consumption by tag number for leased assets during the spring of 2008, further enhancing our ability to accurately report consumption for all vehicles and fuel types.

Exhibit 5. USAF's Vehicular Petroleum Consumption



USAF Fleet Successes

- Installed E85 fuel station at F.E. Warren Air Force Base (AFB), Wyoming and Minot AFB, North Dakota. Additional an E85 station at Little Rock AFB is scheduled to come on-line by the end Jan 08.
- Established a Model Energy Base Initiative (MEBI) to validate vehicle requirements at Barksdale & McGuire AFBs to improve the process for identifying vehicles that could be changed to AFVs or low speed vehicles (LSV). The Assistant Secretary of the Air Force for Installations, Logistics and Environment was so pleased with results of the two MEBI visits conducted in FY07 and plans are pending to accomplish 30 other bases pending travel funding. The MEBI promotes the use of new technology to maximize our efforts to use alternative fuels and continues the process for examining new ways to reduce fossil fuel dependency through alternative energy solutions.
- Major Commands identified 772 LSVs for procurement at a cost of \$7.3M. An additional \$36M is required in FY09 thru FY10 for LSV procurement in order to achieve a 30% or more miles per gallon than conventional gas or diesel vehicles.
- The USAF, in conjunction with DESC, is continually working to balance funding constraints to provide alternative fuel infrastructure to meet on-going requirements. The Air Force Petroleum Agency (AFPET) also continues to work diligently with DESC by submitting 39 additional projects that are in design or awaiting funds for 2008-2013. However, it is unlikely that DESC funding will be available to provide the tankage needed in the near future.
- Within the past fiscal year, the USAF reduced 699 vehicle authorizations and right sized 2,485 vehicle authorizations. Of the 2,485 authorizations right sized, 772 were converted to LSVs. The prime factors for determining an authorization will be mission requirements/ops tempo, availability of alternative fuel infrastructure and historical/estimated annual miles driven. Local Fleet Managers will determine if a LSV, AFV or hybrid will first meet the customer's needs. If these types of conveyances will not meet the customer's needs, then a diesel engine-powered vehicle (if biodiesel (B20) is available locally) will be the next choice with a conventional gasoline vehicle as a last resort. The Air Force's goal is to replace 30% of our light duty fleet with LSVs by FY12. \$36M is needed through FY12 to fund the LSV

replacements. The initiative to aggressively replace conventional vehicle authorizations with LSVs is receiving a great deal of senior Air Force leadership emphasis and oversight.

- Nellis and Minot Air Force Bases are testing the use of oxygenated ultra low sulfur bio diesel. The fuel is essentially an oxygenated (O2) Biodiesel (B20) Ultra Low Sulfur Diesel and equates to a 27.5% biomass diesel product that burns cleaner than regular diesel. Minot AFB is testing cold weather feasibility.
- The Air Force's Advanced Power Technology Office (APTO) has 20 projects involving hydrogen fuel cells/electric prototype vehicles, 3 hydrogen fueling stations for mobile, stationary, cold region and limited scale requirement use, 2 joint services fossil fuel conversion projects, 13 Small Business Innovative Research (SBIR) Phase I & II projects, 4 Fischer Tropsch projects and 3 Renewable Energy projects. The SBIR develops and tests various technologies in hybrid and electrical motor capabilities for vehicles and aerospace equipment. Following are some of the more significant projects presently being worked by the APTO:



Hydrogen Refueling Station Congressionally Funded Hydrogen Infrastructure Project:

This project develops and demonstrates hydrogen refueling equipment for limited scaled requirements. It complements the hydrogen fuel cell vehicles by providing the capability to be deployed for operations at multiple locations to support hydrogen fuel cell vehicles. Station will be built to be expandable and capable of producing from 6 to 40 kilograms of hydrogen. This project is the first task order on the APTO IDIQ and is scheduled to begin construction in the Spring of 2008 and be completed by the fall.



Hydrogen Fuel Cell Powered Tow Tractor. Congressionally Funded C2P2 Project:

Convert a hybrid diesel - electric MB-4 tow tractor to a hybrid hydrogen fuel cell – electric MB-4 tow tractor. Removed the diesel engine, fuel tank and diesel supporting auxiliary components and added a hydrogen fuel cell, storage compartment, power management and auxiliary components. Delivered 2006. Under sustainment and follow-on to begin in 2008.



Fischer Tropsch Demonstration APTO Project

AF Senior Energy Focus Group tasking to demonstrate S-8 synthetic fuel in a field application. S-8 is produced using Fischer Tropsch process by Syntroleum. This is an out of the laboratory utilization of S-8 fuel in 2 pieces of support equipment and 3 vehicles.



Develop and Integrate Auxiliary Power in Vehicles Congressionally Funded Infrastructure Project:

Develop and integrate auxiliary power capability in an M915. It will have the capability to provide additional power generation resources at a fraction of the cost of a separate unit reducing the logistic footprint for deployment.

Summary and Conclusions

In FY07, the USAF exceeded its EPAct AFV acquisition requirements and expects to exceed them again in FY08 and FY09. The Air Force is working diligently in its efforts towards meeting EPA, DOE and DoD regulations and mandates. Since 11 Sep 01 to the present the USAF operations tempo is continually increasing making it more and more difficult to meet these mandates. Operations to support contingencies in Iraq and Afghanistan and other global commitments have a direct effort on our efforts to meet EPAct and E.O. mandates. Despite this difficult era, the Air Force remained committed to reducing our fossil fuel consumption. Unfortunately, despite our aggressive AFV acquisitions and increased use of E85, we did not achieve the required 10% increase in use of alternative fuels, largely due to the reduced consumption of B20. Conversion from low sulfur diesel fuel to ultra low sulfur diesel fuel was the main reason for our decreased B20 consumption. We are relying heavily on the Air Force Petroleum Office (AFPET) to continue its efforts in obtaining alternative fuel infrastructure through DESC and we further expect they will work diligently at improving the availability of quality alternative fuels at locations that already have alternative fuel infrastructure in place. In any case, the current Global War on Terror and sustained security threat levels at stateside Air Force bases continue to complicate our efforts towards moving more aggressively in meeting EPAct and E.O. mandates.

Finally, HQ USAF/A4RE will continue to provide guidance on obtaining and utilizing AFVs, LSVs, hybrids and alternative fuels to the maximum extent possible and will aid the major command and wing level logistic leaders with their efforts towards meeting EPAct 1992/2005 and E.O. 13423 mandates.

Appendix A

Department of Air Force Complex-Wide AFV Report 2007 – Actual

Actual Department of Air Force FY 2007 Vehicle Acquisitions					
Actual FY 2007 Light-Duty Vehicle Acquisitions					Total Vehicle Inventory
		Leased	Purchased	Total	
Total number of Light-Duty (8,500 GVWR) - Vehicle Acquisitions		1,755	600	2,355	16,325
Exemptions	Fleet Size	0	0	0	0
	Geographic	0	0	0	0
	Law Enforcement	106	105	211	919
	Non-MSA Operation (fleet)	0	0	0	0
	Non-MSA Operation (vehicles)	253	126	379	<i>(n/a)</i>
EPACT Covered Acquisitions		1,396	369	1,765	15,406
Actual FY 2007 AFV Acquisitions					Total Vehicle Inventory
Vehicle		Leased	Purchased	Total	
Sedan	CNG Bi-Fuel Subcompact	0	0	0	9
Sedan	CNG Bi-Fuel Compact	0	0	0	2
Sedan	E-85 Flex-Fuel Compact	87	8	95	1,227
Sedan	E-85 Flex-Fuel Midsize	534	0	534	661
Pickup 4x2	CNG Bi-Fuel	0	0	0	546
Pickup 4x2	CNG Dedicated	0	0	0	1
Pickup 4x2	E-85 Flex-Fuel	105	140	245	1,465
Pickup 4x2	Electric Dedicated	0	0	0	25
Pickup 4x2	LPG Bi-Fuel	0	0	0	1
Pickup 4x4	CNG Bi-Fuel	0	0	0	22
Pickup 4x4	CNG Dedicated	0	0	0	1
Pickup 4x4	E-85 Flex-Fuel	62	18	80	331
SUV 4x2	E-85 Flex-Fuel	9	0	9	50
SUV 4x4	CNG Bi-Fuel	0	0	0	1
SUV 4x4	E-85 Flex-Fuel	95	11	106	413
Minivan 4x2 (Passenger)	E-85 Flex-Fuel	239	7	246	1,006
Minivan 4x2 (Cargo)	E-85 Flex-Fuel	0	14	14	4
Van 4x2 (Passenger)	CNG Bi-Fuel	0	2	2	7
Van 4x2 (Passenger)	CNG Dedicated	0	0	0	6
Van 4x2 (Passenger)	E-85 Flex-Fuel	14	3	17	39
Van 4x4 (Passenger)	E-85 Flex-Fuel	5	0	5	5
Van 4x2 (Cargo)	CNG Bi-Fuel	0	0	0	11
Van 4x2 (Cargo)	CNG Dedicated	0	0	0	3
Van 4x2 (Cargo)	E-85 Flex-Fuel	18	0	18	33
Bus	CNG Bi-Fuel	0	0	0	1
Bus	CNG Dedicated	0	0	0	19
Pickup MD	CNG Bi-Fuel	0	0	0	211
Pickup MD	E-85 Flex-Fuel	1	70	71	80
Van MD (Passenger)	CNG Bi-Fuel	0	0	0	81

Van MD (Passenger)	CNG Dedicated	0	0	0	10
Van MD (Passenger)	E-85 Flex-Fuel	1	0	1	2
Van MD (Cargo)	CNG Bi-Fuel	0	1	1	29
Van MD (Cargo)	CNG Dedicated	0	0	0	4
MD 8,501-16,000 GVWR	CNG Bi-Fuel	0	0	0	62
MD 8,501-16,000 GVWR	E-85 Flex-Fuel	1	0	1	5
HD 16,001 + GVWR	CNG Bi-Fuel	0	0	0	7
Total Number of AFV Acquisitions		1,171	274	1,445	6,380
Zero Emission Vehicle Credits		0	0	0	
Dedicated Light-Duty AFV Credits		0	0	0	
Dedicated Medium-Duty AFV Credits		0	0	0	
Dedicated Heavy-Duty AFV Credits		0	0	0	
Biodiesel Fuel Usage Credits - Actual				662	
Total AFV Acquisitions with Credits		1,171	274	2,107	
AFV Percentage of Covered Light-Duty Vehicle Acquisition				119 %	

Appendix B

Department of Air Force Complex-Wide AFV Report 2008 - Planned

Planned Department of Air Force FY 2008 Vehicle Acquisitions				
Planned FY 2008 Light-Duty Vehicle Acquisitions				
		Leased	Purchased	Total
Total number of Light-Duty (8,500 GVWR) - Vehicle Acquisitions		2,038	960	2,998
Exemptions	Fleet Size	0	0	0
	Geographic	0	0	0
	Law Enforcement	95	80	175
	Non-MSA Operation (fleet)	0	0	0
	Non-MSA Operation (vehicles)	1,224	79	1,303
EPACT Covered Acquisitions		719	801	1,520
Planned FY 2008 AFV Acquisitions				
	Vehicle	Leased	Purchased	Total
Sedan	CNG Bi-Fuel Subcompact	9	0	9
Sedan	E-85 Flex-Fuel Compact	386	16	402
Sedan	E-85 Flex-Fuel Midsize	54	1	55
Pickup 4x2	CNG Bi-Fuel	40	0	40
Pickup 4x2	E-85 Flex-Fuel	120	299	419
Pickup 4x4	CNG Bi-Fuel	3	0	3
Pickup 4x4	E-85 Flex-Fuel	11	8	19
SUV 4x2	E-85 Flex-Fuel	3	0	3
SUV 4x4	E-85 Flex-Fuel	54	47	101
Minivan 4x2 (Passenger)	E-85 Flex-Fuel	153	11	164
Minivan 4x2 (Cargo)	E-85 Flex-Fuel	0	1	1
Van 4x2 (Passenger)	E-85 Flex-Fuel	1	14	15
Van 4x2 (Cargo)	E-85 Flex-Fuel	5	0	5
Pickup MD	CNG Bi-Fuel	2	0	2
Pickup MD	E-85 Flex-Fuel	1	69	70
Van MD (Passenger)	CNG Bi-Fuel	13	0	13
Van MD (Cargo)	CNG Bi-Fuel	2	0	2
Van MD (Cargo)	CNG Dedicated	1	0	1
MD 8,501-16,000 GVWR	Electric Dedicated	0	1	1
Total Number of AFV Acquisitions		858	467	1,325
Zero Emission Vehicle Credits		0	0	0
Dedicated Light-Duty AFV Credits		0	0	0
Dedicated Medium-Duty AFV Credits		2	2	4
Dedicated Heavy-Duty AFV Credits		0	0	0
Biodiesel Fuel Usage Credits - Planned				570
Total AFV Acquisitions with Credits		860	469	1,899
AFV Percentage of Covered Light-Duty Vehicle Acquisition				125 %

Appendix C

Department of Air Force Complex-Wide AFV Report 2009 - Projected

Projected Department of Air Force FY 2009 Vehicle Acquisitions				
Projected FY 2009 Light-Duty Vehicle Acquisitions				
		Leased	Purchased	Total
Total number of Light-Duty (8,500 GVWR) - Vehicle Acquisitions		1,820	202	2,022
Exemptions	Fleet Size	0	0	0
	Geographic	0	0	0
	Law Enforcement	85	12	97
	Non-MSA Operation (fleet)	0	0	0
	Non-MSA Operation (vehicles)	1,132	24	1,156
EPACT Covered Acquisitions		603	166	769
Projected FY 2009 AFV Acquisitions				
	Vehicle	Leased	Purchased	Total
Sedan	E-85 Flex-Fuel Compact	352	0	352
Sedan	E-85 Flex-Fuel Midsize	33	0	33
Pickup 4x2	CNG Bi-Fuel	12	0	12
Pickup 4x2	E-85 Flex-Fuel	207	132	339
Pickup 4x4	CNG Bi-Fuel	7	0	7
Pickup 4x4	E-85 Flex-Fuel	26	7	33
SUV 4x2	E-85 Flex-Fuel	1	12	13
SUV 4x4	E-85 Flex-Fuel	57	5	62
Minivan 4x2 (Passenger)	E-85 Flex-Fuel	134	0	134
Minivan 4x2 (Cargo)	E-85 Flex-Fuel	2	0	2
Van 4x2 (Passenger)	CNG Dedicated	6	0	6
Van 4x2 (Passenger)	E-85 Flex-Fuel	5	8	13
Van 4x2 (Cargo)	CNG Dedicated	3	0	3
Van 4x2 (Cargo)	E-85 Flex-Fuel	0	3	3
Pickup MD	CNG Bi-Fuel	2	0	2
Pickup MD	E-85 Flex-Fuel	0	62	62
Van MD (Passenger)	CNG Bi-Fuel	13	0	13
Van MD (Passenger)	E-85 Flex-Fuel	0	8	8
Van MD (Cargo)	CNG Bi-Fuel	13	0	13
Van MD (Cargo)	CNG Dedicated	1	0	1
MD 8,501-16,000 GVWR	E-85 Flex-Fuel	0	2	2
Total Number of AFV Acquisitions		874	239	1,113
Zero Emission Vehicle Credits		0	0	0
Dedicated Light-Duty AFV Credits		9	0	9
Dedicated Medium-Duty AFV Credits		2	0	2
Dedicated Heavy-Duty AFV Credits		0	0	0
Biodiesel Fuel Usage Credits - Projected				288
Total AFV Acquisitions with Credits		885	239	1,412
AFV Percentage of Covered Light-Duty Vehicle Acquisition				184 %