

May 2011

UNITED STATES
POSTAL SERVICE

Strategy Needed to
Address Aging
Delivery Fleet



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Strategy Needed to Address Aging Delivery Fleet



Highlights of [GAO-11-386](#), a report to congressional requesters

Why GAO Did This Study

The United States Postal Service (USPS) has the world's largest civilian fleet, with many of its delivery vehicles reaching the end of their expected 24-year operational lives. USPS is subject to legislative requirements governing the federal fleet, including a requirement in the Energy Policy Act of 1992, which provides that 75 percent of USPS's vehicle acquisitions be alternative fuel vehicles, capable of operating on a fuel other than gasoline. USPS is also facing serious cost pressures in maintaining a national network of processing and retail operations.

Asked to review USPS's delivery fleet, GAO (1) profiled the fleet; (2) assessed USPS's response to alternative fuel vehicle requirements and described its experiences with these vehicles; (3) identified USPS's approach for addressing its delivery fleet needs, including trade-offs; and (4) determined options to fund a major acquisition of delivery vehicles. GAO analyzed USPS data; visited USPS facilities in three locations; and interviewed officials from USPS, the Department of Energy, and other organizations, including fleet operators and manufacturers.

What GAO Recommends

USPS should develop a strategy for addressing its delivery fleet needs that considers the effects of likely operational changes, legislative fleet requirements, and other factors. USPS agreed with GAO's recommendation.

View [GAO-11-386](#) or key components. For more information, contact Phil Herr at (202) 512-2834 or herrp@gao.gov.

What GAO Found

USPS's delivery fleet is largely composed of custom-built, right-hand-drive vehicles designed to last for 24 years, including about 141,000 gasoline-powered vehicles 16 to 23 years old and 21,000 flex-fuel vehicles capable of running on gasoline or 85-percent ethanol (E85) that are about 10 years old. The fleet also includes 22,000 left-hand-drive minivans, many of which are also capable of running on E85, and 3,490 delivery vehicles capable of running on other alternative fuels. Delivery vehicles are driven an average of about 17 miles per day and cost about \$1 billion to maintain and fuel in fiscal year 2010.

Delivery Vehicles at a USPS Maintenance Facility (left) and Post Office (right)



Source: GAO.

USPS met the 75 percent acquisition requirement for alternative fuel vehicles by purchasing about 40,000 flex-fuel vehicles and minivans that can operate on E85 or gasoline. However, USPS does not always use E85 in these vehicles because E85 is not readily available and can cost more to use due to less fuel efficiency, according to USPS officials. USPS has a variety of limited experiences with other alternative fuel vehicles, such as compressed natural gas and plug-in electric vehicles, most of which have higher life-cycle costs than gasoline vehicles.

USPS's approach for addressing its delivery fleet needs is to maintain its current fleet until it determines how to address its longer term needs. USPS has incurred small increases in direct maintenance costs over the last 5 years, which were about \$2,600 per vehicle in fiscal year 2010. However, it is increasingly incurring costs for unscheduled maintenance because of breakdowns, which can disrupt operations and increase costs. In fiscal year 2010, at least 31 percent of USPS's vehicle maintenance costs were for unscheduled maintenance, 11 percentage points over USPS's 20 percent goal.

USPS's financial challenges pose a significant barrier to a major delivery vehicle replacement or refurbishment, estimated to cost \$5.8 billion and (in 2005) \$3.5 billion, respectively. USPS and other federal and nonfederal officials see little potential to finance a fleet replacement through grants or partnerships. GAO has reported that Congress and USPS need to reach agreement on a package of actions to move USPS toward financial viability. Depending on the specific actions adopted, USPS's follow-up, and the results, such an agreement could enhance its ability to invest in new delivery vehicles.

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Abbreviations

DOE	Department of Energy
EPAct 1992	Energy Policy Act of 1992
FFV	flex-fuel vehicles
GSA	General Services Administration
LLV	long-life vehicles
UPS	United Parcel Service
USPS	United States Postal Service
VMAS	Vehicle Management Accounting System

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United States Government Accountability Office
Washington, DC 20548

May 5, 2011

The Honorable Joseph Lieberman
Chairman
The Honorable Susan Collins
Ranking Member
Committee on Homeland Security
and Governmental Affairs
United States Senate

The Honorable Tom Carper
Chairman
The Honorable Scott Brown
Ranking Member
Subcommittee on Federal Financial Management,
Government Information, Federal Services,
and International Security
Committee on Homeland Security
and Governmental Affairs
United States Senate

The Honorable John McCain
United States Senate

The United States Postal Service (USPS) operates the world's largest civilian vehicle fleet, with more than 215,000 vehicles, of which about 192,000 are delivery vehicles.¹ These vehicles are vital to accomplishing USPS's mission of delivering mail to about 131 million residential and business addresses, in most cases, 6 days a week.² The majority of USPS's delivery fleet is composed of custom-built, right-hand-drive, light-duty delivery trucks that it refers to as "long-life vehicles" (LLV)—vehicles built with an aluminum body and other features intended to permit an extended operational life of 24 years (see fig. 1). Purchased from 1987 to 1994, the LLVs are now approaching the end of their expected operational lives.

¹In addition to delivery vehicles, USPS's fleet includes other vehicles, such as administrative vehicles used for sales, accident investigations, and other purposes, and larger trucks used for hauling mail.

²USPS also delivers to another 20 million addresses as part of its post office box service.

Figure 1: USPS LLVs, 2010



Source: GAO.

USPS is required to provide efficient mail service and is expected to pay for its operations through the revenue it receives.³ USPS also is required to comply with certain legislative requirements governing the federal fleet. For example, under the Energy Policy Act of 1992 (EPAAct 1992), 75 percent of the light-duty vehicles that USPS acquires must be capable of using an alternative fuel.⁴

As we previously reported, USPS's business model is not viable because it has been unable to reduce costs sufficiently in response to continuing declines in mail volumes and revenue, and it faces growing financial challenges for the foreseeable future.⁵ Specifically, mail volumes have declined about 20 percent over the last 4 fiscal years because of the economic downturn and the public's changing use of the mail. In addition, over the same period, USPS's financial condition has deteriorated, with cumulative losses of more than \$20 billion and rising debt. For fiscal year 2011, USPS projects a \$6.4 billion loss and expects to reach the \$15 billion statutory limit on its debt. USPS's ongoing financial challenges led us to place USPS's financial condition and outlook on our high-risk list in July

³39 U.S.C. §§ 101(a), 403(a).

⁴Pub. L. No. 102-486, § 303, 106 Stat. 2766 (Oct. 24, 1992).

⁵GAO, *U.S. Postal Service: Strategies and Options to Facilitate Progress toward Financial Viability*, [GAO-10-455](#) (Washington, D.C.: Apr. 12, 2010).

2009.⁶ We have reported that action by Congress and USPS is needed on a package of actions that will allow USPS to move toward financial viability by reducing costs, increasing efficiency, and generating revenues.⁷

In view of USPS's difficult financial condition, you asked us to review matters related to USPS's aging delivery fleet. To do so, we addressed the following key questions: (1) What is the profile of USPS's delivery fleet? (2) How has USPS responded to requirements for alternative fuel vehicles, what experiences has it had with alternative fuel vehicles, and what has it learned from its experiences? (3) What, if any, approach has USPS adopted to address its delivery fleet needs, and what are the trade-offs of this approach? (4) What options exist to help USPS fund a major acquisition of delivery vehicles?

To address our reporting objectives, we collected and analyzed data on USPS's delivery fleet for fiscal years 2006 through 2010, using data from a custom query of USPS's Vehicle Management Accounting System (VMAS). To supplement this information, we also reviewed data from reports generated by VMAS (VMAS reports) that USPS officials regularly use to track the agency's vehicle maintenance and fuel costs. The VMAS reports categorize vehicles somewhat differently than our custom query, and therefore the numbers of vehicles identified in these two sources cannot be compared directly. Through these two sources, we developed a profile of USPS's delivery fleet from fiscal years 2006 through 2010, including most direct costs related to the vehicles' maintenance, excluding costs related to accidents. Based in part on electronic testing and interviews with USPS officials knowledgeable about VMAS system controls and vehicle data procedures, we determined that the VMAS data were sufficiently reliable for the purposes of this report. In addition, we worked with USPS Finance and Vehicle Programs officials to obtain a USPS estimate of the total maintenance and fuel costs for the agency's delivery fleet in fiscal year 2010. We compared this estimate with cost summaries and other information provided by USPS finance officials that supported amounts reported in USPS's audited financial statements for fiscal year 2010 and determined that the agency's estimate was reasonable. We also

⁶See GAO, *High Risk Series: Restructuring the U.S. Postal Service to Achieve Sustainable Financial Viability*, [GAO-09-937SP](#) (Washington, D.C.: July 28, 2009). USPS's financial condition and outlook remained on our high-risk list in 2011. See GAO, *High Risk Series: An Update*, [GAO-11-278](#) (Washington, D.C.: Feb. 16, 2011).

⁷[GAO-10-455](#).

conducted site visits to three states (Florida, Minnesota, and New York), chosen because they represent a variety of climates and operating conditions and because USPS operates various types of alternative fuel delivery vehicles in these locations. During our site visits, we interviewed a variety of USPS personnel, including facility managers, maintenance technicians, and letter carriers. We also reviewed prior studies on USPS's financial challenges, federal fleet alternative fuel vehicle requirements and agencies' experiences with these technologies, federal principles for capital planning, and documentation on USPS's environmental sustainability goals. Finally, we interviewed USPS, Department of Energy (DOE), and General Services Administration (GSA) officials and a wide range of officials from companies with large vehicle fleets, such as FedEx Express and United Parcel Service (UPS); automobile manufacturers; alternative fuel associations; and environmental organizations.

We conducted this performance audit from February 2010 to May 2011 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives. Appendix I provides additional information on our scope and methodology.

Background

USPS's mission is to provide reliable, affordable, and universal mail delivery and postal retail services to the entire U.S. population as nearly as practicable, regardless of where people live. In the past 5 years, USPS's delivery workload has increased on average by about 1 million delivery points, or addresses, per year—from 126 million in fiscal year 2006 to about 131 million in fiscal year 2010.⁸ USPS organizes its delivery points into city and rural routes. Most city routes fall into one of three main types, as shown in table 1.

⁸As noted, USPS also delivers mail to another 20 million addresses as part of its post office box service.

Table 1: Types of Delivery Routes and Number of USPS Vehicles Used for Each Route, as of September 30, 2010

Route type ^a	Definition	Number of USPS vehicles used for each route type
City	A route designated as serving city locations, rather than rural areas. USPS provides vehicles for all motorized city routes.	160,006
Park and loop	The letter carrier drives the vehicle to a designated parking location. The carrier then walks a segment of the route before driving to the next location and walking another segment of the route.	80,564
Curblines	The letter carrier delivers to mailboxes at the curb, typically without leaving the vehicle.	50,517
Dismount	The letter carrier exits the vehicle and delivers mail to the door. Dismount routes include carrier pick-ups at collection boxes.	14,058
Other	This category includes walking, bicycle, and express package routes.	14,867
Rural ^b	A route designated as serving rural areas. Such routes typically involve curblines delivery. Because of suburban development, over time, many rural routes now resemble city curblines routes.	32,299
Total		192,305

Source: GAO analysis of a custom query of VMAS data.

Note: USPS also has highway contract routes. These routes are not included in this table because USPS does not provide vehicles for these routes.

^aUSPS characterizes routes based on the type of delivery for the majority of each route. According to Vehicle Programs officials, many routes involve more than one type of delivery.

^bMany rural routes are operated with privately owned vehicles.

In its two most recent contracts with the National Rural Letter Carriers Association,⁹ USPS agreed to provide about 40,000 right-hand-drive vehicles for many of its rural routes from 2004 to 2013. As of December 31, 2010, USPS had provided rural letter carriers with 33,060 of the contractually required vehicles. According to USPS officials, USPS expects to provide the remaining vehicles by the end of December 2013. According to USPS officials, USPS provides the vehicles to rural carriers with low

⁹The current collective bargaining agreement between USPS and the National Rural Letter Carriers Association expired on November 20, 2010. At the conclusion of our review, USPS and the association were in negotiations.

mileage routes and based on other considerations, such as the vehicle's proximity to fuel and a USPS vehicle maintenance facility and the adequacy of security for the vehicle. While these agreements significantly expanded the number of rural letter carriers who operated USPS vehicles, as of March 11, 2011, 41,026 rural letter carriers still used their personal vehicles for USPS mail deliveries.

USPS is an independent establishment of the federal government, with a Board of Governors, which has responsibilities similar to a corporation's board of directors, that oversees its operations and expenditures, including those for major capital investments. Over the past 4 years, capital investments declined from \$2.7 billion in fiscal year 2007 to \$1.4 billion in fiscal year 2010. According to USPS officials, most capital expenditures since fiscal year 2008 have been for investments that are expected to provide cost savings, such as automated mail sorting equipment, and none of these expenditures have been for delivery vehicles. However, as a result of appropriations to GSA under the American Recovery and Reinvestment Act of 2009, USPS received about 6,500 new, more fuel-efficient vehicles from GSA in 2009 and 2010 in a one-for-one exchange for older, less fuel-efficient USPS vehicles.¹⁰

To help address its financial challenges, in March 2010, USPS issued a 10-year action plan, or strategy, in which it proposed, among other things, reducing mail delivery from 6 days to 5 days a week and enhancing its ability to close underutilized postal offices. The plan did not include a strategy for addressing the agency's delivery fleet needs. USPS also has made operational changes to reduce costs, such as deploying a new system that automatically sorts and sequences large envelopes and magazines into the order in which they are to be delivered. According to USPS, this system reduces the time letter carriers must spend preparing mail for delivery and allows for consolidation of delivery routes into fewer, but longer, routes.¹¹ USPS is also working to enhance its revenues through initiatives such as the introduction of flat-rate boxes for Priority Mail and volume-based rate incentives to stimulate additional mail use. Operational changes will affect USPS's future fleet needs.

¹⁰ According to USPS officials, while a small number of these vehicles (minivans) are used for mail delivery, the majority are used for administrative purposes such as sales, accident investigation, and Office of Inspector General operations.

¹¹ From fiscal year 2009, when USPS implemented a route reduction program, through fiscal year 2010, the total number of city and rural routes decreased by 13,423.

USPS is subject to certain provisions of EPAct 1992 related to federal agency vehicle fleets. The act—designed to improve energy efficiency—requires that 75 percent of light-duty vehicles acquired for federal fleets in major metropolitan areas be capable of using alternative fuels. Alternative fuel vehicles must be capable of using one of a variety of fuel types, such as ethanol, natural gas, propane, biodiesel, electricity, or hydrogen. Legislation subsequently expanded the definition of alternative fuel vehicles to include hybrid vehicles and any other type of vehicle that can achieve a significant reduction in petroleum consumption, as demonstrated by the Administrator of the U.S. Environmental Protection Agency. Legislation also subsequently required that all dual-fuel vehicles use alternative fuel unless they have received a waiver from DOE.¹² DOE grants waivers to agencies that operate vehicles in areas where alternative fuel is unavailable, not available within 5 miles or 15 minutes of travel, or more expensive per gallon than gasoline at the same fuel station.¹³

In February 2011, USPS had 306 vehicle maintenance facilities distributed among its seven area offices.¹⁴ According to USPS officials, the agency also uses contractors at private maintenance facilities, such as garages, to perform some of its vehicle maintenance, and their use has increased in recent years, partly because the number of USPS technicians has declined under a hiring freeze. USPS tracks its vehicles' performance and costs, including maintenance work and costs, through VMAS, according to USPS officials. Field and headquarters offices get periodic VMAS reports on various vehicle performance indicators, and data on vehicle accidents are kept in a separate database.

USPS's Office of Vehicle Programs, which is under the Vice President of Delivery and Post Office Operations, is responsible for fleet management, leasing, maintenance policies and procedures, parts, vehicle research, development and testing, and new vehicle acquisitions. In addition, USPS's Office of Sustainability coordinates and establishes energy and environmental goals for the fleet. Consistent with legislative requirements, by fiscal year 2015 (compared with a fiscal year 2005 baseline), USPS's goals are to reduce petroleum fuel use by 20 percent and increase

¹²Pub. L. No. 109-58, § 701, 119 Stat. 594 (Aug. 8, 2005).

¹³Gasoline is distilled from petroleum. We used the terms "gasoline" and "petroleum" interchangeably throughout this report.

¹⁴Area offices are designated as Capital Metro, Eastern, Great Lakes, Northeast, Pacific, Southwest, and Western.

alternative fuel use by 10 percent annually (for an overall increase of 100 percent over the 10-year period).¹⁵

In its fiscal year 2010 Strategic Sustainability Performance Plan, USPS reported that it did not expect to meet its 2015 petroleum reduction goal. Specifically, USPS reported that from fiscal years 2005 through 2009, its delivery fleet's use of petroleum increased because of growth in the number of its delivery addresses. According to USPS, its proposal to reduce delivery from 6 days to 5 days a week has the largest petroleum reduction potential, but even if Congress approves the proposal, it would not be likely to meet its fiscal year 2015 goal. In contrast, USPS reported that it had already met its second goal because, from fiscal years 2005 through 2009, its use of alternative fuel increased by 114 percent.

USPS's Delivery Fleet Primarily Consists of LLVs That Are Approaching the End of Their 24-Year Expected Operational Lives

LLVs, Flex-Fuel Vehicles, and Minivans Are the Principal Components of USPS's Delivery Fleet

The number of half ton and smaller vehicles in USPS's delivery fleet—mostly LLVs, flex-fuel vehicles (FFV), and minivans—has remained relatively constant over the past 5 fiscal years, ranging from 182,517 to 189,712 vehicles,¹⁶ despite about 13,400 fewer delivery routes. The number of delivery vehicles peaked in fiscal year 2008, before falling slightly, and grew overall by 3,487 vehicles, or about 2 percent, over the 5-year period.

¹⁵Pub. L. No. 110-140, § 142, 121 Stat. 492 (Dec. 19, 2007).

¹⁶These data are from year-end reports for fiscal years 2006 to 2010 that include one-half ton vehicles and smaller vehicles that comprise the vast majority of USPS's delivery fleet. Because vehicles are categorized somewhat differently in VMAS reports than in our custom query, the quantity of vehicles between the two data sources cannot be compared directly.

Despite some recent vehicle purchases, the majority of USPS's fleet consists of LLVs, which are approaching the end of their 24-year expected operational lives. Produced by Grumman, the LLVs were acquired from 1987 through 1994, before EPA's 1992 light-duty vehicle acquisition requirements went into effect in fiscal year 1996.¹⁷ The LLVs have light-weight and long-lasting aluminum bodies mounted on a General Motors chassis and are powered by a 4-cylinder gasoline engine. USPS acquired the second major segment of the delivery fleet, FFVs, in 2000 and 2001, after EPA's 1992 acquisition requirements went into effect. The FFVs have an aluminum body that is similar to that of the LLV. According to USPS officials, FFVs are mounted on a Ford Explorer platform and are powered by a 6-cylinder engine that is "flex-fuel" capable, meaning that it can use gasoline or E85, a mixture of gasoline and ethanol (85 percent).

LLVs and FFVs, which together make up about 84 percent of USPS's delivery fleet, are easily identifiable as mail delivery vehicles (see fig. 2). These vehicles are built on a light truck chassis (light-duty vehicles) and have a cargo capacity of 1,000 pounds with 108 cubic feet of cargo space. Key features of both include right-hand drive, an open interior for storing mail, and sliding doors. According to USPS, right-hand-drive vehicles are necessary for curbside delivery so that letter carriers can safely deliver mail directly to mail boxes without leaving their vehicles. Because right-hand-drive vehicles can be used for all routes, they also provide operational flexibility, allowing managers to move them to any route when, for example, another right-hand-drive vehicle is out of service for maintenance. In addition, Vehicle Programs officials told us that a standardized design minimizes training requirements and facilitates the establishment of partnerships with part suppliers.

¹⁷Specifically, in fiscal year 1996, EPA's 1992 required that 25 percent of all federal fleet acquisitions be for alternative fuel vehicles. The legislation increased the percentage of alternative fuel vehicles required for acquisitions in each subsequent year until fiscal year 1999, when the 75 percent acquisition requirement was reached. Pub. L. No. 102-486, § 303 (b).

Figure 2: Example of an LLV and FFV, 2010



Source: GAO.

LLV

FFVs have an extra window behind the door for improved visibility.

The LLVs' and FFVs' bodies were made to withstand harsh operating conditions. USPS officials explained that the typical delivery operating cycle is extremely hard on vehicles because of the large number of stops and starts each day (an average of about 500 stops and starts per delivery route). In addition, when the letter carrier frequently exits and re-enters the vehicle, doors are opened and closed, and keys are turned in the door locks and ignition far more often than in a typical personal vehicle.

The third major segment of the delivery fleet, shown in figure 3, consists of commercially available minivans. While USPS modified these minivans for use as delivery vehicles,¹⁸ according to USPS officials, they do not have right-hand drive and therefore cannot be used on all routes, reducing operational flexibility. In addition, commercially available vehicles are not built to withstand the harsh operating conditions of mail delivery and, consequently, the minivans have an expected operating life of 10 years. Most of USPS's minivans are E85-capable, meaning that they can operate on either E85 or gasoline.

¹⁸For example, security or safety screens were installed in the cargo area, the driver compartment and passenger seats were removed, and the vehicles were painted to identify them as USPS vehicles.

Figure 3: USPS Minivan Used for Delivering Mail, 2010



Source: GAO.

Table 2 provides a profile of the three main types of delivery vehicles that collectively account for about 96 percent of USPS's 192,305 delivery vehicles. Other types of vehicles are used to deliver mail in certain areas. These vehicles include sport utility vehicles and larger 2-ton trucks, which typically are used for mail collection, not deliveries.

Table 2: Profile of the Three Main Categories of USPS Delivery Vehicles, as of September 30, 2010

Vehicle type	Acquisition years	Vehicle acquisition costs ^a (adjusted for inflation)	Mean age (years)	Age range (years)	Estimated vehicle life (years)	Average miles driven per day/year	Number in fleet
LLV	1987–1994	\$20,009 ^b	20	16–23	24	18/5,388	141,319
FFV	2000–2001	25,070 ^c	9	9–10	24	17/5,079	21,137
Minivan							
Ford Aerostars and Windstars	1997–1998	23,155 ^d	12	12–13	10	11/3,369	5,351
Chrysler Caravans and Ford Windstars	2003	22,875 ^e	7	7	10	15/4,639	6,563
Chrysler Caravans, Dodge Caravans, and Chevrolet Uplanders	2006–2008	17,500 ^f	2.6	2–4	10	14/4,203	10,186
Subtotal							184,556
Other							7,749
Total							192,305

Source: GAO analysis of a custom query of USPS's VMAS data (number in fleet) and information provided by USPS from VMAS reports.

^aAcquisition costs have been adjusted for inflation using a Gross Domestic Product Price Index, base year 2010.

^bUSPS acquired the LLVs from 1987 to 1994. Because relatively consistent quantities of LLVs were purchased each year, USPS provided us with the per-unit cost for 1990—the approximate mid-point of the acquisitions—of \$13,057 as the base year from which to adjust the vehicles' cost for inflation.

^cUSPS acquired the FFVs from 2000 to 2001 at a per-unit cost of \$20,537. We chose 2001 as the base year to adjust the vehicles' cost for inflation because, according to a Vehicle Programs official, most of USPS's payments for these vehicles occurred in that year.

^dThis minivan category comprises two vehicle types with different costs that USPS acquired during 1997 and 1998. The per-unit costs for these vehicles were \$21,069 for the Ford Aerostars and \$17,558 for the Ford Windstars. To obtain a single cost figure, we first adjusted the per-unit costs of each model for inflation. We chose 1998 as the base year to adjust the vehicles' cost for inflation because, according to a Vehicle Programs official, most of USPS's payments for these vehicles occurred in that year. We then calculated a weighted average based on the number of each model (Aerostars and Windstars) acquired.

^eThis minivan category comprises two types of vehicles, Chrysler Caravans, acquired in 2003 at a per-unit cost of \$19,451, and Ford Windstars. According to USPS officials, the Ford Motor Company provided the Windstars free of charge to USPS. Ford provided the Windstars to USPS in exchange for 500 electric vehicles that Ford recalled when the vehicles' battery manufacturer went out of business. (This matter is discussed later in the report.) As a result, the \$22,875 shown reflects only the per-unit cost for the Chrysler Caravans, adjusted for inflation.

^fAcquired from 2006 to 2008, this minivan category comprises three vehicle types with different acquisition costs. The per-unit costs of these vehicles were \$18,861 for the Chrysler Caravans, \$17,261 for the Dodge Caravans, and \$15,616 for the Chevrolet Uplanders. To obtain a single cost figure, we adjusted the per-unit costs of each model for inflation. We chose the middle year of acquisition, 2007, as the base year to adjust the vehicles' cost for inflation. We then calculated a weighted average based on the number of each vehicle type (Chrysler Caravans, Dodge Caravans, and Chevrolet Uplanders) acquired.

According to Vehicle Programs officials, USPS leased some delivery vehicles (minivans) in the past, but it now owns all of its delivery vehicles. In part, this is because USPS's custom-built LLVs and FFVs are not commercially available through leasing programs. However, even when vehicles are commercially available, Vehicle Programs officials stated that, according to USPS's lease-versus-buy analyses for recent purchases, such as its fiscal year 2008 acquisition of minivans, purchasing these vehicles has been more cost-effective than leasing them because USPS intends to own the vehicles for a long time.¹⁹

Some of USPS's Delivery Vehicles Are Capable of Using Alternative Fuels

About 78 percent of USPS's delivery vehicles use gasoline or diesel exclusively, while the other 22 percent are capable of operating with an alternative fuel.²⁰ As shown in table 3, E85-capable vehicles (FFVs and minivans) make up about 20 percent of the delivery fleet while, collectively, the other alternative fuel vehicles—typically, converted LLVs—account for about 2 percent of the delivery fleet. According to Vehicle Programs officials, a typical LLV uses an equivalent of about two gasoline gallons of fuel a day. According to USPS officials, while USPS has a variety of pilot programs underway to explore other alternative fuel vehicle technologies (other than E85-capable vehicles), almost all of its other alternative fuel vehicles are capable of using compressed natural gas in addition to gasoline.

¹⁹Vehicle Programs personnel told us that they perform a lease-versus-buy analysis for each of USPS's major vehicle acquisitions.

²⁰As discussed earlier, LLVs, which make up the majority of USPS's fleet, were acquired from 1987 through 1994, before EPA's 1992's light-duty vehicle acquisition percentage requirements went into effect in fiscal year 1996.

Table 3: Number of USPS Delivery Vehicles, by Alternative Fuel Capability, as of September 30, 2010

Alternative fuel capability	Description of fuel type	Number of vehicles	Percentage of delivery fleet
E85	E85 is a blend of 85% ethanol (primarily derived from corn) and 15% gasoline.	39,149 ^a	20%
Compressed natural gas	Primarily consists of methane, around 90%, with small amounts of ethane, propane, and other gases.	3,401 ^b	2
Propane	Propane is naturally occurring and is derived from a process of separating petroleum from crude oil or natural gas.	34 ^c	less than 1
Plug-in electric	Electric vehicles store electricity in an energy storage device, such as a battery. Energy is replenished by plugging the vehicle into an electric source.	42 ^d	less than 1
Conventional hybrid	Uses both gasoline and stored energy in a battery to power the vehicle.	11 ^e	less than 1
Hydrogen	A fuel cell stack in the vehicle converts hydrogen gas and oxygen into electricity, which drives an electric motor.	2 ^f	less than 1
Total		42,610	22%

Source: GAO analysis of data provided by USPS from a VMAS report.

Note: Percentages do not total to 22 due to rounding.

^aThese vehicles consist of FFVs and E85-capable minivans.

^bThese vehicles consist of 3,372 converted LLVs and 29 2-ton trucks that run on compressed natural gas.

^cThese vehicles are LLVs that have been converted to operate on propane.

^dUSPS has 30 electric 2-ton trucks and 12 T-3s—three-wheeled vehicles equipped with a small trailer for more storage capacity.

^eTen of these hybrids are sports utility vehicles that operate on gasoline. The remaining hybrid is a 2-ton truck that uses diesel.

^fEach of these vehicles is a GM Chevrolet Equinox sports utility vehicle.

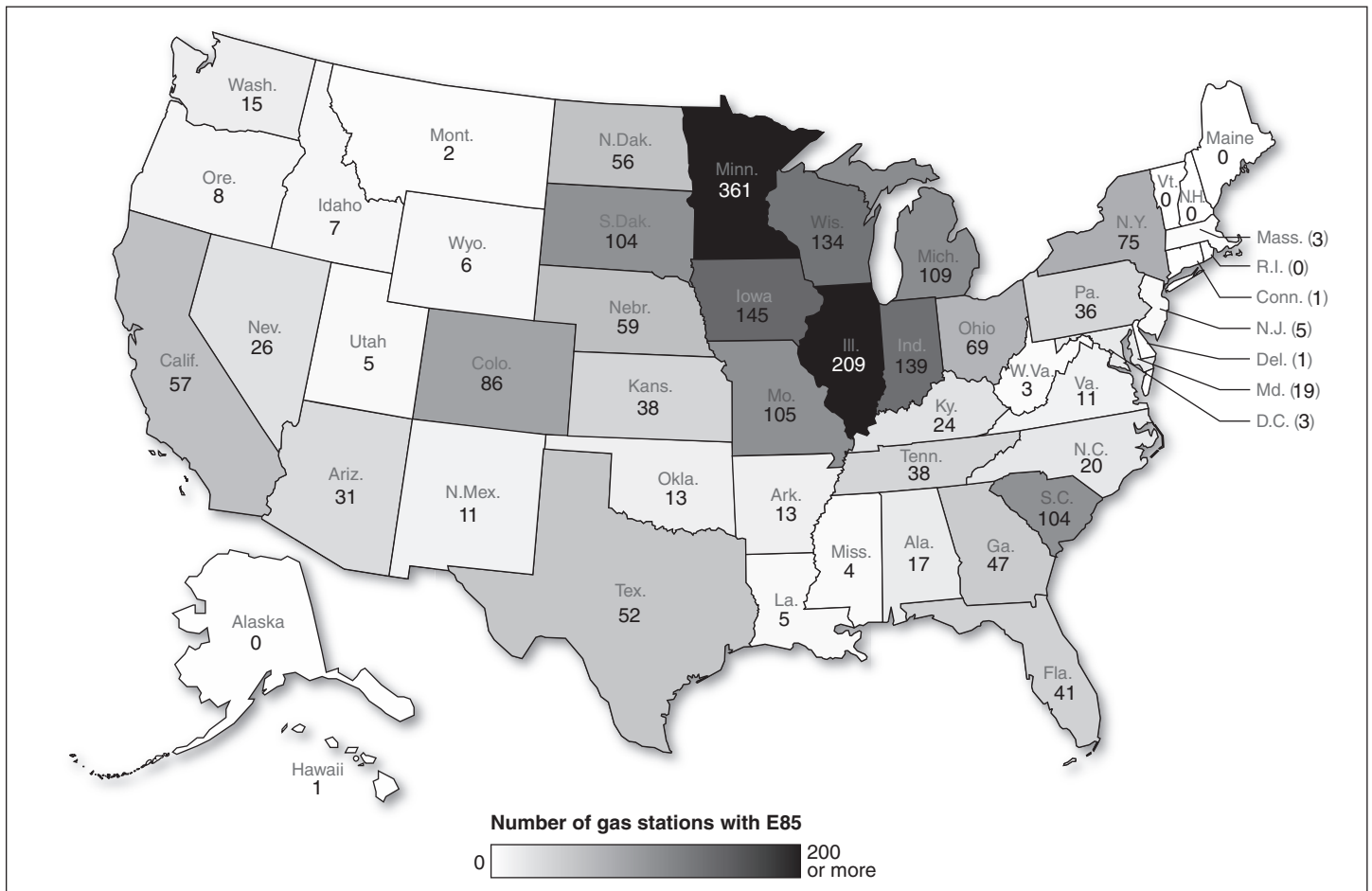
USPS Has Acquired Alternative Fuel Vehicles in Response to Requirements, but Has Experienced Challenges

USPS Has Acquired E85-Capable Vehicles and Increased E85 Use, but Has Not Always Used E85 because of Logistical and Cost Issues

Since 2000, USPS has consistently purchased E85-capable delivery vehicles to satisfy the legislative requirement that at least 75 percent of its vehicle acquisitions be alternative fuel vehicles, and it had a total of 39,149 E85-capable vehicles in its delivery fleet as of September 30, 2010. According to Vehicle Programs officials, USPS purchased E85-capable vehicles because even though prior to 2004 each vehicle cost about \$300 to \$500 more than a comparable gasoline-only vehicle when they were acquired, purchasing E85-capable vehicles allowed USPS to meet the requirements of EPAct 1992 for less than it would have had to spend to acquire other types of alternative fuel vehicles. In addition, according to Vehicle Programs officials, the agency expected that E85 eventually would be widely available throughout the United States. However, according to DOE data, E85 suppliers are concentrated in a few regions of the country (see fig. 4.) and, as of December 2009,²¹ E85 was not available at 99 percent of U.S. fueling stations.

²¹These data were the most recent available, as of December 31, 2010.

Figure 4: Number of Gas Stations that Sell E85 in Each State, as of December 31, 2010

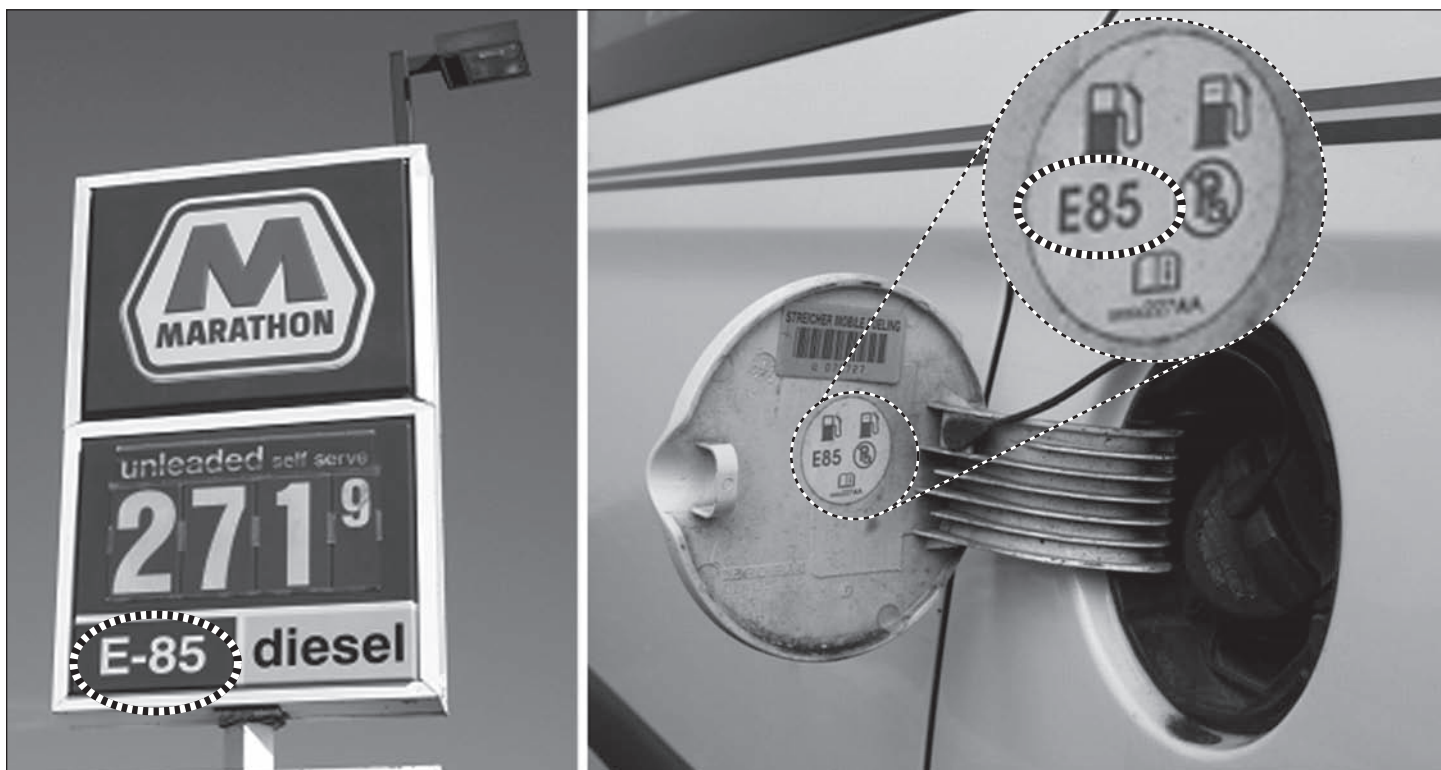


Sources: DOE (data); Map Resources (map).

USPS increased its use of E85 from about 324,000 gasoline gallon equivalents in fiscal year 2005 to about 822,000 gasoline gallon equivalents in fiscal year 2009—an increase of about 154 percent—but the limited availability of E85 nationwide has hindered its greater use of this fuel. For example, according to USPS officials, letter carriers who drive the 720 E85-capable vehicles USPS deployed around Minneapolis and St. Paul, Minnesota, face few problems because E85 is widely available there (see fig. 5). However, because of operational requirements, many E85-capable delivery vehicles are used in other areas, such as New England, that currently have very limited E85 availability. According to Vehicle Programs officials, to increase E85 use, USPS has redeployed some E85-

capable vehicles within local areas so that they could be fueled with E85. However, Vehicle Programs officials said that USPS has not undertaken large-scale redeployments of these vehicles because a cross-country move costs about \$1,500 to \$2,500 per vehicle.²²

Figure 5: Gas Station Sign Advertising E85 near a Minnesota Post Office with E85-Capable Delivery Vehicles in September 2010, and Decals on the Fuel Cap Door of a USPS Delivery Minivan Indicating That It Is E85 Capable



Source: GAO.

Because of E85's limited availability, USPS has sought annual waivers from DOE and, according to USPS data for fiscal year 2010, obtained waivers that permit it to operate 21,495 of its 40,072 E85-capable

²²According to Vehicle Programs officials, redeploying vehicles from 1,000 to 1,500 miles costs less—about \$800 to \$1,000 per move.

vehicles—or about 54 percent—exclusively on gasoline.²³ The remaining 18,577 E85-capable vehicles operate without waivers (unwaived vehicles) and, thus, are expected to operate exclusively on E85. However, as described below, because operational costs are higher for using E85 than for using gasoline, even when E85-capable vehicles are located in areas where E85 is available, USPS does not always use E85, as acknowledged by Vehicle Programs officials. According to DOE officials, apart from cost considerations, DOE will not grant a waiver to the requirement to use alternative fuel when E85 is available within 5 miles or 15 minutes of travel. In January 2009, USPS issued a policy stating that vehicles should be fueled with E85 when (1) E85 is available either to an entire delivery unit or on a specific route when no deviation from the route or no additional travel time is required to acquire E85 and (2) E85 costs the same or less than gasoline.²⁴ In July 2009, based on DOE's draft guidance on E85 waivers, USPS issued a related memo requesting delivery programs managers to determine where E85 was located within 15 minutes or 5 miles of E85-capable vehicles and priced equal to or less than regular unleaded gas. The memo advised the managers that E85 must be used if these conditions were met. However, Vehicle Programs officials acknowledged that, due to operational requirements and cost issues, this latter requirement is not always followed. Instead, according to a USPS official, managers are expected to take into account the language in both the January 2009 policy and July 2009 memo while considering operational requirements, such as additional labor costs, that may be incurred by letter carriers who must deviate from their routes to fuel with E85.²⁵

²³The number of E85-capable vehicles discussed here (40,072) does not agree with the number of E85-capable vehicles discussed previously in this report (39,149) in part because the larger number includes E85-capable vehicles used for administrative purposes. USPS applies for E85 waivers for its entire fleet, not specifically for those vehicles used for deliveries. Given time constraints and the small percentage of USPS's entire E85-capable fleet that consists of administrative vehicles (about 2 percent), we did not attempt to identify the number of waivers received exclusively for the E85-capable delivery fleet. According to USPS data, USPS applied for 25,424 waivers and received 21,495 for fiscal year 2010. While USPS could have appealed the 3,929 waiver requests that were not approved by DOE, it did not.

²⁴In a July 2009 memorandum, USPS asked its delivery program managers to collect information about ethanol fuel prices and driving distances from USPS facilities, to determine where E85 was located within 15 minutes or 5 miles of E85-capable vehicle routes, and to find out where its price was equal to or less than that of regular unleaded gas.

²⁵According to USPS officials, the average hourly rate, with benefits, for a city letter carrier is \$41.24.

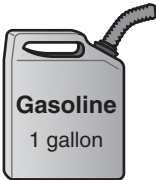

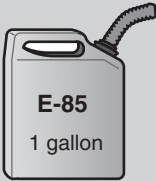

DOE officials are aware that USPS's E85 policy varies from DOE's criteria for approving waivers and that USPS is not fully complying with legislative requirements to fuel unwaived E85-capable vehicles with E85.²⁶ However, they acknowledged that, unlike other agencies that receive appropriations for fuel expenditures, USPS must pay for its fuel costs through income earned from its operations.

USPS's Use of E85-Capable Vehicles Has Resulted in Higher Fuel Costs

USPS's use of E85-capable vehicles has resulted in higher operating costs regardless of whether the vehicles are fueled with E85 or gasoline. First, when USPS contracted to purchase its FFVs in 2000, E85 capability was available only in vehicles with 6-cylinder engines. According to USPS officials, the FFVs' 6-cylinder engines are heavier and less fuel efficient than the LLVs' 4-cylinder engines, resulting in higher fuel consumption and costs—regardless of the type of fuel used. Second, because of E85's lower energy density, USPS's FFVs are about 27 to 30 percent less fuel efficient when fueled with E85 than when fueled with gasoline, according to Vehicle Programs officials. Thus, it takes more gallons of E85 than gasoline to drive the same number of miles. Furthermore, although E85 generally costs less per gallon than gasoline, the difference in cost generally has not been sufficient to offset the higher costs associated with E85's lower fuel efficiency (see fig. 6). Based on USPS's information that it consumed about 587,000 gallons of E85 in fiscal year 2010, we estimate that USPS incurred about \$135,700 more in costs in fiscal year 2010 by using E85, instead of gasoline.

²⁶ According to DOE officials, DOE developed its criteria for waivers in consultation with other federal agencies and, although USPS participated in these consultations, USPS dissented from the final determination.

Figure 6: Average USPS Price for E85 and Gasoline in Fiscal Year 2010 and the Fuels' Relative Efficiency

Fuel type	Average price per gallon ^a	Miles per gallon ^b	Cost per mile
 <p>Gasoline 1 gallon</p>	\$2.62	10 miles 	\$0.26
 <p>E-85 1 gallon</p>	\$2.27	7.15 miles 	\$0.32

Sources: GAO analysis of USPS data.

^aAverage fiscal year 2010 USPS fuel price for gasoline and E85, according to a Vehicle Programs official.

^bThis figure represents a hypothetical example of the difference in fuel efficiency between gasoline and E85. It is based on USPS's (1) estimate of a 27 percent to 30 percent fuel efficiency difference when using E85, compared to gasoline, and (2) the average cost for these fuels in fiscal year 2010. We used 28.5 percent—the mid-point of USPS's estimated fuel efficiency difference—to calculate the difference in USPS's estimate of fuel efficiency between gasoline and E85. However, this figure does not necessarily reflect actual fuel efficiencies realized by USPS.

The reasons that USPS decided to purchase E85-capable vehicles to meet legislative requirements and the challenges it faces in fueling these vehicles with E85 are similar to those of many other federal agencies. For example, according to DOE data, 87 percent of federal alternative fuel vehicles acquired to meet EPAct 1992 requirements in fiscal year 2009 were E85-capable vehicles. Furthermore, in fiscal year 2010, approximately 55 percent of E85-capable vehicles acquired to meet EPAct 1992 requirements in all federal fleets received a waiver, allowing them to operate exclusively on gasoline, according to DOE. In addition, according to DOE officials, a recent DOE analysis—currently in draft—has found

that the majority of federal agencies are not in compliance with the requirement to fuel unwaived E85-capable vehicles with E85.²⁷

Officials from UPS and FedEx Express—companies with missions similar to USPS’s—told us that they see few benefits to owning and operating E85-capable vehicles and, as a result, they have not purchased any E85-capable vehicles. Instead, they said that despite higher acquisition costs, their companies have purchased small numbers of other alternative fuel vehicles—electric, hybrid, and compressed-natural-gas-capable vehicles—to lower their companies’ fuel costs, reduce their emissions, and enhance their corporate image.

USPS’s Experiences with Other Types of Alternative Fuel Vehicles Demonstrate Cost and Infrastructure Challenges

Apart from its experiences with E85-capable vehicles, USPS has a variety of limited experiences with other types of alternative fuel delivery vehicles. Collectively, these vehicles accounted for about 2 percent (3,490 vehicles) of its delivery fleet as of September 30, 2010. These vehicles include 3,401 LLVs and 2-ton trucks converted to run on compressed natural gas,²⁸ 34 LLVs converted to run on propane, 11 conventional hybrid electric vehicles, 42 plug-in electric vehicles, and 2 hydrogen fuel cell vehicles.

According to Vehicle Programs officials, while USPS has integrated these alternative fuel vehicles into its delivery fleet, it has not invested more heavily in alternative technologies for several reasons. First, the officials stated that USPS is the only U.S. agency that requires right-hand-drive vehicles to fulfill its mission and, because these vehicles are not available commercially, the requirement limits vehicle choices, regardless of how the vehicles are fueled.²⁹ Second, USPS officials and other experts explained that purchasing alternative fuel vehicles instead of gasoline-

²⁷Our previous work also has identified challenges faced by agencies in operating E85-capable vehicles on E85. For example, in October 2008, we reported that, like USPS, other federal fleet operators often use gasoline in unwaived vehicles because of convenience, fuel availability, or cost considerations. See GAO, *Federal Energy Management: Agencies Are Acquiring Alternative Fuel Vehicles but Face Challenges in Meeting Other Fleet Objectives*, [GAO-09-75R](#) (Washington, D.C.: Oct. 22, 2008).

²⁸This figure includes compressed-natural-gas-capable vehicles that, according to Vehicle Programs officials, are currently fueled exclusively with gasoline.

²⁹Some overseas vehicle manufacturers produce right-hand-drive vehicles, however, the cost of adapting and shipping these vehicles here would be a major obstacle, according to Vehicle Programs officials.

powered vehicles likely would result in higher estimated lifecycle costs, largely because their acquisition costs would be significantly higher. While purchasing some types of alternative fuel vehicles could reduce USPS's fuel costs, they said, the fuel savings would be unlikely to offset the higher acquisition costs of the vehicles over their operating lives because, on average, USPS's delivery vehicles travel only about 17 miles a day. Third, Vehicle Programs officials told us that the limited availability of alternative fuels and the high costs of installing fueling infrastructure for them—such as on-site charging stations for electric vehicles—have made it difficult to elect to invest in or operate these vehicles. Finally, they noted that USPS has experienced problems obtaining technological support and parts for alternative fuel vehicles. For example:

- *High acquisition costs have prohibited larger purchases of hybrid vehicles.* When we conducted our site visits, USPS had 12 hybrid vehicles in its delivery fleet: two 2-ton hybrid trucks in New York state that were converted to a hybrid power train that USPS received in 2009, and 10 Ford Escape hybrids in California that were purchased in 2005. The 2-ton vehicles were converted to hybrid vehicles through partnerships with manufacturers at no cost to USPS, and it was able to purchase the 10 Ford Escape hybrids at a cost of about \$27,700 in 2010 dollars.³⁰ According to USPS officials, all of these vehicles have significantly better fuel economy than similar nonhybrid vehicles in its delivery fleet. However, Vehicle Programs officials stated that because hybrid vehicles typically cost more to acquire—\$9,000 more in the case of a 2011 Ford Escape hybrid compared to the nonhybrid version of the same vehicle³¹—USPS has not invested heavily in these vehicles.
- *Limited fueling infrastructure and difficulty obtaining parts have caused USPS to scale back its use of compressed natural gas in delivery vehicles.* In the 1990s, USPS converted about 7,300 LLVs to operate on compressed natural gas. However, because of fueling infrastructure issues and parts supply challenges, as of September 30, 2010, USPS had removed this capability from all but 3,372 of these vehicles. At the conclusion of our review, 42 of these vehicles were being operated in Corpus Christi, Texas, where the city, to increase the use of this fuel, helped install needed fueling infrastructure and provided \$400 of fuel for each of these 42 compressed-natural-gas-capable vehicles (about 200 days of fuel per

³⁰USPS purchased the vehicles in 2005 for \$25,026, per vehicle.

³¹The manufacturer's suggested retail price for a 2011 Ford Escape hybrid was \$30,045, compared with \$21,085 for the nonhybrid Ford Escape, as of February 15, 2011.

vehicle, according to Vehicle Programs officials). The manager of the local vehicle maintenance facility told us that operating these vehicles on compressed natural gas has reduced USPS's fuel costs and, consequently, in January 2011, he was in the process of obtaining 37 additional compressed-natural-gas-capable vehicles from other locations in Texas. In contrast, USPS's experience in Huntington, New York, illustrates what Vehicle Programs officials described as more typical challenges related to USPS's use of compressed natural gas. Specifically, in the mid-1990s, all of the LLVs at the Huntington post office were converted to run on compressed natural gas. USPS officials said the vehicles were run on this fuel for only about 6 months because—almost immediately—the vehicles had reliability issues and they faced challenges obtaining replacement parts.

- *Parts supply issues caused Ford to recall 500 electric vehicles soon after their deployment as USPS delivery vehicles.* In 1999, USPS, through a partnership with DOE and several regional and local agencies in California and New York state, acquired 500 plug-in electric vehicles from Ford. However, Ford recalled the vehicles soon afterwards because the vehicle battery manufacturer stopped making the needed batteries. Ford replaced them with gasoline-powered minivans.

For additional information on USPS's experiences with various types of alternative fuel vehicles, see appendix II.

USPS's Approach for Addressing Its Delivery Fleet Needs Has Financial, Operational, and Environmental Trade-offs

USPS's Approach Is to Maintain Its Current Vehicles While Planning How to Address Its Longer Term Delivery Fleet Needs

USPS's current approach is to sustain operations of its delivery fleet—through continued maintenance—for the next several years, while planning how to address its longer term delivery fleet needs. The current approach also anticipates purchasing limited numbers of new, commercially available minivans, as necessary, to meet its operational requirements. According to Vehicle Programs officials, USPS adopted its current approach in December 2005 after senior management and a Board of Governors subcommittee decided not to initiate a major replacement or refurbishment of the delivery fleet. At that time, USPS estimated that fleet replacement—one of the five options considered—would cost \$5 billion for about 175,000 vehicles.³² Planning and executing a custom-built vehicle acquisition would take 5 to 6 years from initially identifying the vehicles' specifications and negotiating with manufacturers through testing and deploying the vehicles, according to Vehicle Programs officials. USPS also elected not to refurbish its fleet, another option considered. According to a USPS contractor, the agency could have delayed purchasing new vehicles for at least 15 years if it refurbished its existing LLVs and FFVs (i.e., replaced nearly all vehicle parts subject to the effects of wear and aging) over a 10-year period. In 2005, the contractor estimated that refurbishing these vehicles would cost \$20,000 per vehicle—a total cost of about \$3.5 billion, assuming that 175,000 vehicles were refurbished. According to Vehicle Programs officials, USPS chose to sustain its operations through continued vehicle maintenance pending operational and financial

³²The five options considered were: (1) continuing to maintain its current fleet of LLVs and FFVs; (2) investing in a major acquisition of new right-hand-drive delivery vehicles beginning in fiscal year 2008; (3) refurbishing the current fleet of LLVs and FFVs; (4) acquiring and configuring commercially available right-hand-drive vehicles, which were available at that time; and (5) acquiring and configuring commercially available left-hand-drive vehicles.

developments and evolving advancements in vehicle technologies. Several senior USPS officials told us the agency does not intend to begin a major vehicle acquisition until 2018 at the earliest, largely because of financial constraints.

As discussed earlier, USPS's financial condition has since declined substantially and although USPS issued a 10-year action plan in March 2010 for improving its financial viability, the plan did not describe a strategy for addressing its delivery vehicle needs. Federal capital planning principles emphasize the importance of

- strategically linking agency goals and objectives, such as those outlined in USPS's action plan, to an agency's capital investment needs;
- evaluating the capacity of existing agency assets; and
- identifying alternatives to bridge gaps between current and needed capabilities.³³

USPS has not analyzed how operational changes proposed in its 10-year plan, including a potential shift in delivery from 6 days a week to 5 days, would affect its fleet needs or the consequences of its decision to delay the fleet's replacement or refurbishment. In addition, it has not developed a plan for financing the strategy it eventually chooses. However, without the inclusion of this major capital investment need in its action plan or other documented analysis, USPS's future fleet needs are unclear, as is USPS's assessment of how urgently it should replace, or refurbish, much of its aging delivery fleet and how it can finance such a major capital investment.

According to Vehicle Programs and senior USPS officials, the Vehicle Programs office is in the early stages of developing a new proposal for addressing the agency's delivery fleet needs. These officials stated that the proposal will likely explore several alternatives, including continuing to maintain the current fleet, refurbishing the LLVs and FFVs, or, possibly, undertaking a major acquisition of new vehicles. The proposal also is expected to address a June 2010 USPS Office of Inspector General

³³See GAO, *Budget Issues: Agency Implementation of Capital Planning Principles is Mixed*, [GAO-04-138](#) (Washington, D.C.: Jan. 16, 2004) and *Executive Guide: Leading Practices in Capital Decision-making*, [GAO/AIMD-99-32](#) (Washington, D.C.: December 1998).

recommendation that USPS replace about 20,000 delivery vehicles whose maintenance costs exceeded \$5,600 during each of 2 consecutive fiscal years.³⁴ Furthermore, Vehicle Programs officials stated that the proposal will discuss strategies for incorporating alternative fuel capabilities into USPS's next major fleet acquisition. According to Vehicle Programs officials, USPS expects to present its proposal for consideration by the USPS Capital Investment Committee later this fiscal year.

USPS Is Uncertain How Best to Incorporate Alternative Fuel Vehicles into Its Next Major Delivery Fleet Acquisition

While USPS intends to examine ways to comply with EPA's 1992 acquisition requirements in its next large-scale acquisition of vehicles, according to Vehicle Programs officials, life-cycle costs are significantly higher for nearly all currently available alternative fuel vehicles than for gasoline-powered vehicles. This is largely because, given the delivery fleet's low annual mileage, the savings on fuel associated with alternative fuel vehicles would not be sufficient to offset the vehicles' higher acquisition costs. Consequently, these officials told us a large-scale acquisition of alternative fuel vehicles (other than E85-capable vehicles) is not likely to be financially viable for USPS. In addition, as discussed earlier, USPS has concerns about undertaking a large-scale acquisition of most alternative fuel vehicles because of their potentially higher infrastructure and operating costs and uncertainties about the availability of parts and long-term support for rapidly evolving alternative vehicle technologies. For example, USPS expressed concern about two recent bills introduced in Congress. One of these bills would have authorized about \$2 billion for, among other purposes, the purchase of at least 20,000 electric delivery vehicles and the installation of 24,000 charging stations,³⁵ while the other bill would have required USPS to ensure that within 5 years at least 75 percent of its fleet would consist of electric vehicles but did not authorize funding.³⁶ USPS stated that it is concerned about operating a large portion of its fleet exclusively on electricity because of the potential for mail delivery disruptions if local electric grids fail. In addition, USPS expressed concerns about the availability of parts and potentially high vehicle acquisition, infrastructure, and battery-replacement costs. Because of these concerns, USPS commented that if

³⁴See United States Postal Service, Office of Inspector General, *Audit Report—Delivery Vehicle Replacement Strategy*, DA-AR-10-005 (Washington, D.C., June 16, 2010).

³⁵H.R. 4399, 111th Cong. (2009).

³⁶H.R. 4711, 111th Cong. (2010).

legislation related to the electrification of its fleet is enacted, it would prefer funding for a pilot program of roughly 1,000 electric vehicles that it would conduct in consultation with DOE.

USPS may be able to meet EPC Act 1992's light-duty vehicle acquisition requirements in future vehicle acquisitions by purchasing E85-capable vehicles without incurring the additional costs that it faced in its previous acquisitions of these vehicles. According to DOE officials, more E85-capable vehicles are now available with 4-cylinder engines, and these engines now can be acquired commercially for little to no additional cost. However, as discussed earlier, USPS and other federal agencies often have faced challenges fueling vehicles with E85.

Other federal agencies also face challenges complying with fleet requirements. As we recently reported, conflicting statutes limit federal fleet managers' flexibility to reduce their fleets' petroleum use and greenhouse gas emissions.³⁷ For example, we reported that federal requirements to purchase alternative fuel vehicles can undermine the requirement to reduce petroleum consumption because the fuels' limited availability results in agencies using gasoline to fuel alternative fuel vehicles. In other work, we reported that federal fleet requirements do not provide agencies with a means to set priorities between conflicting requirements. As a result, we recommended that the Secretary of Energy, in consultation with other federal agencies, propose legislative changes to resolve the conflicts and set priorities for complying with the multiple federal fleet requirements and goals for reducing petroleum consumption, reducing emissions, managing costs, and acquiring advanced technology vehicles.³⁸ DOE and GSA are working with other federal agencies to create a broader, performance-based approach to improve fuel efficiency and thereby reduce petroleum consumption and greenhouse gas emissions. The new performance-based approach is intended to provide federal managers with greater flexibility in improving the fuel efficiency of their agencies' vehicle fleets.

³⁷See GAO, *Opportunities to Reduce Potential Duplication in Government Programs, Save Tax Dollars, and Enhance Revenue*, [GAO-11-318SP](#) (Washington, D.C.; Mar. 1, 2011).

³⁸See GAO, *Federal Energy and Fleet Management: Plug-in Vehicles Offer Potential Benefits, but High Costs and Limited Information Could Hinder Integration into the Federal Fleet*, [GAO-09-493](#) (Washington, D.C.; June 9, 2009).

Vehicle Programs officials stated that, in their view, the best way for USPS to meet national sustainability requirements for reduced emissions without incurring significant costs may be to invest in highly fuel-efficient gasoline-powered vehicles. Such an outcome could be possible for future USPS delivery fleet acquisitions given increased legislative flexibility in the definition of what constitutes an alternative fuel vehicle. Specifically, the National Defense Authorization Act of 2008 expanded this definition by permitting federal agencies to meet EPA's 1992's fleet acquisition requirements for light-duty-alternative-fuel vehicles by purchasing vehicles that the Environmental Protection Agency has demonstrated would achieve a significant reduction in petroleum consumption.³⁹ Based on the agency's demonstration, any low-greenhouse-gas-emitting vehicle in locations that qualify for a DOE waiver would be considered an alternative fuel vehicle.

According to manufacturers, environmental organizations, and other experts we interviewed, gasoline-powered vehicles are becoming more fuel efficient and producing fewer emissions. As a result, newer gasoline-powered vehicles are likely to be more fuel-efficient than USPS's LLVs and FFVs. In addition, purchasing highly efficient gasoline vehicles would eliminate the fueling infrastructure and parts supply challenges USPS has faced with some alternative fuel vehicles. However, because the Environmental Protection Agency evaluates only commercially available vehicles, at present, there are no low-greenhouse-gas-emitting right-hand-drive vehicles available that have been determined to meet EPA's 1992's fleet acquisition requirements for light-duty vehicles.⁴⁰ Consequently, if USPS decides to pursue such a vehicle in its next acquisition of custom-built delivery vehicles, it would need to work with the manufacturer and the Environmental Protection Agency to determine if such a vehicle could meet its operational needs while being considered a low-greenhouse-gas-emitting vehicle.

Recognizing that vehicles have become more fuel efficient, in February 2011, USPS issued two solicitations to "repower" two existing LLVs by installing new fuel efficient engines; new transmissions; and all related equipment, such as new cooling and exhaust systems. One of the

³⁹Pub. L. 110-181, § 2862 (Jan. 28, 2008).

⁴⁰In addition, very few commercially available vehicles that the Environmental Protection Agency has certified as low-greenhouse-gas-emitting vehicles are large enough for potential use for USPS mail deliveries.

solicitations is for the repowerment of an existing LLV with a fuel-efficient gasoline engine, while the other is to replace another LLV's existing gasoline engine with a fuel-efficient diesel engine. According to the solicitations, each of the two repowered vehicles must have (1) one of the best fuel economy ratings possible compared to similar commercially available vehicles and (2) operate on commercially available fuel. A Vehicle Programs official told us that USPS expects to award these contracts in April 2011 and to receive the vehicles in late 2011. According to a Vehicle Programs official, through operating these vehicles, USPS hopes to gain experience on how new, more fuel efficient engines would affect the agency's fuel efficiency and delivery operations.

Current Approach Allows USPS to Defer a Major Capital Investment but Entails Some High Maintenance Costs, Operational Challenges, and Delayed Improvements

USPS's Maintenance Program and Parts Supply Have Enabled USPS to Meet Its Delivery Mission While Avoiding Capital Costs

USPS's well-established maintenance program has allowed it to continue to meet its delivery mission with its current fleet of delivery vehicles. The program requires a minimum of two preventive maintenance inspections annually for each of USPS's delivery vehicles. Parts that are determined to be sufficiently worn or are not expected to last until the next inspection are expected to be replaced. In addition to regularly scheduled maintenance, unscheduled maintenance occurs on the vehicles when needed to (1) resolve problems discovered when letter carriers perform daily inspections of vehicles prior to beginning their routes or (2) fix vehicles that break down while carriers are delivering mail. So that letter carriers have vehicles available to use while their vehicle is being serviced, about 3 percent of USPS's delivery vehicles are held in a maintenance reserve. According to USPS Finance officials, USPS incurred about \$1.05 billion in maintenance and fuel costs for its delivery fleet in fiscal year

2010—which comes to about \$18 per vehicle per day.⁴¹ This estimate includes about \$750 million in maintenance costs and about \$300 million in fuel costs.

The USPS Office of Inspector General, which frequently reports on the vehicle maintenance program, recently reported that USPS's approach of continuing to maintain its current delivery fleet is operationally viable and generally cost-effective, given USPS's financial circumstances.⁴² Similarly, our custom query of USPS's VMAS found that delivery vehicles' direct maintenance costs (costs that can be directly attributed to work on a particular vehicle) have risen only slightly over the past 5 fiscal years, from a low of about \$2,453 per vehicle in fiscal year 2007 to a high of \$2,587 per vehicle in fiscal year 2010 (see fig. 7).⁴³ These direct maintenance costs are somewhat understated because, according to USPS

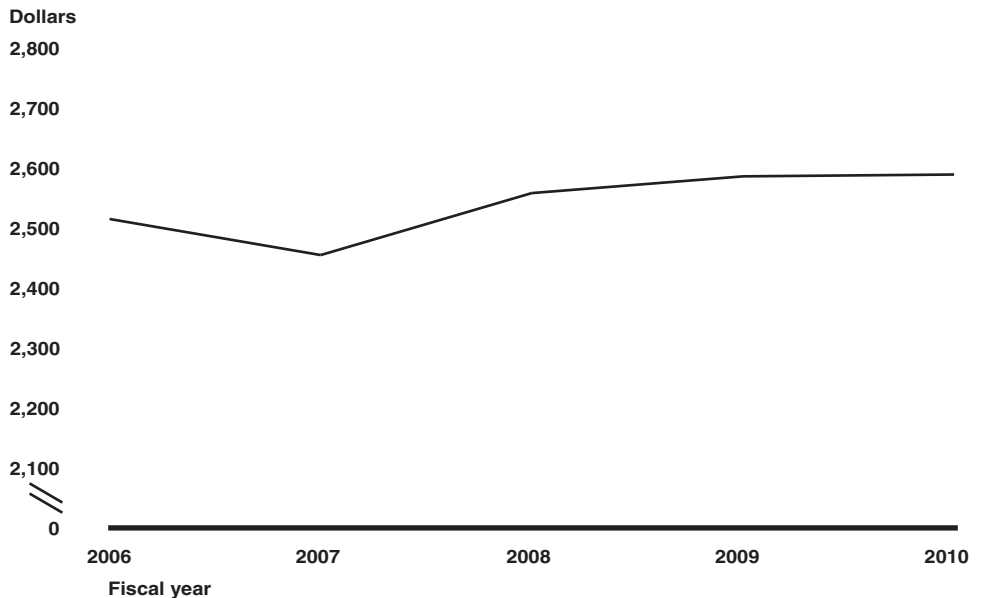
⁴¹This estimate includes direct costs for vehicle maintenance facility parts, direct and indirect labor costs (salaries and benefits for mechanical technicians, clerks, supervisors, managers, and vehicle operations and maintenance assistants), contractor parts and labor, and fuel. The estimate does not include certain other costs, such as those for depreciation and general agency overhead, including the cost of operating and maintaining the agency's vehicle maintenance facilities.

⁴²See United States Postal Service, Office of the Inspector General, *Audit Report—Delivery Vehicle Replacement Strategy*.

⁴³Our custom query of VMAS showed a total of about \$497 million in direct maintenance costs in fiscal year 2010, significantly less than USPS's \$750 million estimate for vehicle maintenance in fiscal year 2010. Several factors account for the difference in costs between the agency's estimate and the results of our custom query. First, VMAS does not include supervisory and management labor costs, or the benefits it pays to these employees. Second, while VMAS includes a large portion of direct labor costs for technicians who service delivery vehicles, unlike USPS's estimate, VMAS does not account for these employees' full labor costs. Third, according to USPS data, about 6 percent of USPS's total maintenance costs—all due to maintenance performed by contractors—are not entered into VMAS but are included in the agency's \$750 million estimate of total maintenance costs for fiscal year 2010. Finally, while costs related to accidents are contained in USPS's total cost estimate, we removed these costs from our analysis of maintenance costs. Neither the \$497 million in direct maintenance costs nor the \$750 million estimate for direct and indirect maintenance costs include certain other costs, such as those for depreciation and general agency overhead, including the cost of operating and maintaining the agency's vehicle maintenance facilities. Additional information on the costs contained in USPS's estimate and our custom query of VMAS is provided in appendix I.

data, about 6 percent of USPS's total maintenance costs—all due to maintenance performed by contractors—are not entered into VMAS.⁴⁴

Figure 7: Annual Average Maintenance Cost Per Vehicle for USPS's Delivery Fleet over the Past 5 Fiscal Years



Source: GAO analysis of USPS data.

Note: The data in this figure are based on our custom query of VMAS.

USPS's success in keeping its aging delivery fleet operational is also due to a steady supply of parts for its LLVs and FFVs, according to Vehicle Programs officials. Since USPS owns more than 160,000 of these vehicles, it has worked with suppliers to ensure that parts for these vehicles continue to be available. During our site visits, USPS's vehicle maintenance managers and technicians routinely informed us that this steady parts supply will enable them to maintain both types of vehicles well into the future. According to Vehicle Programs officials, because of the age of the vehicles, nearly all the LLVs have had their engines and

⁴⁴The Office of Inspector General reported on this matter in June 2009 and recommended that USPS take action to ensure that all contractor costs are entered into VMAS. USPS agreed to reinforce its existing policy in a Vehicle Maintenance Bulletin. See United States Postal Service, Office of the Inspector General, *Audit Report—Vehicle maintenance Facilities Scheduled Maintenance—National Capping Report*, DR-AR-09-007 (Washington, D.C., June 30, 2009).

transmissions replaced at least once, and often twice, and some of the LLVs have had nearly all their parts replaced, including their frames. USPS officials stated that it is more cost-effective to replace delivery vehicle parts as they are needed than to undertake a general vehicle refurbishment, in which all major parts are replaced at one time, because replacing parts as needed avoids costs resulting from premature replacements. While none of the other fleet operators we spoke with keep their vehicles as long as USPS plans to keep its LLVs and FFVs, most agreed that replacing parts as needed can keep vehicles operational at less cost than purchasing new vehicles.

According to numerous USPS headquarters and field officials at vehicle maintenance facilities and post offices, as well as letter carriers, USPS's vehicle maintenance program has thus far supported USPS's requirements to deliver mail 6 days a week. In part this is because, according to officials at a number of vehicle maintenance facilities, the LLV is a well-designed, highly functional vehicle that is easy for mechanics to work on, and its long-lived aluminum body has held up well. While some vehicle maintenance facility officials noted problems with the FFVs—such as engine issues that led to the early replacement of some engines—in general, they stated that the FFVs also continue to be reliable and operational. USPS employees at a majority of the eight vehicle maintenance facilities and some post offices we visited told us that the delivery vehicles in their locations are in good condition and that, in their view, the vehicles can continue to deliver mail without major operational interruptions for at least several more years. Vehicle maintenance facility managers, technicians, and letter carriers routinely stressed that they had no safety concerns about the vehicles despite their advanced age.⁴⁵

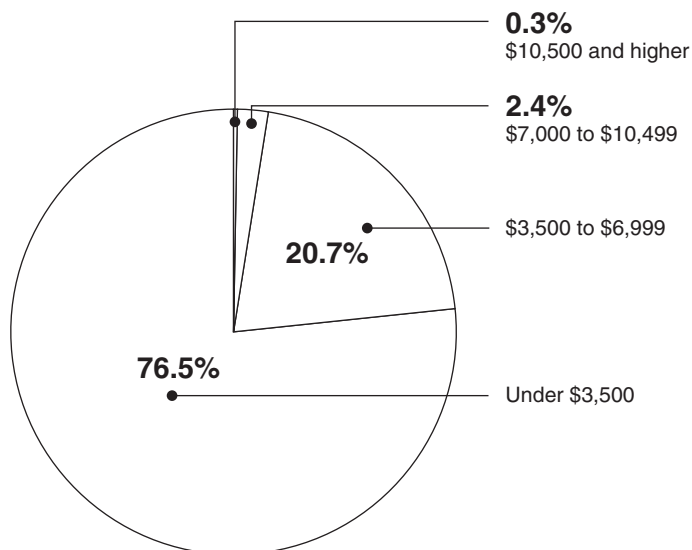
One Trade-off of Current Approach Is High Maintenance Costs for Some Vehicles

The primary advantage of USPS's current approach for addressing its delivery fleet needs is that it has allowed USPS to avoid a near-term, major capital expenditure that it cannot afford. However, this approach has a number of trade-offs. One trade-off is that USPS has incurred high costs to maintain some of its delivery vehicles. Our custom query of VMAS showed that, while most delivery vehicles (about 77 percent) incurred less than

⁴⁵We analyzed USPS's database of accidents and identified that at least 95.5 percent of the reported vehicle accidents did not involve defective parts. While some portion of the remaining 4.5 percent of vehicle accidents could have involved defective equipment, we could not reliably determine whether they did because of limitations related to information contained on the form used to populate the database.

\$3,500 in annual maintenance costs in fiscal year 2010,⁴⁶ about 3 percent (or 5,349) of these vehicles had more than \$7,000 in maintenance costs. In addition, 662 vehicles had more than \$10,500 in maintenance costs in fiscal year 2010⁴⁷—more than one-third the \$31,000 per vehicle replacement cost USPS currently estimates (see fig. 8). According to USPS officials, in most cases, they repair an LLV or FFV rather than replace it with a commercially available minivan because of the continuing need for right-hand-drive vehicles, which are not commercially available.

Figure 8: Proportion of USPS's Delivery Vehicles in Each Maintenance Cost Range, Fiscal Year 2010



Source: GAO analysis of USPS data.

Note: The data in this figure are based on our custom query of VMAS.

Another reason that some vehicles are incurring high maintenance costs is that USPS is replacing the frames of LLVs that have significantly corroded, especially in locations with severe winter weather, such as the Midwest. In

⁴⁶USPS established \$3,500 as a one-time repair threshold for approving expenditures for LLV maintenance. We used this threshold to create maintenance ranges for the purposes of analyzing the VMAS data.

⁴⁷Vehicle maintenance costs between fiscal years 2006 and 2009 reflect a similar pattern, with most delivery vehicles having less than \$3,500 in annual maintenance costs, and a small portion having more than \$7,000, including some with more than \$10,500 in maintenance costs.

2008, USPS began requiring that the frames of all LLVs in high-corrosion locations be visually inspected and measured annually, using an ultrasonic device that determines the thickness of the frames at certain points. Frames with holes through the metal were to be replaced immediately, while frames with less than a desired thickness at certain key points were expected to be replaced within 6 months. According to Vehicle Programs officials, at least 4,489 LLV frames have been replaced from fiscal years 2008 through 2010. Replacing a frame is relatively expensive, not only because of the cost of the frame but also because a replacement is labor-intensive, since every part of the vehicle must be removed and reinstalled (see fig. 9). According to Vehicle Programs officials, it typically costs about \$5,000 to replace an LLV frame. None of the other nonpostal fleet managers we spoke with have replaced their vehicles' frames, and some of these managers suggested that the need to do so is a key indication that it is time to replace—not repair—a vehicle.

Figure 9: New LLV Frames Awaiting Installation (left), and an LLV Being Reassembled after a Frame Replacement (right), 2010



Source: GAO.

Another Trade-off of Current Approach Is Increasing Unscheduled Maintenance Costs, Which Can Have Operational Impacts

In addition to its overall maintenance costs, USPS's unscheduled maintenance costs have increased steadily, according to data from its VMAS reports. Unscheduled maintenance can result in delays in mail delivery and operational costs, such as overtime expenses. To reduce operational costs, USPS, like other fleet operators, attempts to minimize unscheduled maintenance. USPS's goal is to ensure that no more than 20

percent of its total annual maintenance costs are for unscheduled maintenance. However, according to a September 30, 2010, VMAS report, about 31 percent of USPS's annual maintenance costs were for unscheduled maintenance—11 percentage points more than USPS's goal. Furthermore, USPS has not met its unscheduled maintenance goal in any of the last 6 fiscal years.⁴⁸ USPS's unscheduled maintenance costs also are likely to be higher than the amounts reflected in VMAS because, according to headquarters officials and some vehicle maintenance facility managers we spoke with, nearly all of the 6 percent of maintenance costs that are currently not captured in VMAS are for unscheduled maintenance.⁴⁹ Thus, for fiscal year 2010, USPS's unscheduled maintenance costs could have been as high as about 37 percent of its total maintenance costs. During our site visits, several local postal officials told us they are experiencing more operational issues due to vehicle breakdowns, which can lead to increased overtime costs. USPS could not provide us with the costs of these operational issues because USPS's time-keeping systems do not link costs such as overtime incurred by postal supervisors and letter carriers to vehicle breakdowns. We discussed the feasibility of capturing these costs with Vehicle Programs officials. They said that VMAS performance indicator reports track unscheduled maintenance, and management is aware of the operational impacts and costs.

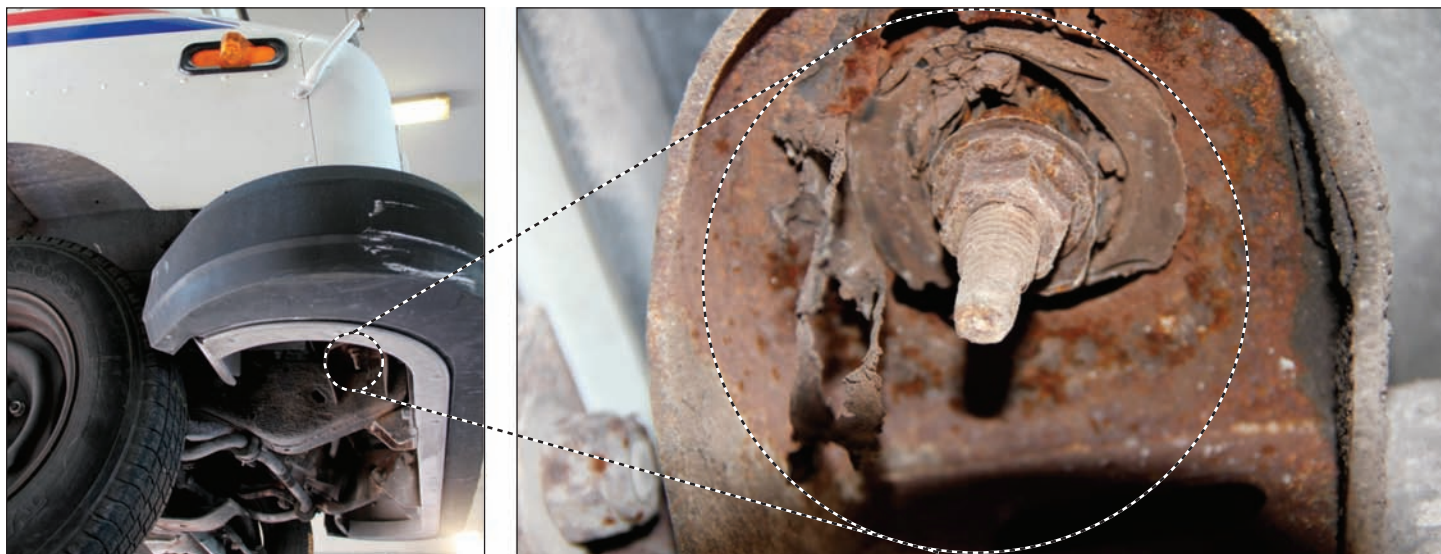
⁴⁸According to VMAS end-of-fiscal-year reports, unscheduled maintenance accounted for the following percentages of total direct maintenance costs: (1) 28.9 percent in fiscal year 2005, (2) 28.8 percent in fiscal year 2006, (3) 28.8 percent in fiscal year 2007, (4) 29.0 percent in fiscal year 2008, (5) 29.7 percent in fiscal year 2009, and (6) 31.3 percent in fiscal year 2010. As discussed previously, these percentages do not include about 6 percent of USPS's total maintenance costs attributable to maintenance performed by contractors.

⁴⁹According to USPS officials, vehicle maintenance facility managers are rated on their ability to accomplish their vehicles' scheduled maintenance inspections, whether the inspections are conducted in house or by a contractor. To get credit for these inspections, the vehicle maintenance facility manager must enter information on the inspections into VMAS. Thus, according to USPS officials, maintenance facility managers routinely enter this information into VMAS. In contrast, some unscheduled maintenance performed by contractors, such as when a vehicle breaks down on its delivery route, may be arranged and paid for by the local postmaster. If the postmaster does not send the itemized bill to the vehicle maintenance facility to be entered into VMAS, the vehicle maintenance facility may not learn that the repair ever took place. As a result, USPS officials consistently told us that the 6 percent of maintenance costs that are not captured in VMAS are due to unscheduled maintenance. As discussed, in response to a June 2009 Office of Inspector General recommendation that USPS take action to ensure that all contractor costs are entered into VMAS, USPS agreed to reinforce existing policy in a Vehicle Maintenance Bulletin.

In addition to the increasing rate of unscheduled maintenance, we identified some instances of maintenance issues during our site visits. For example:

- We saw two rusted and partially missing body mounts on an LLV in Florida, which was on a lift when we visited in October 2010. While the frame bolts, which hold the frame to the vehicle, were intact, the lower half of the body mounts and retaining washers were missing. A maintenance assistant at the site indicated that, given the severity of the rust (see fig. 10), the problem could not have occurred in the 5 months since the LLV's last scheduled inspection in May 2010. Additionally, while we did not observe this issue, this individual told us that nearly all 31 LLVs at his post office had bald tires when he assumed the maintenance assistant position in 2009.⁵⁰

Figure 10: Example of Rust in Lower Half of Body Mount at a Post Office in Florida, 2010



Source: GAO.

⁵⁰We observed two bald tires on a delivery vehicle at another post office in Florida. The manager of the post office was unaware of the condition of the tires, but told us that the vehicle would be taken out of service immediately until the tires were replaced.

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- When we visited a vehicle maintenance facility in New York state, technicians were replacing two severely corroded LLV frames with holes through the metal. The manager of this facility informed us that frames in this condition (see fig. 11) should have been replaced during a previous preventive maintenance inspection. According to the manager, this did not occur, possibly because the inspections were done by contractors who did not follow USPS's requirements for inspecting frames. According to the manager, the vast majority of the 2,800 delivery vehicles at this vehicle maintenance facility are sent to contractors for maintenance because he has chosen to focus his facility's limited resources on servicing USPS-owned tractor trailers used for hauling mail.

Figure 11: Rusted Frame with Holes Being Replaced in a USPS Vehicle Maintenance Facility in New York State, 2010



Source: GAO.

- Similarly, officials at a Minnesota vehicle maintenance facility told us that they are not following USPS's requirements for replacing frames whose thickness in key spots indicates weakness; instead, they said, facility personnel replace frames only when they have one or more holes through the metal. According to officials at this facility, given the state's severe winter weather, the facility has a large number of vehicles with thin frames. While these vehicles meet USPS's frame replacement requirements, officials at the maintenance facility told us that they do not

Minivan Purchases Have Provided USPS with Needed Vehicles, but Have Also Decreased Standardization, Resulting in Operational and Other Challenges

have the resources (typically \$5,000 per vehicle) to replace them all in the short term.

USPS's current approach for dealing with its aging delivery fleet has significantly increased the number of left-hand-drive vehicles in the delivery fleet over time. Specifically, because USPS does not currently have the funds available to acquire new custom-built, right-hand-drive vehicles, it now has 22,100 left-hand-drive minivans in its delivery fleet. According to Vehicle Programs officials and officials at two post offices that had a mix of minivans and right-hand-drive vehicles, minivans can pose a problem because, since they cannot be effectively used on the more than 50,000 delivery routes that require right-hand drive, they reduce USPS's operational flexibility. Furthermore, during our site visits, officials at several vehicle maintenance facilities stated that, unlike for LLVs and FFVs, USPS has encountered maintenance challenges for its minivans. According to these officials, maintaining the older minivans—some of which have met or exceeded their expected 10-year operating lives—has become increasingly difficult, and they are experiencing problems securing parts. According to Vehicle Programs officials, manufacturers typically produce parts for commercially available vehicles for 10 years, and officials told us that USPS does not have sufficient numbers of minivans to maintain its own market for parts for subsequent years, as it does for the LLVs and FFVs. Consequently, some of the older minivans are being used as salvage for parts for operational vehicles (see fig. 12).

Figure 12: A Ford Windstar Minivan Being Repaired at a Postal Vehicle Maintenance Facility (left) and a Nonoperational Minivan Up on Blocks Being Used for Parts (right), 2010



Source: GAO.

Other Trade-offs Include Delayed Improvements in Emissions, Fuel Efficiency, and Design

While new USPS delivery vehicles could potentially provide environmental benefits such as reduced emissions and increased fuel efficiency, it is not possible to quantify these benefits because USPS has not decided when, what type of vehicles and how many it may acquire, or how many old vehicles it may replace. Furthermore, such an analysis would depend on other factors, such as the relative extent to which USPS uses these new vehicles compared to the retired vehicles. Nevertheless, it is likely that new delivery vehicles would (1) be more fuel efficient than the LLVs and FFVs, and thus to some extent produce lower greenhouse gas emissions, and (2) meet more stringent federal light-duty emissions standards for carbon monoxide and other particulate matter.

According to Vehicle Programs officials, USPS's current fleet approach also makes it more challenging and costly to incorporate design improvements into its fleet that could provide operational benefits. Such improvements could include design features that could increase letter carriers' comfort and safety, such as features designed to reduce blind spots when the carriers merge from the right side of the road.⁵¹

⁵¹USPS had the manufacturer add a window to the left-hand side of the FFV to improve visibility and increase the carriers' safety when merging from the right side of roadways.

Without Significant Improvement in USPS's Financial Condition, There Are No Clear Options to Fund a Major Vehicle Replacement

USPS's Financial Condition Poses a Significant Barrier to Funding a Delivery Fleet Replacement

USPS's financial condition poses a significant barrier to its ability to fund a major acquisition of its delivery fleet⁵²—a cost USPS recently estimated would be about \$5.8 billion to replace about 185,000 delivery vehicles with new gasoline-powered custom-built vehicles, at a cost of about \$31,000 per vehicle (in 2011 dollars).⁵³ As we have reported, continuing operational losses have constrained funding for USPS's capital investments.⁵⁴ USPS's annual purchases for property and equipment have steadily declined over the past 4 years, from \$2.7 billion in fiscal year 2007 to \$1.4 billion in fiscal year 2010. For fiscal year 2011, USPS budgeted \$1.3 billion for capital investments and reported that expenditures for these investments will continue to decline as USPS seeks to conserve its cash.⁵⁵ USPS projects an end-of-year cash shortfall of \$2.7 billion for fiscal year 2011, meaning that it does not expect to have sufficient cash to meet all of its financial obligations, jeopardizing its operations. At the same time, while federal capital planning principles emphasize the importance of, among other actions, evaluating the capacity of existing assets and identifying alternatives to bridge the gap between current and needed capacities, as

⁵²USPS's financial condition also poses a significant barrier to funding a major refurbishment of the delivery fleet. As discussed earlier, based on a USPS contractor's 2005 estimate of \$20,000 per vehicle, it would cost about \$3.5 billion to refurbish 175,000 delivery vehicles.

⁵³According to a Vehicle Programs official, this cost would cover the vehicle, shipping, quality control oversight, technician training, and the purchase of essential repair tools. USPS did not estimate the costs to dispose of its existing vehicles, including environmental costs.

⁵⁴See GAO, *U.S. Postal Service: Legislation Needed to Address Key Challenges*, [GAO-11-244T](#) (Washington, D.C.: Dec. 2, 2010).

⁵⁵See United States Postal Service, *Fiscal Year 2011 Integrated Financial Plan*.

discussed previously, USPS has not developed a strategy for how and when it will invest in a major acquisition of new delivery vehicles.

In the past, USPS funded major capital investments through a combination of (1) net income from its earnings from postage and other postal products and services, (2) rate increases designed to increase its income, or (3) debt financing. However, these methods are likely to be inadequate to finance a major delivery fleet replacement in the foreseeable future, for the following reasons:

- *Net income.* Although USPS can retain earnings that could be used to finance a major acquisition of delivery vehicles, such earnings appear unlikely because it projects a \$6.4 billion loss for fiscal year 2011 and continuing large financial losses for the foreseeable future. USPS expects revenues to stagnate in the next decade with losses due to continued declines in mail volumes—particularly for profitable First-Class Mail, its core product. This means that USPS can no longer rely, as it once did, on growth in mail volumes to help cover its costs. Meanwhile, USPS's progress in reducing its costs through rightsizing its operations and realigning its workforce is limited by a combination of stakeholder resistance and statutory requirements, as we have previously reported.⁵⁶
- *Rate increases.* Rate increases also appear unlikely to generate sufficient revenues to fund a major delivery fleet replacement because under the Postal Accountability and Enhancement Act of 2006,⁵⁷ such increases are now generally limited by an inflation-based price cap on USPS's market-dominant products—products that generate close to 90 percent of its revenue.⁵⁸ Moreover, even if the price cap did not constrain rate increases, large rate increases could be self-defeating because they could potentially trigger large, permanent declines in mail volumes.
- *Debt financing.* USPS's outstanding debt at the end of fiscal year 2010 was \$12 billion, and it expects to use the remaining \$3 billion of its \$15 billion

⁵⁶GAO-10-455.

⁵⁷Pub. L. No. 109-435, §201(a), 120 Stat. 3198 (Dec. 20, 2006).

⁵⁸Rate increases for market-dominant products are limited by an annual price cap based on increases in the Consumer Price Index. These products primarily include First-Class Mail, Standard Mail, Periodicals (mainly magazines and local newspapers), and some types of package services (primarily Single-Piece Parcel Post, Media Mail, Library Mail, and Bound Printed Matter).

in borrowing authority in fiscal year 2011 to fund non-vehicle-related expenditures.

USPS and Others See Little Potential to Finance a Fleet Replacement through Grants or Partnerships, Including Joint Procurements

By statute, USPS is generally not subject to federal contracting and budgeting laws.⁵⁹ As a result, USPS officials told us that USPS has the authority to accept grant funding and to enter into joint procurements and other partnerships to assist in a major delivery fleet replacement. However, USPS's use of federal or state grants could have public policy implications, because USPS is supposed to be self-sustaining and to cover its operating costs with post-related revenues. In addition, fair competition issues or concerns about sharing sensitive procurement information could arise if USPS actively pursued a partnership or joint procurement.

USPS and DOE officials stated that there are few opportunities for USPS to receive federal grant funding to help it purchase vehicles, in part because federal grants are typically targeted to state, local, or city governments, or to nonprofit or educational organizations. In the past, USPS has obtained state or local grants for limited numbers of alternative fuel vehicles or related infrastructure, and in one case it received some financial assistance from DOE. Specifically, in 1999, USPS partnered with a number of entities, including the California South Coast Air Quality Management District, DOE, and others, on an agreement formed to reduce air pollution in California. This agreement included about \$9 million in funding subsidies from these entities to purchase 500 electric vehicles from the Ford Motor Company (Ford) as well as to install charging stations for these vehicles.⁶⁰ USPS paid an additional \$11.6 million to Ford for these vehicles. According to USPS officials, the \$9 million in outside funding—a small fraction of the estimated \$5.8 billion to replace the largest portion of its delivery fleet—is the largest amount of outside funding USPS has received for vehicle acquisitions. The project was terminated after about 2 years because of battery problems, as discussed previously in this report.

Senior USPS officials also stated that there is little likelihood that a joint procurement arrangement could help finance a delivery fleet replacement. According to USPS, UPS, and FedEx Express officials, a primary barrier to

⁵⁹39 U.S.C. § 410 (a).

⁶⁰ According to a senior USPS attorney, USPS did not receive any of these funds directly. Instead, the parties involved provided the funds directly to the manufacturer.

a joint procurement is USPS's need for customized, right-hand-drive delivery vehicles similar in size to the LLV and FFV (UPS and FedEx Express typically use larger vehicles and do not need right-hand-drive capability). Officials from DOE, private companies related to vehicle manufacturing and fuel, and an environmental organization that works on vehicle fleet issues confirmed USPS's assessment, indicating that it is unlikely that USPS would be able to obtain financial help through existing mechanisms for acquiring new delivery vehicles. USPS officials also stated that they are not actively pursuing grants, joint acquisitions, or other partnership agreements.

Finally, according to a senior USPS attorney, it is unlikely that it would be feasible for USPS to enter into an energy savings performance contract to help finance a major delivery fleet acquisition. Such contracts are used to privately finance improvements in energy efficiency.⁶¹ Under an energy savings performance contract, federal agencies enter into a long-term contract (up to 25 years) with a private energy services company under which the company installs energy-efficiency improvements financed from private funds. The agency then repays the company out of the estimated annual savings expected to be generated from the improvements. USPS officials stated that the agency used this type of financing for building improvements and has considered their applicability to a major fleet acquisition. However, USPS officials said that USPS has largely stopped using these contracts.⁶² Furthermore, given the low annual mileage of USPS's delivery fleet, USPS and DOE officials stated that it is unlikely that the fuel savings generated from a more efficient fleet (whether consisting of gasoline-only vehicles or alternative fuel vehicles) would be sufficient,

⁶¹Congress provided agencies with an alternative mechanism for obtaining energy-efficiency improvements in 1986 when it authorized agencies to use energy savings performance contracts, a type of share-in-savings contract. Through share-in-savings contracting, the agency compensates a contractor from the financial benefits derived as a result of its contract performance.

⁶²In past work on issues related to financing federal capital projects, we have raised concerns about the value of energy savings performance contracts. In 2004, for example, we reported that these contracts may be more expensive than timely, full, and up-front agency appropriations. See GAO, *Capital Financing: Partnerships and Energy Savings Performance Contracts Raise Budgeting and Monitoring Concerns*, [GAO-05-55](#) (Washington, D.C.: Dec. 16, 2004.) In addition, in 2005, we questioned whether savings from 254 energy savings performance contracts at a number of agencies actually covered costs. See GAO, *Energy Savings: Performance Contracts Offer Benefits, but Vigilance Is Needed to Protect Government Interests*, [GAO-05-340](#) (Washington, D.C.: June 22, 2005).

compared with the acquisition cost of the vehicles, to interest a private investor.

Congressional Actions to Improve USPS's Financial Condition Could Help USPS Fund a Delivery Fleet Replacement but Present Difficult Policy Issues and Trade-offs

In April 2010, we reported that Congress and USPS need to reach agreement on a package of actions so that USPS can become financially viable, and we recommended that in doing so, Congress consider providing financial relief, such as by revising its retiree health benefit funding and requiring any binding arbitration to take USPS's financial condition into account, as well as consider all cost cutting options.⁶³ Agreeing on a package of actions will involve difficult public policy issues and trade-offs. However, depending on the specific actions adopted, USPS's follow-up, and the results, such an agreement could help enable the funding of a major acquisition of delivery vehicles.

Although USPS is authorized to request appropriations for costs related to "public service,"⁶⁴ it has not received an appropriation for operational costs since fiscal year 1982. USPS receives annual appropriations to fund statutorily required mail services at free or reduced rates, such as free mail for the blind and overseas voting, but these funds represent a very small percentage of its revenues.⁶⁵ However, USPS has benefited from taxpayer funding in special circumstances. For example, Congress appropriated \$587 million in 2002 and \$507 million in 2004 to help pay for safety measures after letters containing anthrax contaminated the mail in 2001.

Providing appropriations would be another alternative to fund the multi-billion-dollar replacement of USPS's delivery fleet.⁶⁶ Such appropriations could ensure the future viability of USPS's delivery fleet, and—if alternative fuel vehicles are specified by legislation or chosen by USPS—could potentially yield additional benefits, particularly for manufacturers

⁶³ [GAO-10-455](#).

⁶⁴ USPS is authorized to request reimbursement for public service costs incurred for providing effective and regular postal service in communities where post offices may not be deemed self-sustaining. See 39 U.S.C. § 2401(b).

⁶⁵ In fiscal year 2010, USPS recognized \$113 million in revenue (including \$24 million in imputed interest) from these appropriations, which was 0.2 percent of its total revenue of \$67.1 billion.

⁶⁶ As discussed, one of two recent legislative proposals would have authorized funding (\$2 billion) to replace a portion of USPS's fleet with electric vehicles. The legislation was not enacted.

and suppliers of alternative fuel vehicles. In addition, regardless of the technology selected, new vehicles likely would be more fuel efficient and produce lower environmental emissions than USPS's current vehicles. However, this option also has difficult public policy trade-offs and would raise questions about whether the economic benefits would be sufficient to justify the costs. For example, appropriations would raise the federal budget deficit, would reduce incentives for USPS to be self-supporting, and could further limit USPS's flexibility in determining the best vehicles for its fleet.

Conclusions

USPS faces severe financial challenges and, for the foreseeable future, cannot afford to replace or refurbish a large portion of its aging fleet. USPS's March 2010, 10-year action plan for addressing its financial challenges did not (1) describe a strategy for addressing its delivery fleet needs or (2) identify how the operational changes proposed in this plan would affect its future fleet needs.

The trade-offs of continuing to maintain USPS's delivery fleet until USPS decides how to address its longer term delivery fleet needs are numerous and include somewhat higher maintenance costs overall. For each of 662 delivery vehicles in fiscal year 2010, USPS incurred maintenance costs of more than \$10,500—more than one-third the \$31,000 per-vehicle replacement cost USPS estimates as of 2011. Furthermore, these high vehicle costs were experienced in each of the four prior fiscal years that we analyzed. These costs largely arise from USPS's need for right-hand-drive vehicles at a time when it cannot purchase these vehicles, yet remains contractually required to supply thousands of them to rural letter carriers. Related to this, delays in acquiring new delivery vehicles have caused USPS to replace about 4,500 thin and, in some cases, severely corroded LLV vehicle frames in fiscal years 2008 through 2010—at a cost of \$5,000 per vehicle. If not for the critical need for right-hand-drive vehicles, the need to replace these frames may have caused USPS to replace—not repair—them. USPS's approach also has resulted in increasing unscheduled maintenance costs, which create operational difficulties. Finally, delays in acquiring custom-built, right-hand-drive vehicles have increased the number of left-hand-drive vehicles in the delivery fleet by more than 19,000 since 2006, even though these vehicles cannot effectively operate on more than a quarter of USPS's delivery routes.

Despite these operational impacts, USPS's approach of continued maintenance has been reasonable given its pressing need to defer an estimated \$5.8 billion capital outlay for a major vehicle replacement or a

major refurbishment, estimated at \$3.5 billion in 2005. However, the time soon will come when the cost and operational consequences of this approach will not allow further delays. When that time comes, USPS will need to know how it can best comply with federal requirements for acquiring alternative fuel vehicles while also meeting its operational requirements. Consequently, USPS must develop a comprehensive strategy for dealing with this inevitability.

As we have reported, Congress and USPS need to reach agreement on a package of actions to restore USPS's financial viability, which will enable USPS to align its costs with revenues, manage its growing debt, and generate sufficient funding for capital investment, including the inevitable replacement or refurbishment, of its delivery fleet.⁶⁷ However, until USPS defines its strategy for a major capital investment for its delivery vehicles, neither USPS nor Congress has sufficient information to fully consider its options.

Recommendation for Executive Action

Given USPS's need to ensure that its delivery fleet remains operationally viable and maintain its legal mandate to purchase alternative fuel vehicles and use alternative fuel in them, we recommend that the Postmaster General develop a strategy and timeline for addressing USPS's delivery fleet needs. This effort should address:

- the effects of USPS's planned operational changes and continuing changes in customers' use of the mail on future delivery fleet requirements;
- the range of strategic options available (including continuing to maintain, not replace, its fleet), as well as the costs and time frames for these options;
- an analysis of any safety consequences associated with extending the vehicles' operational lives; and
- alternative ways to comply with federal fleet requirements, including an analysis of how USPS can best meet these requirements, given its budget constraints.

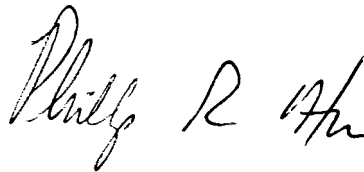
⁶⁷GAO-11-244T.

Agency Comments

USPS provided written comments on a draft of this report by letter dated April 13, 2011. These comments are summarized below and are reprinted in appendix III. USPS agreed with our findings and recommendation to develop a strategy and timeline for addressing its delivery fleet needs. In commenting on our recommendation, USPS stated that it is developing a strategy to address the immediate and long-term needs of its delivery fleet, and that it planned to complete the strategy and timeline by the end of December 2011. USPS also stated that, while many alternatives exist for future delivery vehicles, ultimately, operational requirements and the total cost of ownership—including investment costs, infrastructure, life cycle maintenance, and support costs—will be the drivers behind any technology selection decision. In addition, USPS emphasized that given its current financial condition, the availability of capital funds also will be a primary factor in any investment decision. USPS also provided minor technical comments via email, which we incorporated as appropriate.

As agreed with your offices, unless you publicly announce the contents of this report earlier, we plan no further distribution until 30 days from the report date. At that time, we will send copies to appropriate congressional committees and USPS. We will also make copies available to others on request. In addition, the report will be available at no charge on the GAO Web site at <http://www.gao.gov>.

If you or your staff have any questions about this report, please contact me at herrp@gao.gov or (202) 512-2834. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. Key contributors to this report are listed in appendix IV.



Phillip Herr
Director, Physical Infrastructure Issues

Appendix I: Objectives, Scope, and Methodology

In response to interest in issues related to the United States Postal Service's (USPS) vehicle fleet, the objectives of this report were to answer the following key questions: (1) What is the profile of USPS's delivery fleet? (2) How has USPS responded to requirements for alternative fuel vehicles, what experiences has it had with alternative fuel vehicles, and what has it learned from its experiences? (3) What, if any, approach has USPS adopted to address its delivery fleet needs, and what are the trade-offs of this approach? (4) What options exist to help USPS fund a major acquisition of delivery vehicles?

The following sections describe the procedures we undertook to answer these questions. In addition, we conducted background research to inform our review. We reviewed prior GAO reports, including our work on USPS's financial condition and options Congress could consider to address USPS's financial condition; federal vehicle fleets; alternative fuel vehicles; capital planning; internal controls; and energy savings performance contracts. We analyzed financial and operating information from USPS, including its annual reports, audited financial reports, 10-year action plan, strategic sustainability performance plan, contractual obligation to provide right-hand-drive vehicles to rural carriers, and fleet management handbook. We reviewed analyses of USPS's fleet conducted by USPS officials, private consultants to USPS, and the USPS Office of Inspector General. In addition, we reviewed documents prepared by the Department of Energy (DOE) and the General Services Administration on issues related to federal vehicle fleets as well as presentations and reports provided at an annual federal fleet conference and at monthly meetings of federal fleet managers. We reviewed USPS and DOE data on the number of waivers USPS applied for and received exempting it from fueling its alternative fuel vehicles with alternative fuel. Furthermore, we reviewed federal legislation that establishes requirements related to federal fleets, including the Energy Policy Act of 1992, the Energy Policy Act of 2005, the Energy Independence and Security Act of 2007, and the National Defense Authorization Act of 2008. In addition, we reviewed executive orders related to federal vehicle fleets.

Analysis of Data from USPS on Its Vehicle Fleet

To determine the profile of USPS's delivery fleet, the fleet's maintenance costs, and the trade-offs of the agency's approach for addressing its delivery fleet needs, we obtained and analyzed data from a custom query of USPS's Vehicle Management Accounting System (VMAS), the database the agency uses to manage its vehicle fleet. We assessed the reliability of the data by

- performing electronic testing and visual review of data elements for obvious errors and inconsistencies,
- reviewing reports related to VMAS, and
- interviewing agency officials knowledgeable about VMAS system controls and vehicle data procedures.

Through discussions with knowledgeable USPS and USPS Office of Inspector General officials, we learned that USPS staff enter data manually into VMAS and, as a result, some contractor costs for maintenance are not entered into VMAS, which has the effect of understating USPS's vehicle maintenance costs in VMAS. USPS and USPS Office of Inspector General officials agreed that manual data entry is a major limitation of VMAS.

To identify the contractor costs that were not reported in VMAS, and were therefore missing from our custom query of this database, we compared the total contractor costs reported in VMAS with the total contractor costs reported in another USPS data system, the Enterprise Data Warehouse system. According to USPS finance officials, the Enterprise Data Warehouse captures data from accounts payable, feeds into the general ledger, and is used to supply information to the financial reporting system USPS uses for its audited financial statements. Thus, according to these officials, it provides the most reliable information available on USPS's costs. To assess the reliability of the Electronic Data Warehouse's data, we (1) interviewed officials knowledgeable about the data and (2) compared our results to those of the USPS Office of Inspector General, which had previously reported on discrepancies between data in the Electronic Data Warehouse and VMAS. Based on this assessment, we determined that the VMAS data were sufficiently reliable for the purposes of this report, as long as we clearly noted the percentage of maintenance costs missing from VMAS as determined by comparing the total maintenance costs recorded in VMAS with the total maintenance costs recorded in the Electronic Data Warehouse.

Using a custom query, we obtained VMAS data for all USPS vehicles for fiscal years 2006 through 2010, including the vehicles' annual maintenance costs. To analyze information on the delivery fleet, we defined this fleet as all vehicles with one of eight function codes based on the advice of

knowledgeable USPS officials.¹ USPS officials agreed that the universe established through this process resulted in an accurate representation of its delivery fleet.

In addition to analyzing the VMAS data we obtained through a custom query, we reviewed reports generated by VMAS (VMAS reports) and other USPS documentation, including information on the number of alternative fuel vehicles in USPS's delivery fleet. USPS officials stated that they typically use VMAS reports to manage the fleet. Because these reports categorize vehicles by make and model rather than by function, the total universe of delivery vehicles represented in these reports is slightly different from the universe we obtained through our analysis of the custom query and, thus, the numbers cannot be directly compared. USPS officials recommended that we use the information from the agency's VMAS reports, rather than our custom query, to determine the number of delivery vehicles in past fiscal years, because the accuracy of the VMAS reports has been tested over time whereas the custom query was a new capability. Consequently, we used data from the VMAS reports to analyze changes in the numbers of delivery vehicles for fiscal years 2006 through 2010. On the other hand, Vehicle Programs officials agreed that the information we obtained through the custom query was sufficiently reliable to develop average per vehicle maintenance costs over the past 5 fiscal years and to analyze the number and maintenance costs of delivery vehicles in fiscal year 2010.

Using both the data obtained through our custom query and the data provided by USPS from its VMAS reports, we developed a profile of USPS's delivery fleet from fiscal years 2006 through 2010, including maintenance costs. To analyze maintenance costs, we excluded costs related to fuel and accidents. To exclude costs related to accidents, we obtained information on the number and causes of vehicle accidents from USPS's accident reporting database for fiscal years 2006 through 2010. We assessed the reliability of these data by (1) performing electronic testing and visual review of data elements for errors, (2) reviewing existing USPS

¹The eight codes are (1) curblines delivery; (2) dismounted route, city; (3) expedited delivery; (4) park and loop; (5) rural route; (6) maintenance reserve; (7) collection; and (8) parcel post. Through discussions with Vehicle Programs officials, we also learned that the maintenance reserve code includes some vehicles that are not used for delivery. To exclude these vehicles from our analysis, as these officials recommended, we eliminated all vehicles with the function code of maintenance reserve and with make-model codes that clearly identified them as not being part of the delivery fleet (such as 7-ton vehicles, which are large trucks that are not used for mail deliveries).

information about the accident reporting database, and (3) interviewing agency officials knowledgeable about the data. We determined that these data were sufficiently reliable for the purposes of this report. Because USPS's accident reporting database and VMAS use unique vehicle identification numbers to identify each vehicle, we were able to cross match these numbers in the two databases to identify vehicle maintenance costs due to accidents. We subtracted these costs from USPS's total maintenance costs to obtain the total maintenance costs not related to accidents, as reported in VMAS.

Finally, we worked with USPS Finance and Vehicle Programs officials to get an agency estimate of the total costs attributable to delivery fleet maintenance and fuel in fiscal year 2010. USPS officials used a combination of VMAS reports and data in the Enterprise Data Warehouse to develop this estimate, which includes all direct costs and some indirect costs related to the delivery fleet's maintenance and fuel use in fiscal year 2010.² We compared this estimate with cost summaries provided by USPS Finance officials and other USPS documentation supporting amounts reported in the agency's audited financial statements for fiscal year 2010 and determined that the agency's estimate of \$1.05 billion in total maintenance and fuel costs for its delivery fleet in fiscal year 2010 was reasonable.

USPS's estimate of \$1.05 billion includes about \$750 million in identifiable direct and indirect maintenance costs, or a total of about \$3,900 in maintenance-related costs per vehicle.³ Our custom query of VMAS showed about \$497 million in direct maintenance costs in fiscal year 2010, or about \$2,600 per vehicle. Several factors account for the difference in costs between the agency's estimate and the results of our custom query. First, VMAS does not capture indirect maintenance costs and, instead, tracks only costs that can be directly associated with the vehicles' maintenance. Thus, the lower maintenance cost figure produced from our analysis does not include costs that can not be specifically allocated to

²This estimate includes direct costs for vehicle maintenance facility parts, direct and indirect labor costs (salaries and benefits for mechanical technicians, clerks, supervisors, managers, and vehicle operations and maintenance assistants), contractor parts and labor, and fuel. The estimate does not include certain other costs, such as those for depreciation and general agency overhead, including the cost of operating and maintaining the agency's vehicle maintenance facilities. VMAS also does not include these costs.

³About \$300 million of the \$1.05 billion costs were for fuel. This amounts to about \$1,600 in fuel costs per vehicle.

maintenance on a delivery vehicle. For example, VMAS includes costs for parts and direct labor to inspect a vehicle and replace brakes and other equipment, but does not include supervisory and management labor costs, or the benefits it pays to these employees.⁴ Second, while VMAS includes a large portion of its direct labor costs for technicians who service delivery vehicles, unlike USPS's estimate, VMAS does not account for these employees' full labor costs.⁵ Third, according to USPS data, about 6 percent of USPS's total maintenance costs—all due to maintenance performed by contractors—are not entered into VMAS,⁶ but are included in the agency's \$750 million estimate of total maintenance costs for fiscal year 2010. Finally, while costs related to accidents are contained in USPS's total cost estimate, we removed these costs from our analysis of maintenance costs.

Site Visits

To inform our understanding of USPS's delivery fleet profile, its experiences with alternative fuel vehicles, and its approach to its aging fleet, we conducted site visits to three regions: Minneapolis and St. Paul, Minnesota; New York City, New York; and southern Florida. We judgmentally selected these regions because they are geographically diverse and their climates vary—two of the three regions experience severe winter weather. In addition, the three regions use different types of alternative fuel vehicles and a variety of gasoline-fueled delivery vehicles. During each site visit, we visited a combination of vehicle maintenance facilities and post offices. We toured facilities, observed the maintenance activities occurring on vehicles at the facilities, and interviewed managers, supervisors, mechanical technicians, and carriers about their experiences with the delivery fleet. Finally, while we did not visit the vehicle

⁴Specifically, VMAS does not include any indirect labor costs related to the salaries and benefits for clerks, supervisors, managers, and vehicle operations, and maintenance assistants.

⁵Costs recorded in VMAS include direct costs for vehicle maintenance facility parts and the labor costs of the technicians who service the vehicles. These labor costs are calculated based on a fixed hourly rate, excluding benefits, multiplied by the number of hours charged to complete each vehicle's servicing. According to a Vehicle Programs official, for fiscal year 2010, the fixed hourly rate recorded in VMAS was \$35 for technicians—less than the actual average hourly labor rate of \$43, including benefits, for these employees.

⁶The Office of Inspector General reported on this matter in June 2009 and recommended that USPS take action to ensure that all contractor costs are entered into VMAS. USPS agreed to reinforce its existing policy in a Vehicle Maintenance Bulletin. See United States Postal Service, Office of the Inspector General, *Audit Report—Vehicle Maintenance Facilities Scheduled Maintenance—National Capping Report*.

maintenance facility in Corpus Christi, Texas, we selected this site for a telephone interview because, according to Vehicle Programs officials, it is one of the few areas where compressed natural gas is still being used in delivery vehicles that have been converted to use this fuel.

Interviews

To inform all of our objectives, we interviewed a wide range of USPS officials as well as officials from DOE, General Services Administration, and the Postal Regulatory Commission. In addition, we interviewed representatives from 22 nonfederal entities, including alternative fuel associations, automobile manufacturers and associations, environmental groups, companies that operate large delivery fleets, and consulting firms with experience evaluating vehicle fleets. To identify appropriate parties to interview, we spoke with knowledgeable GAO staff, USPS officials, and others about which entities would have information most relevant to our objectives. Table 4 identifies the nonfederal organizations whose representatives we interviewed.⁷

⁷We attempted but were unable to obtain interviews with representatives from numerous organizations, including the Alliance of Automobile Manufacturers, the Alternative Fuel Vehicle Institute, the American Coalition for Ethanol, Calstart (a nonprofit organization that works to develop environmentally sound transportation options), the Electric Transportation Engineering Corporation, the National Association of Letter Carriers, the NAFA Fleet Management Association, the National Propane Gas Association, and the Propane Vehicle Council.

Table 4: Nonfederal Organizations Interviewed

Organization
Association of International Automobile Manufacturers
Azure Dynamics
Booz Allen Hamilton
Clean Energy Fuels Corporation
Chrysler ^a
Eaton Corporation
Environmental Defense Fund
Electric Drive Transportation Association
FedEx Express
Ford Motor Company
General Motors
Growth Energy
International Council on Clean Transportation
Mercury Associates
National Rural Letter Carriers' Association
Natural Gas Vehicles for America
Nissan Motor Company
Pacific Gas and Electric Company
San Diego Gas and Electric
Southern California Edison
United Parcel Service
U.S. Fuel Cell Council

Source: GAO.

^aChrysler responded to questions via e-mail, not an interview.

We conducted this performance audit from February 2010 to May 2011 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Appendix II: USPS's Experiences with Non-E85-Capable Alternative Fuel Vehicles

USPS has had the following experiences with alternative fuel vehicles (other than E85-capable vehicles).

Compressed Natural Gas Vehicles

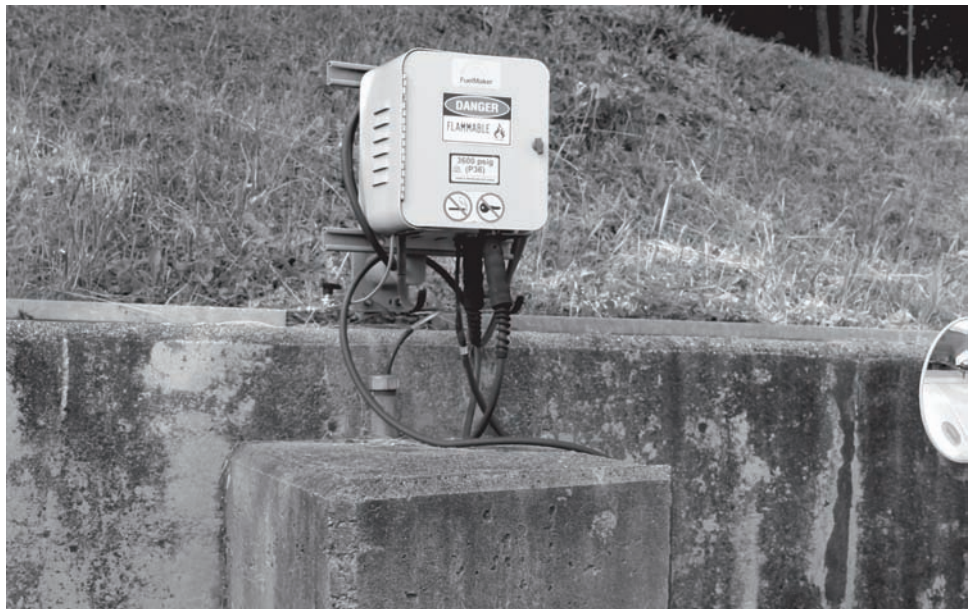
USPS currently has more compressed-natural-gas-capable vehicles than any other kind of alternative fuel vehicle (except E85-capable vehicles), but its use of these vehicles has greatly diminished in recent years. Beginning in 1990, USPS began converting long-life vehicles (LLV) in selected locations to run on both compressed natural gas and gasoline. USPS converted about 7,300 LLVs over 6 years at a cost of about \$2,000 each in the 1990s. Local utility companies, DOE's Clean Cities program, and others installed the fueling infrastructure. According to a Vehicle Programs official, only in limited instances did USPS actually fund any portion of these costs. However, because of parts supply challenges, limited fuel availability, and expiring compressed natural gas fuel tanks,¹ USPS removed this capability from all but about 3,400 of these LLVs. About 1,000 of these LLVs are currently running on compressed natural gas.

According to USPS, 42 of the approximately 1,000 compressed-natural-gas-capable vehicles are being operated in Corpus Christi, Texas, because the city created the necessary fueling infrastructure and helped pay USPS's fuel costs. For example, according to a local vehicle maintenance facility official, the city built a gas line connecting a nearby compressed natural gas station to the city's post office and provided the post office with \$400 worth of free compressed natural gas (about 200 days of fuel, according to a Vehicle Programs official) for each of the vehicles there. According to an official at the local vehicle maintenance facility, these vehicles have been reliable and have reduced USPS's fuel costs because (1) the city provided free fuel and (2) compressed natural is cheaper than gasoline for those vehicles that have already used their supply of free fuel. According to this official, because of USPS's fuel cost savings, as of January 2011, the official was in the process of swapping 37 of the facility's gasoline-only LLVs for compressed-natural-gas-capable LLVs (from other USPS locations) increasing the number of LLVs operating on this fuel to a total of 79 vehicles at two post offices in Corpus Christi, Texas. In contrast, USPS's experience with compressed natural gas in Huntington, New York, highlighted challenges that led USPS to abandon its use of compressed natural gas in this area. In the mid-1990s, USPS converted all of the LLVs at

¹Compressed natural gas tanks have a service life of 15 to 25 years and are required to be labeled with an expiration date.

the Huntington post office to run on compressed natural gas and installed associated fueling infrastructure (one pump per vehicle). However, within 6 months of using these vehicles, USPS experienced vehicle reliability problems, two of the three manufacturers of vehicle conversion kits went out of business, and USPS experienced difficulties in obtaining parts needed for maintenance and repairs. As a result the fueling infrastructure is unused (see fig. 13). While Vehicle Programs officials recognize that the use of compressed natural gas has been successful in some parts of Texas, they stated that they see limited potential for USPS's future use of this fuel in delivery vehicles, largely because the natural gas infrastructure is not available in much of the United States and parts supplies remain uncertain.

Figure 13: Example of an Unused Compressed Natural Gas Fuel Pump at a Post Office in Huntington, New York, 2010



Source: GAO.

Propane Vehicles

As of September 30, 2010, USPS operated 34 LLVs in Key West, Florida, that are capable of running on propane in addition to gasoline. According to USPS local officials, these vehicles have been well received by the community because of their reduced emissions and USPS has faced few challenges operating and fueling the vehicles. However, according to USPS officials, USPS did not expand its use of propane because of the lack of propane infrastructure.

Plug-in Electric Vehicles

USPS has been using limited numbers of plug-in electric vehicles for many years. In 1999, for example, USPS entered into a partnership with DOE and several state, regional, and local agencies in California and New York state and invested \$11.6 million to purchase 500 plug-in electric vehicles from Ford. However, Ford recalled the vehicles about 2 years later because the vehicle battery company stopped manufacturing the batteries.² As of September 30, 2010, USPS operated about 30 plug-in electric 2-ton vehicles in New York City, New York, as well as 12 T-3 plug-in electric personal mobility delivery vehicles that USPS purchased in 2008 at an average cost of about \$11,200 in 2010 dollars (see fig. 14). While USPS reports that the T-3 vehicles cost less than 5 cents per mile to operate, operational challenges, such as letter carrier exposure to the elements, a tendency to stall in the rain, and low operating speed limit their applicability on USPS routes. Furthermore, USPS is currently testing four neighborhood electric vehicles³ and recently initiated a program called the Electric LLV Program under which five suppliers are converting gasoline LLVs to plug-in electric LLVs that USPS intends to use for deliveries.⁴

²Ford provided gasoline-powered minivans to USPS in response to this recall.

³Neighborhood electric vehicles cannot be legally operated on highways or at speeds greater than 25 miles per hour.

⁴DOE, on behalf of USPS, began testing these vehicles in the summer of 2010. At the conclusion of our review, testing had been completed on two of the vehicles. USPS will pay \$50,000 for each conversion, with the remainder of the costs to be covered by the supplier.

Figure 14: T-3 Electric Personal Mobility Delivery Vehicle, 2010



Source: GAO.

Conventional Hybrid (Hybrid) Vehicles

When we conducted our site visits, USPS's use of hybrid vehicles was limited to 12 vehicles, including two 2-ton hybrid trucks⁵ in New York state that it had received in 2008 and 2009 at no cost to USPS because the manufacturers agreed to provide these vehicles to USPS in order to obtain information on their use on the delivery cycle (see fig. 15).⁶ In addition, USPS had 10 Ford Escape hybrids in California that it purchased in 2005 at an average cost of about \$27,700 in 2010 dollars.⁷ However, hybrid vehicles typically have much higher up-front costs than the nonhybrid version of the same vehicle—about \$9,000 more in the case of a 2011 Ford Escape hybrid.⁸ As a result, USPS officials said that the increased costs that likely

⁵Except for certain urban areas, such as New York City, New York, USPS does not typically use its 2-ton trucks for mail deliveries.

⁶According to Vehicle Programs officials, one of these trucks was subsequently returned to the manufacturer.

⁷USPS purchased these vehicles in 2005 for \$25,026 per vehicle.

⁸The manufacturer's suggested retail price for a 2011 Ford Escape hybrid was \$30,045, compared with \$21,215 for the nonhybrid Ford Escape, as of February 15, 2011.

would be associated with acquiring a custom-built hybrid vehicle (compared with a comparable nonhybrid vehicle) would, in all likelihood, far outweigh the potential fuel cost savings given a delivery vehicle's low annual mileage.

Figure 15: One of Two Hybrid 2-Ton Delivery Vehicles in Huntington, New York, 2010



Source: GAO.

Hydrogen Fuel Cell Vehicles

USPS is currently piloting two hydrogen fuel cell Chevrolet Equinox vehicles on delivery routes. Both vehicles were provided by General Motors in 2008 with funding from DOE. As part of the pilot program, USPS is assessing the vehicles' potential usefulness as delivery vehicles. According to USPS, the two vehicles are meeting the demands of USPS's daily operational drive cycle as delivery vehicles. However, according to Vehicle Programs officials, hydrogen fuel cell technology is in the early stages of its development and, consequently, it likely will be a number of years before such vehicles are available in large quantities.

Appendix III: Comments from the United States Postal Service

DEAN J. GRANHOLM
VICE PRESIDENT
DELIVERY AND POST OFFICE OPERATIONS



April 13, 2011

Mr. Philip Herr
Director, Physical Infrastructure Issues
United States Government Accounting Office
411 G Street, N.W.
Washington, DC 20548-0002

Dear Mr. Herr,

We are writing to express the comments of the U. S. Postal Service (USPS) concerning the draft report of the United States Government Accountability Office (GAO) to the Senate Committee on Homeland Security and Governmental Affairs and the Senate Subcommittee on Federal Financial Management, Government Information, Federal Services, and International Security, entitled, "Strategy Needed to Address Aging Delivery Fleet." We request that our comments be included as an Appendix to the Report.

We would like to commend you and your team on their professional and thorough approach to this audit on the status of our delivery fleet. In general, we agree with the findings of this report.

The USPS travels over 1.2 billion miles per year to provide a trusted, affordable mail service to over 150 million addresses across our nation. Our vehicle fleet is critical to the successful completion of our mission. Our fleet preventive maintenance program has been instrumental in allowing us to sustain all of the vehicles in our delivery fleet, including the 20 year old Long Life Vehicles, in a safe, working condition. We are now taking the next steps to gather data on how best to improve our fleet for the future.

The USPS has a long history of being a leader in alternative fuel vehicle use and we continue to maintain a strong alternative fuel vehicle testing program. Not only do we maintain the largest civilian fleet, we also have one of the largest civilian alternative fuel fleets. We continue to explore new technologies that offer promise for our fleet. We work with major vehicle manufacturers, industry experts, state and Federal governmental agencies to test vehicle technology innovations in our operations at the lowest cost possible to the Postal Service.

Many alternatives exist for the Postal vehicle of the future; however, ultimately operational requirements and total cost of ownership (including investment costs, infrastructure, life cycle maintenance and support costs) will be the drivers behind any technology selection decision. As you correctly pointed out in your report, given our current financial conditions, the availability of capital funds will also be a primary factor in any investment decision.

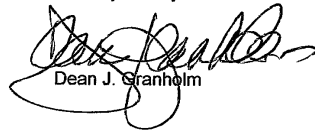
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**Appendix III: Comments from the United
States Postal Service**

- 2 -

We concur with your recommendation and we are currently in the process of developing a strategy to address immediate and long term needs of our light duty delivery fleet. We will complete the long term strategy and timeline addressing the points in your recommendation by the end of December 2011.

Thank you for your continued interest in the Postal Service.



Dean J. Granholm

Appendix IV: GAO Contact and Staff Acknowledgments

GAO Contact

Phillip Herr, (202) 512-2834 or herrp@gao.gov

Staff Acknowledgments

In addition to the contact above, Kathleen Turner (Assistant Director), Nicola Clifford, Bess Eisenstadt, Laura Erion, Tim Guinane, Kenneth John, Alexander Lawrence, Joshua Ormond, Robert Owens, Matthew Rosenberg, Kelly Rubin, Karla Springer, James Ungvarsky, Crystal Wesco, and Alwynne Wilbur made key contributions to this report.

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