



# OFFICE OF INSPECTOR GENERAL

UNITED STATES POSTAL SERVICE

## Delivery Vehicle Fleet Replacement

### Management Advisory Report

Report Number  
DR-MA-14-005-DR

June 10, 2014





# OFFICE OF INSPECTOR GENERAL

## UNITED STATES POSTAL SERVICE

## Highlights

***The Postal Service has an acquisition strategy, but has not fully developed or implemented it.***

### Background

The U.S. Postal Service uses more than 190,000 vehicles to collect and deliver mail, including about 142,000 long-life vehicles that are nearing or exceeding their expected service life. As the fleet ages, maintenance costs will increase and older models will be retired as they become too costly to maintain or repair.

Our objectives were to assess the Postal Service's acquisition strategy for the next generation of collection and delivery vehicles and identify features recommended for these vehicles.

### What the OIG Found

The Postal Service has an acquisition strategy, but has not fully developed or implemented it. The short-term plan developed in 2011 included acquiring 25,000 vehicles costing about \$500 million to meet operational needs and replace some of the aging fleet. The long-term plan included purchasing the next generation of delivery vehicles beginning in fiscal year (FY) 2017. However, this plan lacked details, such as vehicle requirements, specifications, and green technology features. Despite 3 years of effort, neither plan has been approved or fully funded. In January 2014, the Postal Service received approval to purchase 3,509 vehicles to meet a contractual rural carrier vehicle commitment as a stop gap measure.

These conditions occurred due to financial constraints. Our analysis of the delivery vehicle inventory and motorized routes showed the Postal Service could sustain delivery operations nationwide until FY 2017. On the other hand, it could experience vehicle shortfalls if there are unexpected decreases in vehicle inventory or increases in motorized routes. In addition, aging vehicles are typically repaired when they break down, even though it would sometimes be more cost effective to replace them.

In designing new delivery vehicles, management must consider federal fleet regulations, emerging vehicle technologies, and fleet best practices. For example, growth in the package market could help dictate the design and technologies selected for a new vehicle. Moreover, replacing vehicles could take more than 10 years. Thus, the Postal Service should act quickly to implement a plan to meet operational needs, achieve sustainability goals, and reduce maintenance costs.

### What the OIG Recommended

We recommended the vice president, Delivery and Post Office Operations, continue to pursue short-term annual vehicle acquisitions and formalize a long-term plan to replace the fleet that includes requirements and specifications for the next generation of delivery vehicles.

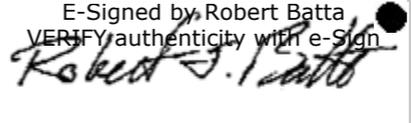
# Transmittal Letter



OFFICE OF INSPECTOR GENERAL  
UNITED STATES POSTAL SERVICE

June 10, 2014

**MEMORANDUM FOR:** EDWARD F. PHELAN, JR.  
VICE PRESIDENT, DELIVERY AND POST OFFICE  
OPERATIONS

E-Signed by Robert Batta  
VERIFY authenticity with e-Sign  


**FROM:** Robert J. Batta  
Deputy Assistant Inspector General  
for Mission Operations

**SUBJECT:** Management Advisory Report – Delivery Vehicle  
Fleet Replacement  
(Report Number DR-MA-14-005)

This report presents the results of our review of the U.S. Postal Service's Delivery Vehicle Fleet Replacement (Project Number 13XG031DR000).

We appreciate the cooperation and courtesies provided by your staff. If you have any questions or need additional information, please contact Rita F. Oliver, director, Delivery and Post Office Operations, or me at 703-248-2100.

Attachment

cc: Corporate Audit and Response Management

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# Findings

**Despite 3 years of effort, both short-term and long-term vehicle acquisition plans have not been fully approved or funded due to financial constraints.**

## Introduction

This report presents the results of our review of the U.S. Postal Service's Delivery Vehicle Fleet Replacement (Project Number 13XG031DR000). This is the first in a series of reviews on replacing the Postal Service's collection and delivery vehicle fleet.<sup>1</sup> Our objectives were to assess the Postal Service's acquisition strategy for the next generation of collection and delivery vehicles and identify features recommended for these vehicles. See [Appendix A](#) for additional information about this review.

The Postal Service operates one of the largest vehicle fleets in the U.S. As of May 2013, the Postal Service owned almost 212,000 vehicles, using over 190,000 of them to collect and deliver mail.<sup>2</sup> Long-life vehicles (LLV),<sup>3</sup> which comprise 75 percent of the Postal Service's delivery fleet, have an expected service life of 24 years. The current fleet consists of LLVs that are now between 20 and 27 years old.<sup>4</sup> As the Postal Service's fleet ages, projected maintenance costs will continue to increase.<sup>5</sup> The Postal Service will increasingly retire older models by necessity due to the high cost of repairing them or the unavailability of replacement parts.

The Government Accountability Office (GAO)<sup>6</sup> and the U.S. Postal Service Office of Inspector General (OIG)<sup>7</sup> issued prior reports recommending the Postal Service develop a strategy to address its delivery fleet needs. Management agreed with the GAO's recommendations, developed a vehicle replacement plan, and presented it to the Capital Investment Committee on June 23, 2011; however, senior management did not approve the plan because the Postal Service lacked the funds to implement it. Additionally, management agreed to incorporate annual replacement for portions of the fleet rather than a massive purchase prior to the next significant vehicle acquisition. It included this concept in its short-term vehicle replacement plans submitted for funding in FYs 2012, 2013, and 2014. The Postal Service's ongoing financial constraints have limited its ability to implement delivery fleet replacement plans.

## Conclusion

The Postal Service has an acquisition strategy that has not been fully developed or implemented. The short-term plan developed in 2011 included acquiring 25,000 vehicles costing about \$500 million to meet operational needs and replace some of the aging fleet. The long-term plan included purchasing the next generation of delivery vehicles beginning in FY 2017; however, this plan lacked details such as vehicle requirements, specifications, and green technology features. Despite 3 years of effort, the Postal Service has not approved or fully funded either plan. In January 2014, the Postal Service received approval to purchase 3,509 vehicles to meet a contractual rural carrier vehicle commitment as a stop gap measure.

The Postal Service has not fully developed or funded these plans due to financial constraints. Our analysis of the delivery vehicle inventory and motorized routes showed the Postal Service could sustain delivery operations nationwide until FY 2017. On the other hand, it could experience vehicle shortfalls if there are unexpected decreases in vehicle inventory or increases in motorized routes. In addition, aging vehicles are typically repaired when they break down even though it would sometimes be more cost effective to replace them.

<sup>1</sup> We also plan to conduct separate reviews on Foreign Post best practices for fleet management and Global Positioning System (GPS) opportunities and the use of geofencing at the Postal Service.

<sup>2</sup> This delivery fleet consist of about 20,000 minivans, 7,000 cargo vans, 21,000 flex fuel vehicles, and 142,000 LLVs. Information source: *Electronic Data Warehouse (EDW) Vehicle Asset Attribute Report*, as of May 31, 2013.

<sup>3</sup> The LLV is a custom-built, right-hand drive (RHD), light-duty delivery truck built with an aluminum body and other features intended to permit an extended operational life.

<sup>4</sup> The percentage of vehicles 20 to 26 years old are evenly spread at 13 to 14 percent each year, and 5.4 percent are 27 years old.

<sup>5</sup> The Postal Service incurred more than \$906 million in vehicle maintenance costs in fiscal year (FY) 2012.

<sup>6</sup> *U.S. Postal Service: Strategy Needed to Address Aging Delivery Fleet*, GAO-11-386, May 5, 2011.

<sup>7</sup> *Delivery Fleet Strategies*, CI-AR-12-006, August 14, 2012.

In designing the new delivery vehicles, management must consider federal fleet regulations, emerging vehicle technologies, and fleet best practices. For example, growth in the package market could help dictate the design and technologies selected for a new vehicle. Moreover, replacing vehicles could take more than 10 years. Thus, the Postal Service should quickly implement a plan to meet operational needs, achieve sustainability goals, and reduce maintenance costs.

## Delivery Vehicle Fleet Replacement

The Postal Service developed a short-term plan to maintain operations until it can implement its long-term plan, beginning in FY 2017, to replace its aging fleet with the next generation of collection and delivery vehicles. But it lacks the financial resources to fully develop or fund these plans. Our analysis indicates the Postal Service will still have enough vehicles to sustain delivery operations in the short term; however, it could experience delivery vehicle shortfalls if there is an unexpected decrease in vehicle inventory or increase in motorized vehicle routes. Additionally, continuing to repair the aging fleet<sup>8</sup> is not cost effective for vehicles that have high maintenance costs.

### Vehicle Acquisition Strategy

In May 2011, the Postal Service agreed with a GAO report<sup>9</sup> recommending management develop a delivery fleet strategy that considers the effects of likely operational changes, legislative fleet requirements, and other factors. In June 2011, Delivery Operations officials developed a short-term plan to spend about \$500 million to acquire about 25,000 left-hand drive (LHD) minivans to meet operational needs through 2017. The intent was to replace high maintenance cost LLVs and minivans that had reached their end of life. The Postal Service would purchase vehicles over a 5-year period (2012 through 2016). The plan would also allow the transfer of some existing RHD LLVs to rural carriers driving privately owned vehicles.<sup>10</sup> Further, the Postal Service developed a long-term plan to purchase the next generation of collection and delivery vehicles beginning in FY 2017. This plan described management's intention to buy about 20,000 RHD vehicles a year to replace the aging LLVs. On June 23, 2011, officials briefed the Capital Investment Committee on these plans, but they were not approved due to lack of funds.

Additionally, in June 2012, the OIG's report<sup>11</sup> recommended the Postal Service develop and implement a comprehensive fleet management strategy managed from headquarters by a dedicated team of specialists. The strategy was to focus on using identified best management practices for the vehicle fleet. Management disagreed with this recommendation, saying it had a comprehensive strategy, had undergone a reorganization that spread the strategy among the different teams, and did not want to make additional changes. However, management agreed to incorporate annual replacement of portions of the fleet rather than make a massive purchase prior to the next significant vehicle acquisition. Management included this concept in the short-term vehicle replacement plans that were modified and resubmitted for funding in FYs 2012 and 2013. Again, senior management did not approve these plans due to a lack of funding.

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8 Without the capital resources to purchase a new vehicle fleet, management's approach is to sustain delivery fleet operations through continued maintenance. Vehicles are repaired as they experience failure as a short-term means of ensuring that the delivery vehicles remain operational.

9 U.S. Postal Service: Strategy Needed to Address Aging Delivery Fleet, GAO-11-386, May 5, 2011.

10 Handbook EL-902, Agreement Between the United States Postal Service and the National Rural Letter Carriers' Association 2010-2015, dated July 3, 2012.

11 Delivery Fleet Strategies, CI-AR-12-006, August 14, 2012.

Delivery Operations' officials have continued to pursue funding through the budget process. In August 2013, they initiated an interim plan to spend \$276 million to acquire new vehicles to meet the contractual rural carrier vehicle commitment and replace older LLVs, 2-ton vehicles, and service vehicles. Because of financial constraints, only a portion of the plan<sup>12</sup> was funded. The Investment Review Committee (IRC) approved a limited budget request to purchase 3,509 minivans<sup>13</sup> to meet the contractual rural carrier vehicle commitment as a stop gap measure. The IRC approved the DAR for this purchase in January 2014 and the postmaster general approved the purchase on March 11, 2014. Additional requests are being considered in FY 2014 for more than 400 mixed collection and delivery vehicles (2-ton vehicles) needed to comply with California Air Resource Board (CARB) truck emissions regulations and to meet the increased need due to package delivery growth in the New York and Triboro districts.

The Postal Service developed a long-term plan to purchase the next generation of collection and delivery vehicles beginning in FY 2017; however, the plan has not been formalized. According to Postal Service officials, this acquisition will be a lengthy process, with several phases that require multiple levels of review and led by a team of experts from several departments.<sup>14</sup> The Postal Service must develop a DAR that the IRC, postmaster general, and Board of Governors must approve.<sup>15</sup> Officials estimate the entire process from vehicle design to complete replacement of LLVs could take more than 10 years and cost more than \$5 billion.<sup>16</sup> They stated that, from 2003 through 2005, they developed a detailed acquisition strategy that was never funded. They do not think it is worthwhile to repeat the process now, particularly in view of the uncertainty of funding due to the Postal Service's continued financial losses.

The Postal Service continues to explore ways to acquire new collection and delivery vehicles. It reached its statutory borrowing limit with the U.S. Department of Treasury in 2012 and cannot borrow additional funds to purchase or lease new vehicles. In September 2013, the Postal Service requested an exigent rate increase<sup>17</sup> to raise rates by 4.3 percent. On December 23, 2013, the Postal Regulatory Commission approved the rate increase for 2 years, resulting in \$2.8 billion in additional revenue. Management stated in the rate case that low levels of liquidity have impaired the Postal Service's ability to maintain and improve business assets, such as delivery vehicles, that are critical to meeting the universal service obligation. The additional revenue could help the Postal Service begin upgrading its delivery vehicle fleet.

### Vehicle Inventory and Motorized Routes

Delivery vehicles are critical for the Postal Service to meet its universal service obligation. Our analysis of vehicle inventory and motorized delivery routes showed delivery operations could be sustained nationwide until FY 2017, the target date for purchasing the next generation of collection and delivery vehicles. Specifically, our analysis indicates that by the end of FY 2014, the Postal Service will have 251 additional vehicles above the 4 to 5 percent reserve limit (see [Figure 1](#)). Also, the recent purchase of 3,509 vehicles should help the Postal Service sustain delivery operations and meet contractual obligations. But unexpected decreases in vehicle inventory or increases in motorized routes could cause vehicle shortfalls.

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12 The Decision Analysis Report (DAR) for vehicle acquisition will be implemented in three phases. Phase I was approved for a capital investment purchase of \$88.4 million for the minivans.

13 According to Postal Service officials, no significant cost savings are expected from the purchase of 3,509 minivans to satisfy the rural vehicle contractual obligation. While the purchase would eliminate the equipment maintenance allowance paid to rural carriers driving their privately owned vehicles, this amount would be offset by increased maintenance costs for the additional vehicles added to the Postal Service fleet.

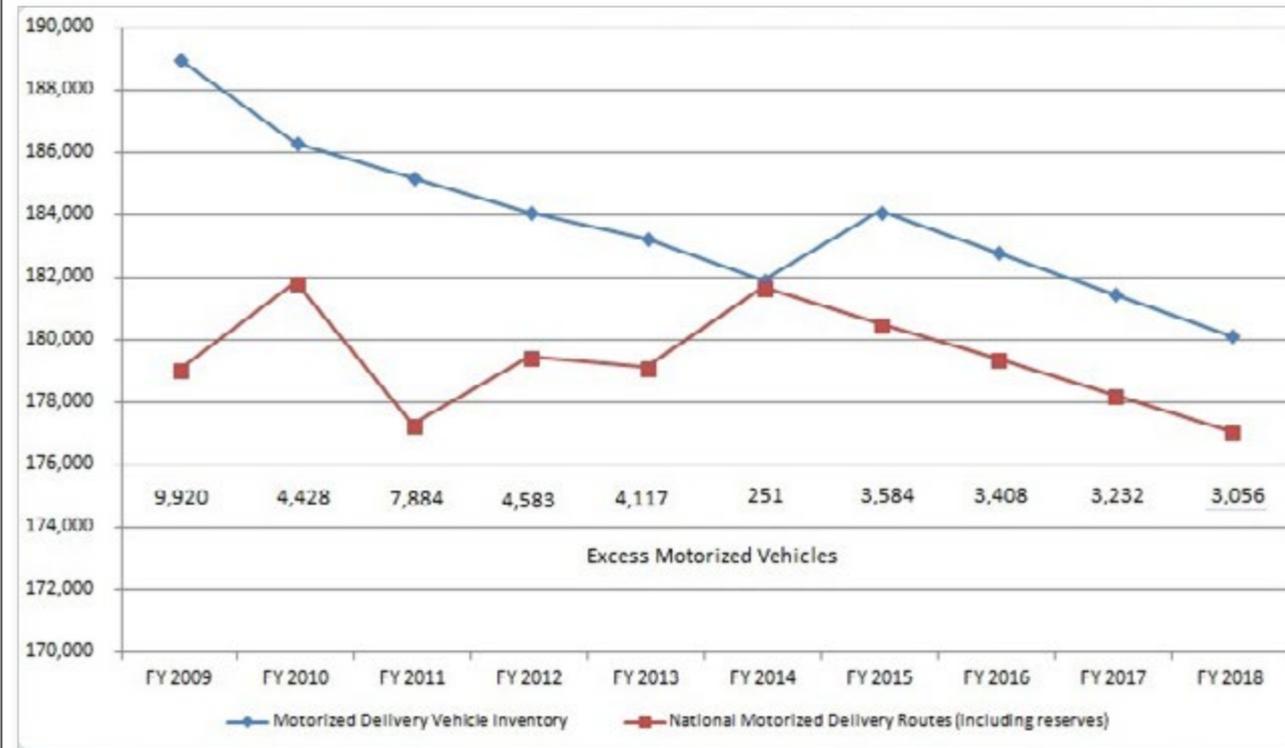
14 The team of experts includes representatives from Delivery and Post Office Operations, Engineering, General Counsel, Safety, Supply Management, and Sustainability.

15 Handbook F-66b, Investment Policies and Procedures – Major Equipment, dated January 2006.

16 Additionally, as part of the overall vehicle replacement strategy, the Postal Service would need to secure funding to replace heavy-duty trucks, trailers, and service vehicles that have also exceeded their vehicle life expectancy and mileage.

17 The Postal Accountability and Enhancement Act, enacted on December 20, 2006, recognized that the Postal Service might need to raise market-dominant prices above the Consumer Price Index price cap due to extraordinary or exceptional circumstances. In such circumstances, the Postal Service may file a proposal with the commission for an "exigent" rate increase.

**Figure 1. Analysis of Historical and Projected Delivery Vehicle Inventory and Motorized Delivery Routes**



Source: OIG analysis, EDW, and Address Management System (AMS).

Our analysis of vehicle inventory and motorized delivery routes<sup>18</sup> considered the following.

- The January 2014 approval of the purchase of 3,509 minivans to satisfy the commitment in the National Rural Letter Carriers' Association contract to provide additional LLVs to rural carriers.<sup>19</sup> The Postal Service will redeploy LLVs to rural routes by December 31, 2014 (FY 2015).
- The Postal Service retires about 1,300 vehicles each year due to excessive repair costs or unavailability of parts for older minivans.
- The Postal Service needs a vehicle reserve of 4 to 5 percent to replace vehicles being serviced and other non-route related assignments, such as driver training.
- The Postal Service's ability to continue reducing motorized city delivery routes by about 1,100 routes a year due to reductions in First-Class Mail<sup>®</sup> volume and route optimization.<sup>20</sup> Management indicated that maintaining these motorized route reductions into the future may prove challenging due to the continued growth in package volume.

<sup>18</sup> This refers to motorized routes assigned a vehicle provided by the Postal Service and also includes the number of reserve vehicles set aside for vehicle maintenance facility (VMF) maintenance and training.

<sup>19</sup> Memorandum of Understanding 13 of the National Agreement between the National Rural Letter Carriers' Association and the Postal Service requires 15,000 RHD postal-owned vehicles to be deployed to rural routes between 2009 and 2013. At the end of FY 2013, the remaining RHD vehicles required to fulfill the agreement was 3,374.

<sup>20</sup> Delivery Operations management provided route projections for FY 2014, so we projected future motorized routes using historical data.

## Vehicle Maintenance Costs

The existing management approach to sustaining the delivery fleet is not cost effective. It typically involves repairing vehicles that break down, resulting in high maintenance costs, instead of replacing them. This strategy also limits the Postal Service's ability to upgrade its delivery vehicle fleet with new technologies (see Figure 2).

**Figure 2. Postal Service Annual Vehicle Operating Cost Trend<sup>21</sup> (Excluding Fuel Costs)**



Hover over the Fiscal Years to reveal the trend.

Source: FY 2014 Vehicle Acquisition Plan, IRC Ideation presentation, August 21, 2013.

The Postal Service projected that in FY 2013 about 9 percent of the LLV fleet (nearly 13,000 vehicles) would require maintenance repairs costing more than \$6,000 per vehicle per year, or a total of over \$107 million. This represents more than 23 percent of total projected FY 2013 LLV maintenance costs. As the OIG reported in 2010,<sup>22</sup> the fix as fail strategy is not cost effective for vehicles with high maintenance costs (see Table 1).

**Table 1. Projected FY 2013 LLV Maintenance Costs**

	LLV Count	Total Cost <sup>23</sup>	Average	Percentage of Vehicles	Percentage of Cost
All LLVs	141,727	\$451,881,701	\$3,188	100.00%	100.00%
Greater than \$6,000	12,890	\$107,334,855	\$8,327	9.09%	23.75%
Greater than \$7,000	7,789	\$74,428,027	\$9,556	5.50%	16.47%
Greater than \$8,000	4,893	\$52,882,722	\$10,808	3.45%	11.70%
Greater than \$9,000	3,192	\$38,487,351	\$12,057	2.25%	8.52%
Greater than \$10,000	2,108	\$28,223,556	\$13,389	1.49%	6.25%

Source: FY 2014 Vehicle Acquisition Plan, IRC Ideation presentation, August 21, 2013.

<sup>21</sup> The annual vehicle operating costs include VMF salaries and benefits, commercial parts and labor, and VMF parts. The American Recovery and Reinvestment Act of 2010 provided replacement vehicles at no cost to the Postal Service, contributing to a single year reduction in operating costs.

<sup>22</sup> Delivery Vehicle Replacement Strategy (Report Number DA-AR-10-005, dated June 16, 2010).

<sup>23</sup> Historical costs were adjusted for inflation and future costs were projected in accordance with historical trends and Postal Service Finance's recommended escalation rates.

***The need to replace its collection and delivery vehicles offers the Postal Service an opportunity to significantly improve the efficiency and technology of the fleet.***

## Next Generation of Collection and Delivery Vehicles

The need to replace its collection and delivery vehicles offers the Postal Service an opportunity to significantly improve the efficiency and technology of the fleet. This acquisition is also critical to meeting future delivery needs in the growing package market, reducing petroleum fuel costs and use, and cutting maintenance costs. Management must consider federal fleet regulatory requirements, emerging vehicle technologies and trends, and fleet management best practices as it designs its next generation of collection and delivery vehicles.

### Statutory and Regulatory Requirements

Collection and delivery vehicle fleet planning should consider federal regulatory requirements to:

- Ensure that 75 percent of light-duty fleet vehicle acquisitions are alternative fuel vehicles manufactured in the U.S. or Canada.<sup>24</sup>
- Meet appropriate safety standards administered by the National Highway Traffic Safety Administration.

In addition, the Postal Service has adopted policies and programs established in several energy-related executive orders (EO) issued by the White House to federal executive agencies, including efforts to reduce greenhouse gas (GHG) emissions through reduced petroleum consumption. See [Appendix B](#) for additional information regarding the statutes and regulations the Postal Service must consider when acquiring next generation collection and delivery vehicles.

### Vehicle Safety

While the Postal Service has generally maintained its LLV fleet in a safe, working condition, these vehicles do not have the numerous modern vehicle safety features now considered standard on most vehicles, including:

- Front airbags
- Back-up cameras
- Intermittent wipers
- Blind-spot warning systems
- Daytime running lights
- Seatbelt reminders
- Anti-lock brake systems (ABS)

Many standard safety features were not available when LLVs (which are 75 percent of the delivery fleet) were originally designed and purchased about 27 years ago (see [Appendix C](#) for additional information regarding standard fleet safety features).

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<sup>24</sup> Certain types of emergency, law enforcement, and national defense vehicles are exempt from these requirements.

## Vehicle Design Options

### Capacity, Size, and Shape

It is difficult to define the capacity of future collection and delivery vehicles because it is a “moving target.” Just as today’s needs differ from those of more than 20 years ago, when LLVs were designed, needs may change again 10 years from now. Requirements can vary by location or route; however, the Postal Service should make every effort to standardize vehicle size, type, and brand because this increases the opportunity for volume discounts and makes it easier to train maintenance staff and stock parts.

Current LLV capacities specify a payload of 1,000 pounds and cargo storage space of 121 cubic feet. Informal observations and interviews revealed that these capacities are often underused. Now that the Postal Service is delivering more packages, it might need capacities at least as large as, or larger than, those of the existing LLVs; however, Postal Service management indicated the amount of mail a letter carrier can deliver in his or her 8-hour day limits that maximum capacity. Significant future package volume increases could shorten the length of existing carrier routes, as additional time would be needed to deliver each package to a customer’s door. This could limit the maximum vehicle capacity needed in the future.

From an operations point of view, more size options may be desirable. Vehicles that must operate in highly congested cities should be smaller and easier to maneuver than those that operate in more suburban areas. It would be reasonable for the Postal Service to offer a small portfolio of vehicle types and sizes to meet varying needs (often termed a “vehicle selector list”). Both FedEx and UPS use a variety of sizes and types of vehicles, depending on location, population density, loads, and so forth. Future FedEx strategies also suggest a “menu” of available vehicle types, depending on the distance traveled each day and the volume of packages.

The Postal Service can address the shape of the vehicle as two components – cargo space and driver space. Most medium and large trucks are based on a chassis or cab that can accept a variety of cargo bodies. The same concept applies to the Postal Service’s future collection and delivery vehicles; however, if the choice is a small, commercially produced van, the cab and cargo space are usually integrated. Medium and large vans often have separate cab or body configurations. The shape of the cargo space is dictated by the load and cubic feet space requirement. For the Postal Service, the shape of the cab could depend on driver’s vision and ergonomic factors, rather than aerodynamics, because the vehicles generally travel at low speeds.<sup>25</sup>

### Driver Side

RHD vehicles continue to be the most practical for collecting and delivering mail. RHD vehicles are used on curbside delivery routes to allow letter carriers to safely deliver mail directly to mailboxes without leaving their vehicles. While carriers can perform some delivery routes without curbside delivery using LHD vehicles, they can use RHD vehicles for all routes. Today’s “global market” for vehicles makes it easier to acquire RHD vehicles, but the Postal Service cannot identify any U.S.-manufactured RHD vehicles that meet its operational requirements. This leaves it with limited options, such as exploring ways to convince major vehicle manufacturers to build RHD versions of their U.S.-manufactured light-duty vehicles or working with a qualified vehicle modifier to convert vehicles from LHD to RHD.

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<sup>25</sup> Air resistance increases with the cube of the speed; thus, it is not significant at speeds below 50 miles per hour.

## Custom Vehicle Versus Commercial Vehicle

It is no longer practical to design and purchase “custom” vehicles with long lifecycles, such as the LLV, given the current state of automotive technology and the rapid changes in powertrain<sup>26</sup> development. Each year brings new vehicles with better fuel economy, reduced maintenance requirements, improved safety and convenience features, lower emissions, and many other benefits.

Although custom vehicles allow fleet personnel to specify exactly what they need, they are generally more costly to manufacture than commercially produced vehicles due to economies of scale. The Postal Service first purchased an LLV in 1987 for \$11,651. Assuming a simple 3 percent per year cost increase due to inflation and advances in standard features, the same vehicle would cost \$25,126 in 2013. A suitable standard commercial vehicle, even with a small amount of customization and a host of new safety features, would cost less.<sup>27</sup>

A commercial vehicle with some customization (in other words, a “mix”) could be the best option for the Postal Service. This follows fleet management best practices and aligns with competitors and foreign posts. FedEx, UPS, Canada Post, and Royal Mail use a variety of van-type vehicles. See [Appendix D](#) for examples of competitor and Foreign Post vehicles. While commercial vehicle options are limited, there are likely replacements for the LLV if they are delivered as RHD and meet alternative fuel vehicle requirements. Commercial vehicles could allow the Postal Service to continuously adopt new technologies and enjoy the cost savings they offer. The Postal Service could also benefit from better resale values<sup>28</sup> by selling used commercial vehicles rather than custom vehicles.

## **Powertrains and Green Technologies**

Automotive technology is evolving rapidly and manufacturers are offering a greater variety of powertrains, along with the ability to use several alternative fuels.<sup>29</sup> The Postal Service has pilot tested many alternative technologies with varying degrees of success. In establishing the specifications of its next generation of collection and delivery vehicles, it should consider a variety of powertrains to evaluate how well the technologies meet current and future delivery operations and regulatory requirements governing new fleet purchases. Technologies the Postal Service should consider include:

- Biodiesel
- Electric
- Ethanol or E85
- Hydrogen
- Natural gas
- Propane or liquefied petroleum gas (LPG)

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<sup>26</sup> A powertrain refers to the group of components (such as the engine and transmission) that generate power and deliver it to the road surface.

<sup>27</sup> Source: [AutoTrader.com](#) for a basic cargo van that would cost \$21,000. The Postal Service should be able to acquire vehicles in large quantities below invoice price.

<sup>28</sup> Resale value is very important in the vehicle acquisition analysis because depreciation is normally the largest component of overall cost.

<sup>29</sup> Alternative fuels are derived from resources other than petroleum. Some are produced domestically, reducing our dependence on imported oil, and some are derived from renewable sources. Often they produce less pollution than gasoline or diesel fuel.

Many companies with large fleets, including UPS and FedEx, are also testing alternative fuels; however, it is important to note that few companies are moving to use a specific alternative fuel for their entire fleet. See [Appendix E](#) for a description and the advantages and disadvantages of alternative fuel technologies.

### Innovative Tracking

GPS fleet tracking and telematics devices reduce guesswork and uncertainty in the management of a geographically dispersed fleet. When fully implemented, a GPS fleet tracking solution could give the Postal Service greater insight into how its fleet functions, thus extending the life of its assets and enabling it to respond more quickly to emergencies or mail carrier rerouting and to take proactive maintenance measures. More broadly, GPS technologies could help the Postal Service become more effective and profitable.

The GPS and telematics functionalities listed below show a few areas where the Postal Service could potentially reduce fleet costs:

- **Idle Time Reduction**—GPS vehicle tracking technology can uniquely contribute to managing fuel consumption. Monitoring idle time and establishing a related policy could significantly reduce fuel consumption.
- **Improved Maintenance**—field breakdowns could be reduced by monitoring on-board vehicle diagnostics and bringing vehicles in for repair at the first sign of a problem. In addition, these same telematics could optimize preventive maintenance intervals.
- **Speeding Oversight**—the U.S. Environmental Protection Agency estimates that excessive speeding may decrease fuel economy by up to 20 percent. Speeding oversight could reduce the Postal Service’s fuel consumption.
- **Route Optimization**—mail collection delivery vehicles typically make multiple stops each day and the Postal Service could save time and fuel by more efficiently routing its drivers. When the number of stops and locations are subject to frequent change or are not scheduled by appointment, it becomes even more important to determine the order of the stops and the most efficient route.

The Postal Service may also have opportunities to use GPS technologies to help grow its package delivery business. Specifically, the Postal Service could use GPS with scanning technologies to track mail in real time in addition to tracking vehicles.<sup>30</sup> Further, the agency could integrate GPS technologies to support its dynamic routing initiatives.<sup>31</sup>

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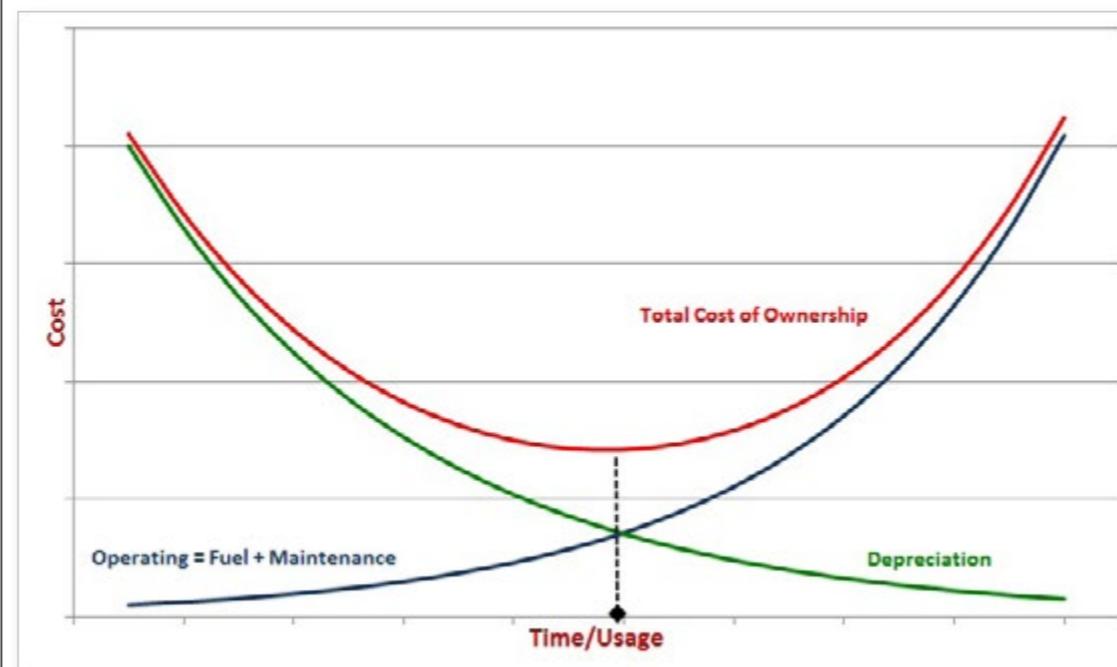
<sup>30</sup> Global Positioning System: End-to-End Platform and Actionable, Robust Reports Needed to Achieve Goals and Potential Return-on-Investment (Report Number DR-MA-11-003, dated September 30, 2011).

<sup>31</sup> The OIG plans to conduct a future audit on the Postal Service’s use of GPS and geofencing.

## Best Practices for Fleet Management

The Postal Service's current fix as fail strategy may not be the best approach for an aging fleet of vehicles that are nearing or exceeding their expected service life, as it would generally be more cost effective to replace older vehicles than to continue to maintain and repair them. Fleet management best practices involve investing predictable and consistent sums annually to renew the fleet continuously and allow adoption of new technologies.<sup>32</sup> Many fleet managers use the "Total Cost of Ownership" (TCO) approach to determine the optimum replacement cycle for each type of vehicle. TCO incorporates acquisition costs, resale value, and maintenance and fuel costs. Vehicle maintenance costs increase over the life of any vehicle and, if a vehicle is kept too long, the cost of maintenance outweighs the benefit of keeping the vehicle in service to delay the expense of a replacement. Figure 3 depicts this principle, with the sum of these two cost categories representing the U-shaped total lifecycle cost curve. The optimum time to replace a vehicle is before the TCO increases.

**Figure 3. Vehicle TCO**



Source: Mercury Associates, Inc.

The total cost curve differs for every type of vehicle. This variability is due to differences in design and engineering, the effects of unique operating environments, the quality of care the vehicle receives, and other factors.

In designing the new delivery vehicles, management must consider federal fleet regulations, emerging vehicle technologies, and fleet best practices. For example, growth in the package market could influence the design and technologies selected for new vehicles. Replacing vehicles could take more than 10 years; thus, it is important that the Postal Service quickly implement a plan to meet operational needs, achieve sustainability goals, and reduce maintenance costs.

<sup>32</sup> Delivery Fleet Strategies (Report Number CI-AR-12-006, dated August 14, 2012).

# Recommendations

***We recommend management continue pursuing short-term annual vehicle acquisitions. We also recommend management formalize the long-term strategy for replacing the delivery fleet that includes developing requirements, specifications, and green technology features for the next generation of collection and delivery vehicles.***

We recommend the vice president, Delivery and Post Office Operations:

1. Continue pursuing short-term annual vehicle acquisitions.
2. Formalize the long-term strategy for replacing the delivery fleet that includes developing requirements, specifications, and green technology features for the next generation of collection and delivery vehicles.

## Management's Comments

Management agreed with the findings and recommendations.

Regarding recommendation 1, management stated that Delivery Operations continues to request annual funding to replace vehicles with the highest maintenance costs with vehicles that will provide the best opportunity for reducing overall total cost of ownership. Delivery Operations provided a vehicle capital funding plan to Finance that included both short- and long-term replacement objectives. Management stated they have already implemented this recommendation.

Regarding recommendation 2, management stated that a cross-functional group consisting of Supply Management, Engineering, and Delivery Program Support has begun the process of formalizing a fleet replacement strategy. Management stated they will develop a fleet replacement strategy by January 2015.

See [Appendix F](#) for management's comments, in their entirety.

## Evaluation of Management's Comments

The OIG considers management's comments responsive to the recommendations and management's corrective actions should resolve the issues identified in the report.

Regarding recommendation 1, Delivery Operations management submitted a 5-year vehicle capital funding plan that included short- and long-term replacement objectives in April 2014. We assessed the plan and, if funded, the requested vehicle acquisitions should help the Postal Service sustain delivery operations and reduce maintenance costs until it acquires the next generation of collection and delivery vehicles.

Regarding recommendation 2, the OIG requests written confirmation when corrective actions are completed. This recommendation should not be closed in the Postal Service's follow-up tracking system until the OIG provides written confirmation that the recommendation can be closed.

The OIG considers all recommendations significant, and therefore requires OIG concurrence before closure. Management's actions sufficiently addressed recommendation 1; therefore the OIG considers this recommendation closed with the issuance of this report.

# Appendices

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## Appendix A: Additional Information

***The Postal Service operates one of the largest vehicle fleets in the U.S. As of May 2013, the Postal Service owned almost 212,000 vehicles, using over 190,000 of them to collect and deliver mail.***

### Background

The Postal Service operates one of the largest vehicle fleets in the U.S. As of May 2013, the Postal Service owned almost 212,000 vehicles, using over 190,000 of them to collect and deliver mail. This delivery fleet consists of about 20,000 minivans, 7,000 cargo vans, 21,000 flex fuel vehicles, and 142,000 LLVs.<sup>33</sup> The expected service life of an LLV is 24 years and the current fleet consists of LLVs that are now between 20 and 27 years old. As the Postal Service fleet ages projected maintenance costs will increase. Older models will, by necessity, continue to be retired due to the high cost to repair them or the unavailability of replacement parts.

The responsibility of operating, sustaining, and renewing the Postal Service's delivery fleet is a cooperative venture among Delivery and Post Office Operations, Engineering, Sustainability, and Supply Management. Their specific responsibilities are as follows:

- Delivery and Post Office Operations develops, implements, and communicates long-range strategic plans and manages national delivery and collection operations policies and procedures.
- Engineering provides leadership in the research and development of all postal vehicles, including alternative fuel vehicles.
- Sustainability works to reduce vehicle petroleum fuel use and increase alternative vehicle fuel use.
- Supply Management supports customer requirements for the development and acquisition of delivery vehicles, with services ranging from the initial research and development contracts to full-scale repair and maintenance service contracts.

### Objectives, Scope, and Methodology

Our objectives were to assess the Postal Service's acquisition strategy for the next generation of collection and delivery vehicles and identify features for these vehicles. To accomplish our objectives, we:

- Identified and reviewed applicable documentation related to Postal Service strategies that could impact delivery operations.
- Interviewed Postal Service officials to identify any limitations the existing collection and delivery vehicles may have in implementing this strategy and the effect the strategy may have on the design of future collection and delivery vehicles.
- Collected and analyzed data on the FY 2009-2013 collection and delivery fleet, using data from the EDW and AMS, including number and type of vehicles and the number of motorized delivery routes. This data and projected fleet complement requirements enable us to determine the Postal Service's ability to continue meeting operational needs.
- Reviewed financial challenges, federal fleet alternative fuel vehicle requirements, federal principles for capital planning, and documentation on the Postal Service's environmental sustainability goals to identify risk factors for acquisition of the next generation of collection and delivery vehicles.
- Performed a limited review, with the assistance of a fleet management expert, of fleet management best practices for evaluating and defining vehicle requirements, viable vehicle options, and technologies that would be available to the Postal Service in designing the next generation of collection and delivery vehicles and federal regulatory requirements.

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<sup>33</sup> EDW Vehicle Asset Attribute Report as of May 31, 2013.

We conducted this review from March 2013 through June 2014, in accordance with the Council of the Inspectors General on Integrity and Efficiency, *Quality Standards for Inspection and Evaluation*. We discussed our observations and conclusions with management on May 5, 2014, and included their comments where appropriate.

We assessed the reliability of EDW and AMS data by performing electronic testing of required data elements, reviewing existing information about the data and the system that produced them, interviewing agency officials knowledgeable about the data, and comparing results to published reports. We determined that the data were sufficiently reliable for the purposes of this report.

## Prior Audit Coverage

Report Title	Report Number	Final Report Date	Monetary Impact
<i>Delivery Fleet Strategies</i>	CI-AR-12-006	8/14/2012	None
<p><b>Report Results:</b> The Postal Service does not have a comprehensive fleet management strategy but has some elements of a strategy in place to operate, sustain, and renew its delivery fleet. In June 2011, management developed a plan to purchase new vehicles; however, the Postal Service's continuing financial situation prevented the plan's implementation. We recommended that management develop and implement a comprehensive fleet management strategy that is managed from headquarters by a dedicated team of specialists whose primary focus is to use identified best practices for the management of the Postal Service's vehicle fleet. Management disagreed with our first finding and recommendation stating the Postal Service's fleet strategy is not contained in one department, but is a cooperative venture among various departments. We also recommended that management establish an annual new vehicle replacement strategy, as part of a comprehensive fleet management strategy, to replace part of the fleet each year, spread out the expenditures over time, and ensure the overall operational functionality of the fleet. Management agreed to incorporate the concept of yearly replacement of portions of the fleet rather than a massive purchase prior to the next significant vehicle acquisition.</p>			
<i>Global Positioning System: End-to-End Platform and Actionable, Robust Reports Needed to Achieve Goals and Potential Return-on-Investment</i>	DR-MA-11-003	9/30/2011	None
<p><b>Report Results:</b> Opportunities exist to enhance the use of GPS at the Postal Service. GPS technology has been implemented on only 3 percent of delivery vehicles and not on trucks that transport mail. For delivery operations, management uses standard GPS reports from the vendor (rather than customized reports) and districts do not consistently use exception data from the reports to manage operations. Existing GPS for delivery vehicles has helped in street management, anecdotally curtailed negative behavior, and provided a basis for return-on-investment. However, the Postal Service could develop an end-to-end, single-sourced GPS platform and back office accountability for the entire fleet of vehicles and trucks focused on taking costs out of the delivery and transportation system. We recommended management maximize existing GPS functions and create internal best practices for the existing GPS and explore an end-to-end GPS platform and establish a cross-functional team of Postal Service managers to review existing barcode and scanning systems, as well as other related tracking and scanning opportunities. Management generally agreed with the findings and recommendations.</p>			
<i>U.S. Postal Service: Strategy Needed to Address Aging Delivery Fleet</i>	GAO-11-386	5/5/2011	None
<p><b>Report Results:</b> The GAO profiled the Postal Service's delivery fleet, assessed its response to alternative fuel vehicle requirements, and described its experiences with these vehicles. In addition, the GAO identified the Postal Service's approach to addressing its delivery fleet needs, including trade-offs, and determined options to fund a major acquisition of delivery vehicles. As a result of this analysis, the GAO recommended the Postal Service develop a strategy for addressing its delivery fleet needs that considers the effects of likely operational changes, legislative fleet requirements, and other factors and management agreed. Postal Service management also stated given the current financial conditions, the availability of capital funds would be a primary factor in any investment decision.</p>			

## Appendix B: Alternative Fuel Vehicle Laws and Regulations

### Summary of Federal Fleet Requirements

Federal fleets must reduce GHG emissions while meeting mission critical needs and complying with all federal goals and mandates. Federal fleets, including the Postal Service fleet, will reduce GHG emissions through less petroleum consumption by reducing miles driven, increasing fuel efficiency, and using alternative fuels. The White House and Congress have established federal fleet regulatory requirements through the EOs<sup>34</sup> and statutes in Table 2.

**Table 2. Principle Federal Fleet Energy Management and Efficiency Requirements**

Key Federal Fleet Statutes and EOs	GHG Reduction	Petroleum Consumption Reduction	Alternative Fuel Use
EO 13514—Federal Leadership in Environmental, Energy, and Economic Performance	Federal agencies shall make reduction of GHG emissions a priority and establish a target for reducing fleet GHG emissions by FY 2020, relative to an FY 2008 baseline.	Reduce the fleet's total consumption of petroleum products by 2 percent annually through the end of FY 2020, based on an FY 2005 baseline for a 30 percent total reduction by FY 2020.	
Energy Independence and Security Act of 2007	Prohibits federal agencies from acquiring light-duty vehicles that are not low GHG emitting vehicles.	Not later than October 1, 2015, each federal agency shall achieve at least a 20 percent reduction in annual petroleum consumption as calculated from an FY 2005 baseline.	Not later than October 1, 2015, each federal agency shall achieve a 10 percent increase in annual alternative fuel consumption as calculated from an FY 2005 baseline.
EO 13423—Strengthening Federal Environmental, Energy, and Transportation Management		Reduce the fleet's total consumption of petroleum products by 2 percent annually through the end of FY 2015, based on a FY 2005 baseline.	Increase total fuel consumption that is non-petroleum based by 10 percent annually through the end of FY 2015, based on an FY 2005 baseline. In addition, use plug-in hybrid electric vehicles (HEV) when they are commercially available at a reasonable lifecycle cost compared to non-plug-in HEV.
Energy Policy Act (EPAAct) of 2005			Federal dual-fueled alternative fuel vehicles shall use alternative fuels unless the Secretary of Energy determines the agency qualifies for a waiver.
EPAAct of 1992			Of the total number of light-duty vehicles acquired by a federal fleet, at least 75 percent in FY 1999 and thereafter, shall be alternative fuel vehicles

Source: Department of Energy, [Federalfleets.energy.gov](http://Federalfleets.energy.gov).

<sup>34</sup> EOs 13514 and 13423 do not apply to the Postal Service; however, it has adopted many of the policies and programs under postal authority and considers them when developing its compliance strategy.

## Appendix C: Standard Fleet Safety Features

***LLVs represent 75 percent of the Postal Service delivery fleet. These vehicles were purchased as long as 27 years ago and, as a result, do not include numerous modern vehicle safety features developed to reduce accidents and injuries that are now considered standard on most vehicles.***

LLVs represent 75 percent of the Postal Service delivery fleet. These vehicles were purchased as long as 27 years ago and, as a result, do not include numerous modern vehicle safety features developed to reduce accidents and injuries that are now considered standard on most vehicles. Below are 31 standard safety features commonly found in fleet vehicles.

**Table 3. Standard Fleet Safety Features**

	<b>Standard Fleet Safety Features</b>	<b>Average Cost Per Vehicle to Add This Feature<sup>35</sup></b>
1	Frontal airbags (driver and passenger)	Standard on all vehicles
2	Back-up cameras	Will be standard as of 2016
3	Intermittent wipers	Standard on all vehicles
4	Blind spot warning systems	\$250 after market
5	Daytime running lights	Standard on all vehicles
6	Seat belt reminder	Standard on all vehicles
7	ABS brakes	Standard on all vehicles
8	Safety belt pretensioners	Standard on all vehicles
9	Electronically adjusting external mirrors	Standard on most vehicles
10	Crash recorder or event data recorder	Standard on most vehicles
11	Tire pressure monitoring	Standard on all vehicles
12	Air conditioning/climate control	Standard on all vehicles
13	Emergency equipment (first-aid kit, emergency signaling device, fire extinguisher)	\$50
14	GPS tracking device, as well as a system that transmits engine data to a central location for monitoring and tracking, plus real-time package tracking	Many aftermarket devices that start at around \$100+ based on sophistication and functionality
15	Cargo barrier	Will be standard
16	Side airbags	Now standard on some vehicles; \$1,500-\$2,000 new from dealer
17	Collision avoidance systems	Pricing is unknown, but cost is a function of sophistication
18	Back-up sensors	Numerous aftermarket suppliers; under \$100
19	Dash cameras facing forward and toward the driver	Pricing is unknown
20	Conspicuous body color	\$100
21	Flashing light on rear indicating vehicle makes frequent stops	\$100
22	Turn indicators on side mirrors	\$15 aftermarket, \$250 new from dealer

<sup>35</sup> For safety features not standard on vehicles or required by law, we estimated the average cost per vehicle to add this feature.

Standard Fleet Safety Features		Average Cost Per Vehicle to Add This Feature <sup>36</sup>
22	Turn indicators on side mirrors	\$15 aftermarket, \$250 new from dealer
23	Rear parking assistance device	\$35-\$200 aftermarket
24	Fatigue warning systems	Aftermarket products exist but pricing is unknown
25	Device preventing phoning or texting while driving	Pricing unknown, but can vary from one-time purchase price to monthly monitoring license fees
26	Automatic 911 call in the event of an accident (OnStar or similar)	\$20 monthly fee
27	Night vision enhancements	\$2,100-\$5,500 aftermarket
28	Lane departure indicators	\$1,000 aftermarket
29	Cornering (adaptive) headlights	\$500-\$600 new from dealer
30	Real-time traffic information	Pricing unknown
31	Top-speed limiter	Functionality is in place, it just needs to be enabled

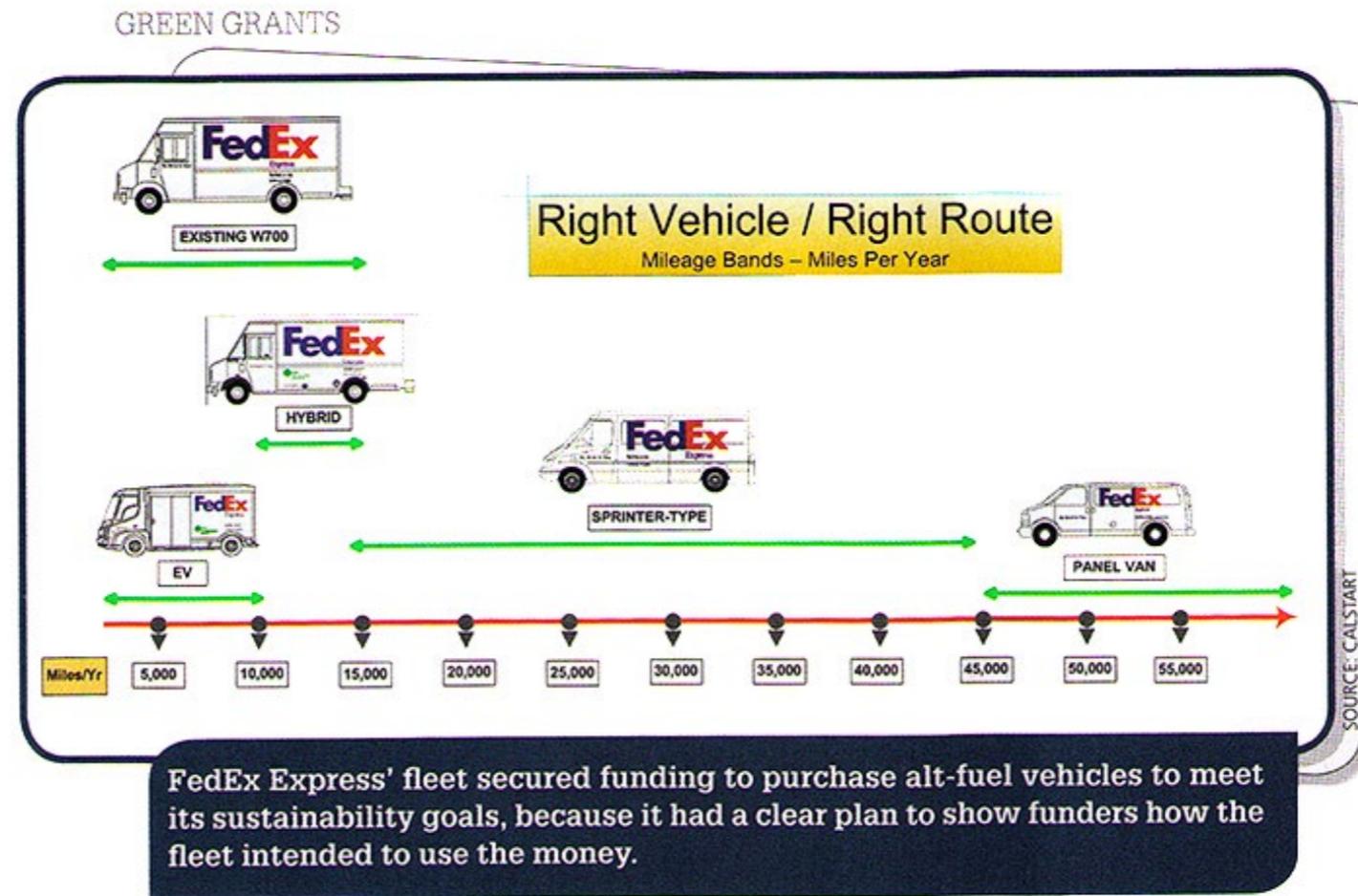
Source: Mercury Associates, Inc.

<sup>36</sup> For safety features not standard on vehicles or required by law, we estimated the average cost per vehicle to add this feature.

## Appendix D: Examples of Competitors and Foreign Post Vehicles

Postal Service competitors and foreign posts have acquired a variety of van-type commercial vehicles, with some customization to meet their collection and delivery vehicle needs. Figure 4 indicates that FedEx plans to use four types of vehicles to cover the majority of collection and delivery routes. We note that FedEx plans to eventually migrate from its existing W700 step van to a combination of hybrid and electric vehicles. It is not clear when this transition will occur, but we suspect it will be a gradual phase-in over many years.

**Figure 4. FedEx Vehicles**



Source: *Green Fleet* magazine, July 9, 2013.

Worldwide, UPS has over 96,000 package cars, vans, tractors, and motorcycles, including more than 2,700 alternative fuel and advanced technology vehicles. These include all electric, hybrid electric, hydraulic hybrid, compressed natural gas (CNG), liquefied natural gas (LNG), LPG, biomethane, and lightweight fuel-saving composite body vehicles. UPS has developed and continues to expand its fleet using a “rolling laboratory” approach – using its alternative fuel fleet as a way to learn how new technologies and advancements can be adapted for use in a large delivery network. See [Figure 5](#) for examples of vehicles UPS is testing.

**Figure 5. UPS Alternative Fuel Vehicles**



Source: [UPS.com](http://UPS.com).

Royal Mail and Canada Post also use a wide variety of vans and trucks (and bicycles). See Figures 6 and 7.

**Figure 6. Royal Mail Fleet Vehicles**



Source: [Postalheritage.org.uk](http://Postalheritage.org.uk).

**Figure 7. Canada Post Fleet Vehicles**



Source: [CanadaPost.ca](http://CanadaPost.ca).

## Appendix E: Alternative Fuel Technologies

Table 4 identifies six alternative fuels the Postal Service should consider for possible implementation in its fleet and some of the advantages and disadvantages of each fuel type.

**Table 4. Alternative Fuel Analysis**

Alternative Fuel	Advantages	Disadvantages
<p><b>Biodiesel or B5, B20, or B100</b> —Biodiesel is a renewable fuel that can be manufactured from vegetable oils, animal fats, or recycled cooking grease for use in diesel vehicles.</p>	<ul style="list-style-type: none"> <li>• Domestically produced from non-petroleum, renewable resources.</li> <li>• Can be used in most diesel engines, especially newer ones.</li> <li>• Lower air pollutants and GHG emissions.</li> <li>• Safe to handle, biodegradable, and non-toxic.</li> </ul>	<ul style="list-style-type: none"> <li>• Use of blends above B5 not yet approved by many auto makers.</li> <li>• Lower fuel economy and power (10 percent lower for B100, 2 percent for B20).</li> <li>• Currently more expensive than gasoline.</li> <li>• B100 generally not suitable for use in low temperatures due to gelling (14F).</li> </ul>
<p><b>Opinion:</b> Biodiesel has good potential where supplies are easily accessible. Existing diesel storage tanks can easily be converted to biodiesel, but we suspect few Postal Service locations currently stock diesel. The primary drawback is the added cost for a diesel engine vehicle compared with a gasoline engine.</p>		
<p><b>Electricity</b>—Electricity can be used to power all-electric vehicles (EV) and plug-in hybrid electric vehicles (PHEV), as well as, boost fuel efficiency on HEV. These vehicles can draw electricity directly from the grid and other off-board electrical power sources and store it in batteries.</p>	<ul style="list-style-type: none"> <li>• Better fuel economy and lower fuel costs (HEV, PHEV).</li> <li>• Lower air pollutants and GHG emissions (HEV).</li> <li>• Zero tailpipe air pollutants and GHG emissions when in all electric mode (PHEV, EV).</li> </ul>	<ul style="list-style-type: none"> <li>• Purchase prices are higher than their straight gasoline counterparts. (All)</li> <li>• Battery replacement costs. (All)</li> <li>• Large up-front cost to build fueling infrastructure. (PHEV, EV)</li> <li>• Service and repair technicians require special training. (All)</li> <li>• Shop facilities require special equipment to diagnose and repair problems. (All)</li> </ul>
<p><b>Opinion:</b> HEVs have very good potential for Postal Service use because they offer a solution that is easily adopted and cost effective given the Postal Service delivery fleet mode of operation. They can operate solely on gasoline (or diesel), which makes them easy for operators to embrace. Additional fueling infrastructure is not needed. Vehicle availability remains a barrier for Postal Service needs. The Postal Service is an ideal candidate for PHEV after they become available because of pre-determined routes, known route length, and vehicles returning to the same parking area at the end of the business day. They also have good potential for future needs when investment can be made in charging infrastructure; in the meantime, they are still able to operate on petroleum fuels. Vehicle availability is limited. EVs are not considered practical at this time, but could very likely be a leading vehicle technology in 10 to 15 years.</p>		

Alternative Fuel	Advantages	Disadvantages
<p><b>Ethanol or E-85</b>—Ethanol is a widely used renewable fuel made from corn and other plant materials. It is blended with gasoline for use in vehicles.</p>	<ul style="list-style-type: none"> <li>• Domestically produced, reducing use of imported petroleum.</li> <li>• Lower emissions of air pollutants.</li> <li>• Added vehicle cost is relatively small, as little as \$70.</li> </ul>	<ul style="list-style-type: none"> <li>• Can only be used in flex-fuel vehicles.</li> <li>• Lower energy content, resulting in fewer miles per gallon.</li> <li>• Comparatively limited availability.</li> </ul>
<p><b>Opinion:</b> E-85 has good potential where supplies are easily accessible. The addition of an E-85 on-site fueling facility will add cost. Performance is good, but future economic viability is uncertain due to the potential loss of federal subsidies to produce this fuel.</p>		
<p><b>Hydrogen</b>—Hydrogen is a potentially emissions-free alternative fuel that can be produced from domestic resources for use in fuel cell vehicles.</p>	<ul style="list-style-type: none"> <li>• Domestically produced, reducing use of imported petroleum.</li> <li>• No air pollutants or GHG emissions when used in fuel cells.</li> </ul>	<ul style="list-style-type: none"> <li>• Hydrogen is expensive to produce and only available in a handful of locations.</li> <li>• Vehicles are expensive and not yet available for sale to the general public.</li> <li>• Fewer miles on a tank of fuel.</li> <li>• Service and repair technicians require special training.</li> <li>• Shop facilities require special equipment to detect/remove gas leakage.</li> </ul>
<p><b>Opinion:</b> Hydrogen is not recommended due to the many barriers to overcome for production, distribution, storage, handling, and vehicle technology. It may take 20 years or more before it is ready for Postal Service vehicles.</p>		
<p><b>Natural Gas</b>—Natural gas is a domestically abundant gaseous fuel that can have significant fuel cost advantages over gasoline and diesel fuel. It can be used in vehicles as either CNG or LNG.</p>	<ul style="list-style-type: none"> <li>• Less expensive than gasoline.</li> <li>• Lower air pollutants and GHG emissions</li> <li>• Natural gas remains abundant in the U.S.</li> </ul>	<ul style="list-style-type: none"> <li>• The cost to purchase/convert vehicles to CNG is high.</li> <li>• CNG tanks require storage space, reducing passenger and/or cargo space.</li> <li>• LNG and CNG filling infrastructure is limited.</li> <li>• Large up-front cost to build fueling infrastructure.</li> <li>• Fewer miles on a tank of fuel.</li> <li>• Service and repair technicians require special training.</li> <li>• Shop facilities require special equipment to detect and/or remove gas leakage.</li> </ul>
<p><b>Opinion:</b> LNG and CNG are not good options for light duty vehicles due to conversion costs and fuel acquisition, storage, and distribution issues.</p>		

Alternative Fuel	Advantages	Disadvantages
<p><b>Propane</b>—Propane, also known as LPG, is a readily available gaseous fuel that has been widely used in vehicles throughout the world for decades.</p>	<ul style="list-style-type: none"> <li>• 90 percent of propane used in the U.S. comes from domestic sources.</li> <li>• Remains less expensive than gasoline.</li> <li>• Potentially lower air pollutants and GHG emissions.</li> </ul>	<ul style="list-style-type: none"> <li>• Limited vehicle availability.</li> <li>• Less readily available than gasoline and diesel.</li> <li>• Fewer miles on a tank of fuel.</li> <li>• Service and repair technicians require special training.</li> <li>• Shop facilities require special equipment to detect/remove gas leakage.</li> </ul>
<p><b>Opinion:</b> LPG has potential for Postal Service vehicles but suffers the same availability and fuel infrastructure cost barriers as E-85 and other alternatives.</p>		

Source: Mercury Associates, Inc.

## Appendix F: Management's Comments

EDWARD F. PHELAN  
VICE PRESIDENT, DELIVERY AND POST OFFICE OPERATIONS



May 30, 2014

JUDITH LEONHARDT  
DIRECTOR, AUDIT OPERATIONS

SUBJECT: Draft Management Advisory Report – Delivery Vehicle Fleet  
Replacement Report Number (DR-MA-14-DRAFT)

Thank you for providing the U.S. Postal Service (USPS) with the opportunity to review and comment on the draft report titled Delivery Vehicle Fleet Replacement (Report Number DR-MA-14-DRAFT).

This report was initiated to assess the Postal Service's acquisition strategy for the next generation of collection and delivery vehicles and identify features recommended for these vehicles.

All recommendations made in this report are based on what is currently being done within the USPS today. We therefore concur with staying on course with the recommendations currently being taken.

Recommendation 1:

Continue pursuing short-term annual vehicle acquisitions.

Management Response/Action Plan:

As stated in the report, Delivery Operations continues to request funding annually for the replacement of vehicles with the highest cost maintenance that provide the best opportunity for reducing overall total cost of ownership. A capital funding plan has been provided to finance for both short and long term replacement objectives.

Target Implementation Date:

N/A, this recommendation has already been implemented.

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Recommendation 2:

Formalize the long-term strategy for replacing the delivery fleet that includes developing requirements, specifications, and green technology features for the next generation of collection and delivery vehicles.

Management Response/Action Plan:

In accordance with the long-term delivery vehicle replacement strategy to begin large scale vehicle replacements in FY 2017, a cross functional group consisting of Supply Management, Engineering, and Delivery Programs Support has begun the process of formalizing a fleet replacement strategy.

Target Implementation Date:

The long term fleet replacement strategy will be developed by January 2015.

This report and management's response does not contain information that may be exempt from disclosure under the Freedom of Information Act.

Edward F. Phelan, Jr.

cc: Corporate Audit and Response Management



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