



Office of Inspector General | United States Postal Service

Audit Report

Delivery Vehicle Acquisition Strategy

Report Number 19-002-R20 | August 12, 2020



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Highlights

Objective

Our objective was to assess the U.S. Postal Service's acquisition strategy for delivery and collection vehicles.

The Postal Service's mission is to provide reliable and affordable universal mail delivery and postal retail services to the U.S. In fiscal year (FY) 2019, the Postal Service delivered to about 160 million delivery points, six days a week. The Postal Service delivers 48 percent of the world's mail volume and more packages than any other business using the largest vehicle fleet in the U.S. In FY 2019, the Postal Service had about 203,767 delivery and collection vehicles.

The backbone of the delivery fleet is the purpose-built, right-hand-drive Long Life Vehicle (LLV), which is used to deliver mail on city and rural routes across the country. The expected service life of these vehicles is 24 years and 69 percent of the current fleet is now between 25 and 32 years old.

As the fleet continues to age, maintenance costs remain high and older model vehicles will be retired as they become too costly to maintain or repair. In FY 2019, the Postal Service spent about \$706.2 million in maintenance costs for 141,057 LLVs. While annual LLV maintenance costs have not significantly changed since 2018, average maintenance costs per vehicle were about \$5,000, and nearly 10,000 LLVs averaged more than \$12,000 in annual maintenance costs.

The combined effect of aging vehicles, additional delivery points, and a changing mail mix increases the need for new delivery vehicles to meet operational demands six days a week. To address this need, the Postal Service has committed more than \$2.3 billion to add or replace over 68,000 delivery and collection vehicles. In FY 2015, the Postal Service began planning the acquisition process for a new purpose-built, Next Generation Delivery Vehicle (NGDV) to start replacing the current LLV fleet beginning in FY 2018 through FY 2019. However, by the end of FY 2019, the Postal Service had not awarded the estimated \$5-6 billion contract(s) for the production of the NGDV. Due to frequent changes to the NGDV acquisition timeline, the planned production deployment date is now scheduled for January 2022.

The Postal Service plans to purchase 37,768 commercial off-the-shelf vehicles, including 30,608 right-hand drive vehicles and 7,160 left-hand drive vehicles over a three-year period beginning in FY 2020 to meet immediate vehicle needs, replace high maintenance cost LLVs, and sustain delivery operations until NGDV production.

In recent months, the global COVID-19 pandemic has impacted many companies and industries both financially and operationally, including the Postal Service and the automotive industry. The Postal Service anticipates a substantial drop in mail volume and the long-term impact is forecasted to be significant. We completed our fieldwork before the President of the United States issued the national emergency declaration concerning the novel coronavirus disease outbreak (COVID-19) on March 13, 2020. The results of this audit do not reflect any process and/or organizational changes that may have occurred as a result of the pandemic.

Finding

The Postal Service's vehicle acquisition strategy, which uses modeling of current and projected operational data, was generally adequate for acquisition of a mixed vehicle delivery fleet. However, that strategy encountered significant implementation delays in producing a viable purpose-built NGDV by the target deployment date of 2019. Specifically, the following delays occurred during NGDV development:

- Issuance of the Request for Proposal to suppliers for the NGDV prototype vehicle took six months longer than initially planned due to extensive stakeholder briefings.
- During the prototype vehicle design and development phase, the Postal Service extended the timeframes for building 44 prototype vehicles from six months to one year based on requests from suppliers for additional time to develop proposals and design prototype vehicles.
- The Postal Service and suppliers required additional time to build and assemble the prototypes. While suppliers initially planned a year to design and build their prototypes, they only allocated 18 weeks to build, assemble,

and complete supplier testing of the vehicles before delivery. Without adequate time to test their assembled vehicles, the vehicles delivered by four of the five suppliers experienced critical safety failures during the prototype testing phase, including brake failures and leaking fuel tanks. As a result, the Postal Service suspended field testing and returned all of the vehicles to the suppliers, to address any deficiencies. This resulted in delays of one to three months prior to resuming testing.

- When the prototype testing phase resumed, the Postal Service implemented two additional tests — a simulated field test and a durability test — to address critical safety issues. This resulted in delays of between three to eight months depending on the individual performance of a supplier's vehicle.
- After the two additional critical safety tests were completed, three of the five suppliers completed the remaining prototype tests by December 2018. The Postal Service extended the testing period an additional three months to allow the remaining two suppliers to complete testing by March 2019.

Management stated the original timelines presented were not sufficient and more time was needed to develop and test the prototypes. Management adjusted the NGDV testing and deployment schedule six times between April 2015 and September 2019 to account for additional time needed to complete the prototype development and testing process.

The Postal Service noted that due to the competitive nature of the NGDV acquisition and to stay unbiased, they intentionally limited oversight of suppliers' design and build activities throughout the duration of the prototype phase to prevent any potential conflicts in the competitive process. The Postal Service's Engineering group conducted 46 monthly virtual meetings with suppliers, two in-person design meetings with four of the five suppliers at their facilities and no in-person design meetings with one supplier located outside the U.S. where travel restrictions prevented onsite visits and alternative monitoring processes had to be used. While we acknowledge the prototype phase is a research and development process, Engineering officials were not able to physically observe the progress in building the NGDV prototypes. Such observations may have identified potential issues with the vehicles before the prototype testing phase began.

The U.S. Government Accountability Office has identified ten best practices associated with high-quality and reliable schedules for government acquisition programs. One such practice is a schedule risk assessment, which is an essential basis for managing a schedule, making progress, and identifying and resolving potential problems. The Postal Service conducted supplier risk assessments after the design review meetings to evaluate the vehicle design and program schedule risks, the suppliers' progress in completing significant milestones, and any schedule risks in meeting Postal Service delivery dates. However, to prevent potential unequal/biased influence on vehicle design among suppliers, the Postal Service did not use the risk assessments to mitigate or resolve potential problems, technical challenges, integration risks, or other events that occur during the prototype design phase.

In addition, we noted that most commercial fleet acquisition strategies favor standardization or customization of commercial off-the-shelf vehicles rather than purpose-built vehicles. Customization of existing vehicles follows fleet management best practices found among foreign posts and Postal Service competitors. Developing a purpose-built vehicle for the operational needs of the Postal Service adds significant time and complexity to the overall acquisition timeline. However, the original acquisition and deployment schedule appeared to be developed heavily towards the use of an existing vehicle product that was close to production readiness.

Given the significant capital investment the NGDV program will require, the Postal Service's projected liquidity, and the delays experienced in the NGDV prototype development phase, we believe a thorough assessment of the NGDV production timelines is warranted to determine the risk of further delays.

Recommendations

We recommended the Vice President, Delivery Operations, coordinate with the Acting Vice President, Engineering Systems, to perform a schedule risk assessment of the NGDV production timeline to evaluate the risk of further delays and determine whether modification to the mixed vehicle acquisition strategy is warranted.

Transmittal Letter





OFFICE OF INSPECTOR GENERAL
UNITED STATES POSTAL SERVICE

August 12, 2020

MEMORANDUM FOR: JOSHUA D. COLIN
VICE PRESIDENT, DELIVERY OPERATIONS

LINDA M. MALONE
ACTING VICE PRESIDENT, ENGINEERING SYSTEMS

Janet Sorensen 



FROM: Janet M. Sorensen
Deputy Assistant Inspector General for Retail,
Delivery, & Marketing

SUBJECT: Audit Report – Delivery Vehicle Acquisition Strategy
(Report Number 19-002-R20)

This report presents the results of our audit of the U.S. Postal Service's Delivery Vehicle Acquisition Strategy.

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 & Retail Operations, or me at 703-248-2100.

Attachment

cc: Postmaster General
Corporate Audit Response Management

Results

Introduction/Objective

This report presents the results of our self-initiated audit of the delivery vehicle acquisition strategy (Project Number 19-002). Our objective was to assess the U.S. Postal Service's acquisition strategy for delivery and collection vehicles. See [Appendix A](#) for additional information about this audit.

In recent months, the global COVID-19¹ pandemic has impacted many companies and industries both financially and operationally, including the Postal Service and the automotive industry. The Postal Service anticipates a substantial drop in mail volume and the long-term impact is forecasted to be significant. Our fieldwork was completed before the President of the United States issued the national emergency declaration concerning the novel coronavirus disease outbreak (COVID-19) on March 13, 2020. The results of this audit do not

reflect any process and/or organizational changes that may have occurred as a result of the pandemic.

Background

The Postal Service's mission is to provide reliable and affordable universal mail delivery and postal retail services to the entire U.S. population, regardless of where people live, six days a week. In fiscal year (FY) 2019, the Postal Service delivered 48 percent of the world's mail volume and more packages than any other business, delivering to about 160 million delivery points using the largest vehicle fleet in the U.S. In FY 2019, the Postal Service had about 203,767 delivery and collection vehicles that consisted of right-hand drive (RHD) and left-hand drive (LHD) vehicles (see Table 1).

Table 1. Delivery and Collection Vehicle as of September 30, 2019

Vehicle Type	Number of Vehicles	Percent of Vehicles	Acquisition Years	Age Range (Years)	Estimated Vehicle Life (Years)
RHD Long Life Vehicles (LLV) ²	140,664	69.03%	1987-1994	25-32	24
RHD FFVs ³	20,987	10.30%	2000-2001	18-19	24
LHD Ram ProMasters ⁴	20,436	10.03%	2016-2019	0-3	10
LHD Minivans ⁵	9,291	4.56%	1996-2010	9-23	10
LHD Mixed Delivery & Collection Vehicles	8,814	4.33%	1996-2017	2-23	12
LHD Ram Tradesman ⁶	3,484	1.71%	2015	4	10
Other ⁷	91	0.04%	1987-2015	4-32	N/A
Total Delivery and Collection Vehicles	203,767	100%	1987-2019	0-32	—

Source: Electronic Data Warehouse (EDW), Accounting Datamart, Vehicle Asset Listing.

1 COVID-19 is a respiratory illness that can spread from person to person. The virus that causes COVID-19 is a novel coronavirus that was first identified during an investigation into an outbreak in Wuhan, China.

2 Purpose-built, RHD light-duty delivery trucks built with an aluminum body and other features intended to permit an extended operational life.

3 Flexible Fuel Vehicles (FFV) are similar in appearance to the LLVs, but can use E85 fuel.

4 The LHD RAM ProMaster is a model of the Dodge RAM vehicle brand.

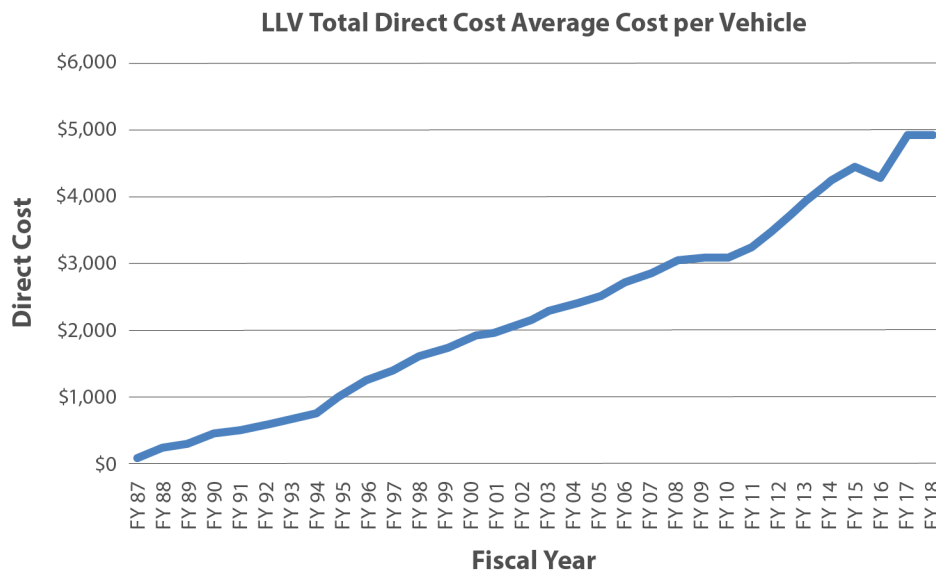
5 The LHD minivan count includes the Caravan, Uplander, Aerostar, Windstar, and 1-ton GMC.

6 The LHD RAM Tradesman minivan is a model of the Dodge RAM vehicle brand.

7 Other types of vehicles are used to deliver mail in certain areas. These vehicles are a combination of pick-up trucks and larger 2-ton trucks, which are typically used for mail collection and do not follow the same criteria regarding the service life.

Delivery vehicles are a key component to achieving effective and efficient delivery of mail (see [Appendix B](#)). The backbone of the delivery fleet is the purpose-built RHD LLV, which is used to deliver mail on city and rural routes across the country. The expected service life of these vehicles is 24 years and 69 percent of the current fleet is now between 25 and 32 years old. Over 140,000 delivery and collection vehicles are more than 25 years old. As the fleet continues to age, maintenance costs remain high, and older vehicle models are being retired as they become too costly to maintain or repair. In FY 2019, the Postal Service spent about \$706.2 million in maintenance costs for 141,057 LLVs, which was down slightly from FY 2018, when it spent \$706.5 million to maintain 141,237 LLVs. Since their purchase in 1987, maintenance costs for LLVs have gradually increased (see Figure 1).

Figure 1. LLV Average Maintenance Cost Trend



Source: FY 2019 Commercial Off-the-Shelf (COTS) Acquisition Investment Review Committee (IRC) presentation from May 15, 2019.

While annual LLV maintenance costs have not significantly changed since 2018, the average LLV will incur about \$5,000 in maintenance costs yearly. However, nearly 10,000 RHD vehicles require more than \$12,000 in annual maintenance costs due to significant mechanical repair work or damages incurred from major accidents to keep them operational (see Table 2). While management is scheduled to begin replacing the entirety of the RHD fleet in FY 2022 with the Next Generation Delivery Vehicle (NGDV), the cost to maintain many of the current vehicles until replacement will be high. Delivery Operations officials stated they will not retire the existing fleet immediately once they deploy the NGDVs. Management acknowledged this is not ideal and agrees that the maintenance cost for these LLVs and FFVs is high.

Table 2. FY 2019 LLV Maintenance Cost

Annual Maintenance Cost Range	Total Quantity	Average Maintenance Cost	Percentage of Total ⁸
<\$3,000	39,999	\$2,078	28%
\$3,000-\$4,000	24,130	3,485	17%
\$4,000-\$5,000	19,792	4,478	14%
\$5,000-\$6,000	15,539	5,476	11%
\$6,000-\$7,000	11,764	6,477	8%
\$7,000-\$8,000	8,881	7,473	6%
\$8,000-\$9,000	6,339	8,473	4%
\$9,000-\$10,000	4,661	9,466	3%
>\$10,000	9,952	12,548	7%
Total/Average	141,057	\$5,007	100%

Source: Solution for Enterprise Asset Management (SEAM) Query 9 FY 2019.

⁸ Percentage totals were rounded up to the nearest whole number.

The combined effect of aging vehicles, additional delivery points, and a changing mail mix increases the need for delivery vehicles to meet operational demands six days a week. To address this need, the Postal Service has committed more than \$2.3 billion to add or replace over 68,000 delivery and collection vehicles. See [Appendix C](#) for additional information on recent Postal Service vehicle acquisition commitments.

Prior to 2018, the only vehicles in the commercial market suitable for mail delivery routes were manufactured as LHD vehicles. In FY 2018, the Postal Service paid two manufacturers to perform emissions and safety certifications for two RHD COTS vehicles not currently sold in the U.S. The Postal Service acquired 10 vehicles from each manufacturer to evaluate on city and rural routes and determined the vehicles were suitable for purchase. The Postal Service plans to purchase 37,768 COTS vehicles, including 30,608 RHD COTS vehicles from one of the two manufacturers, over a three-year period beginning in FY 2020 to meet immediate vehicle needs, replace high maintenance cost LLVs, and sustain delivery operations until NGDV production.

Additionally, the Postal Service's acquisition strategy included replacing the aging fleet over time, replacing the oldest, and most expensive to maintain vehicles first. Overall, this acquisition is critical to meeting future delivery needs in the growing package market, reducing petroleum fuel costs and use, and cutting maintenance costs. The need to replace its collection and delivery vehicles offers the Postal Service an opportunity to significantly improve the efficiency and technology of its fleet.

In FY 2015, the Postal Service began planning the acquisition process for a new purpose-built, NGDV to start replacing the current LLV fleet beginning in FY 2018 through FY 2019. However, by the end of FY 2019, the Postal Service had not awarded the estimated \$5-6 billion contract(s) for the production of the NGDV. Due to changes with the NGDV acquisition timeline, the planned production deployment date is now scheduled for January 2022.

The Postal Service made several attempts prior to FY 2015 to initiate replacement of its aging fleet. However, due to lack of capital resources and other factors, they could not begin vehicle replacement plans until January 2015, when the Postal Service publicly began the NGDV acquisition program with a Request for Information (RFI) and a meeting open to all interested technology and automotive suppliers. In October 2015, the Postal Service issued a Request for Proposal (RFP) to the fifteen prequalified suppliers determined from the RFI to submit their prototype proposals. The Postal Service awarded contracts to six⁹ suppliers and obtained 44 prototype vehicles as part of the NGDV prototype phase in September 2016.

For comparison, the average annual maintenance cost in FY 2019 of a ProMaster was \$1,307, a Mixed Delivery & Collection Vehicles was \$1,670, a minivan was \$2,220, and an FFV was \$4,663.

Finding #1: Delivery Vehicle Acquisition Strategy – Next Generation Delivery Vehicle Implementation Challenges

The Postal Service's vehicle acquisition strategy, which uses modeling of current and projected operational data, was generally adequate for acquisition of a mixed vehicle delivery fleet. However, that strategy encountered significant implementation delays in producing a viable purpose-built NGDV by the target deployment date of 2019. Specifically, delays in NGDV development occurred throughout the duration of the project, including:

- Delays in issuing the RFP
- Timeframe extensions for completing the vehicle design and development phase
- Insufficient time allocated to build and assemble the prototypes
- Additional prototype testing requirements added
- Extension of prototype testing phase

⁹ One of the six suppliers who was awarded the contract for the Prototype RFP withdrew from the prototype phase.

Delays in Issuing the Request for Proposal

Issuing the RFP to suppliers for the NGDV prototype vehicle took six months longer than initially planned. The NGDV acquisition had high visibility which required extensive stakeholder briefings with members of Congress, federal agencies, the automotive industry, postal unions, and employees. As a result of the feedback received from the stakeholder briefings, the NGDV project team reevaluated project requirements and objectives which led to finalizing the Statement of Objective and Prototype RFP with a broader statement of objectives. The intent of the revision was to increase the design flexibility during this phase of the acquisition process to ensure capturing a wide range of options available in the industry.

Timeframe Extensions to Complete the Vehicle Design and Development Phase

The Postal Service extended the timeframes during the prototype vehicle design and development phase for suppliers to build 44 prototype vehicles. Based on requests from suppliers for additional time to develop proposals and design prototype vehicles, the time allotted was revised from six months to one year.

The Postal Service's original 2015 NGDV schedule was too aggressive and not feasible for developing purpose-built vehicles. We noted that the initial schedule was based on internal acquisition practices from previous acquisition projects with no input from potential suppliers. After reviewing the RFI responses from the potential suppliers, the Postal Service extended the design and development phase from six to eight months based on supplier feedback. The feedback identified significant challenges to completing the research, design, development, and production of prototypes in only six months. Additionally, the prequalified suppliers requested more time to draft the prototype RFP proposals and build the prototypes. The Postal Service granted additional time to develop proposals and extended the design and development timeline again from eight months to a year for six¹⁰ suppliers to build the prototype vehicles. The 44 vehicle types

included Internal Combustion Engine, Mild Hybrid Vehicles, and Plug-in Hybrid Electric Vehicles.

Insufficient Time Allocated to Build and Assemble Prototypes

The Postal Service and suppliers did not allocate sufficient time to build and assemble the prototypes. Prior to prototype contract award, the suppliers were asked to provide estimates for prototype development and design, and all suppliers stated that they could accomplish prototype development and delivery within one year. While suppliers had a year to design and build their prototypes, they only allocated 18 weeks to build, assemble, and test the vehicles before delivery. This included all activities necessary to build the vehicles, including part procurement, testing and validation, customer prototype build, and logistics activities. However, throughout the prototype building phase, suppliers never communicated any major issues during monthly meetings or outside of the meetings that could impact the project schedule.

The inadequate build time led to quality control issues, including 50 critical safety issues in 2017, such as brake failures and leaking fuel tanks (see [Table 3](#)), and the need for additional prototype testing concluded in 2019.¹¹ After initial testing during the building portion of prototype development, Engineering officials acknowledged that suppliers did not have enough time to complete supplier testing. As a result, the Postal Service temporarily suspended prototype field testing and returned all of the vehicles to the suppliers for redesign and modifications, which resulted in additional delays of one to three months.

Non-Critical Safety Issues included the following:

Driver's seatbelt did not latch and retract, windshield wipers inoperative, rear camera non-functional, unable to shift out of first gear, frayed parking brake cable, and poor visibility with side mirrors.

¹⁰ One of the six suppliers who was awarded the contract for the Prototype RFP withdrew from the prototype phase.

¹¹ Initially eight tests were planned; however, due to the critical safety issues identified, Engineering implemented two additional tests to ensure the critical safety features were addressed and nothing similar would reoccur.

Additional Prototype Testing Requirements Added

The Postal Service implemented two additional tests — a simulated field test and a durability test — to address critical safety issues prior to resuming the live carrier test. All suppliers were required to complete these additional tests without failure prior to resuming the live carrier tests. Delays of between three to eight months resulted, depending on vehicle type and the supplier's ability to efficiently resolve vehicle failures.

Table 3. 2017-2019 NGDV Prototype Critical and Non-Critical Safety Issues

Suppliers	Non-Critical Safety Issues			Critical Safety Issues			Grand Total of Safety Issues
	2017	2018	2019	2017	2018	2019	
A	6	7	0	2	0	0	15
B	17	34	0	6	3	0	60
C	13	37	4	13	24	0	91
D	14	3	0	0	0	0	17
E	15	56	5	29	10	2	117
Grand Totals	65	137	9	50	37	2	300

Source: Weekly vice president reports obtained from Postal Service Engineering.

Critical Safety Issues included the following: Leaking fuel tank, electronic parking brake not engaging, parking brake intermittent function, broken front sway bar link, leaking brake line, cracks in subframe, uncommanded acceleration, parked vehicle rolled away, and prototype vehicle died on testing track.

Extension of Prototype Testing Phase

The Postal Service extended the testing period an additional three months to allow the remaining two suppliers to complete testing by March 2019. The NGDV prototype testing phase evaluated the prototypes from qualified suppliers regarding prototype performance, supplier performance, innovation, and powertrain feasibility. After

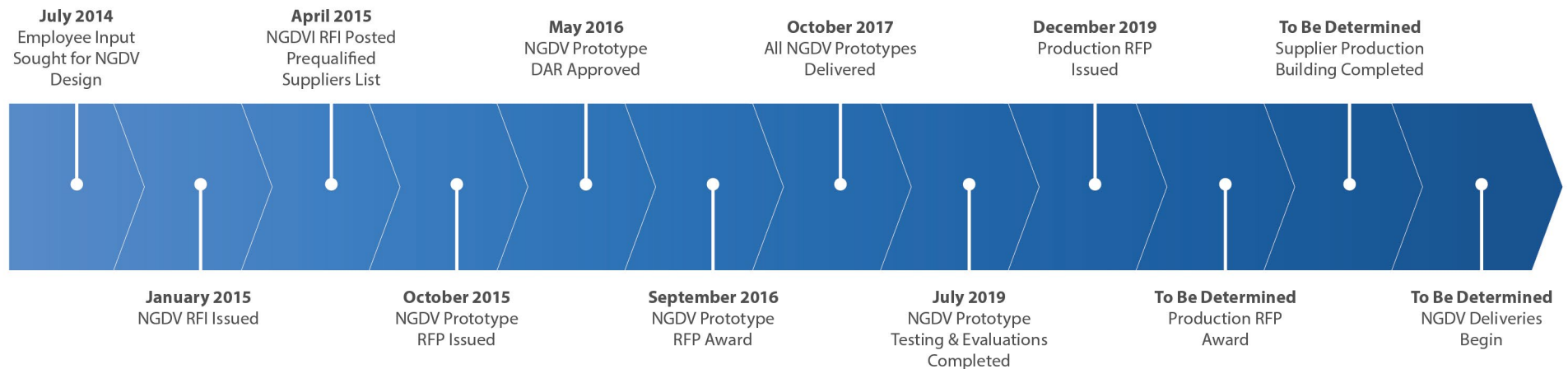
completing the two additional critical safety tests, three of the five suppliers completed the remaining prototype tests by December 2018. Although the prototype testing phase lasted longer than the Postal Service's previous projections, the prototype phase is a research and development process that was intended as a comprehensive and fair comparison of all the prototypes to identify viable candidates for the production phase. Engineering officials stated prototype test results will be included as one of the technical evaluation criteria for the production contract award. Specifically, production proposals will be evaluated based on the following criteria: (1) Design Quality and Technical Approach, (2) Supplier Capability, and (3) Past Performance. Total cost of ownership, technical evaluation results, and risk will be weighed.

As a result of delays and extended timeframes, management adjusted the NGDV deployment schedule six times between April 2015 and September 2019 to account for additional time needed to address the issues that occurred with suppliers.

We acknowledge the Postal Service's commitment to obtaining a quality vehicle, and this likely contributed to the adjustments in the original schedule projections. The Postal Service's original acquisition and deployment schedule was developed heavily towards the use of an existing vehicle product that was close to production readiness and did not consider the full complexity of the purpose-built vehicle process and the high visibility of the NGDV acquisition. In addition, the Postal Service intentionally did not specify how suppliers should develop their vehicles to allow flexibility, and some suppliers subsequently

developed their prototype vehicles without using an existing production vehicle. Management stated early in the development of the NGDV that they would not compromise on operational efficiency by acquiring a less than optimal vehicle to replace the fleet. As a result, management stated the original timelines presented were not sufficient and more time was needed to develop and test the prototypes. Further, the duration of the initial project milestones lasted longer than expected and were adjusted as needed. The most recent version of the schedule indicates that deployment will begin in January 2022 (see Figure 2).

Figure 2. NGDV Prototype Schedule – Completed Milestones and Estimates of Upcoming Milestones



Source: OIG analysis of Decision Analysis Reports (DAR), IRC presentations, and FedBizOpps postings.

The Postal Service noted that due to the competitive nature of the NGDV acquisition and to stay unbiased, they intentionally limited oversight of suppliers' design and build activities throughout the duration of the prototype phase, to prevent any potential conflicts in the competitive process. The Postal Service's Engineering group conducted 46 monthly virtual meetings with suppliers, two in-person design meetings with four of the five suppliers at their facilities, and no in-person design meetings with one supplier located outside¹² the U.S. where travel restrictions prevented onsite visits. Although they were not able to physically observe one supplier, they conducted individual monthly virtual meetings to assess design progress, including ergonomic simulations, component

testing videos, open action items status, and review of schedule milestones and deliverables. In addition, a live-walk through and driving demonstration of the prototype vehicle was conducted virtually. While we acknowledge the prototype phase is a research and development process, Engineering officials were not able to physically observe the progress in building the NGDV prototypes. Such observations may have identified potential issues with the vehicles before the prototype testing phase began.

For the production phase, the Postal Service has incorporated the prototype testing findings into the production-level Statement of Work. According to

¹² Postal Service officials were unable to travel to one supplier located in Turkey due to security restrictions.

“Fleet management best practices and industry standards for vehicle operations showed most commercial fleet acquisition strategies favor standardization or customization of COTS vehicles rather than purpose-built vehicles.”

Engineering Systems officials, they will require some of the safety technologies and other technological advancements observed and tested from the prototype phase to be included in the suppliers' production proposals. Furthermore, additional forms of oversight are expected to be conducted during the production phase. Although not required, suppliers have the opportunity to fully resolve any vehicle performance and design demonstration concerns that occurred during the prototype phase. Additionally, the Postal Service will determine the final production schedule after the contract awards based on the schedule proposed by the winning supplier(s). The NGDV production RFP's supplier proposal deadline was extended once from March 27, 2020, to May 15, 2020 and then again to July 14, 2020.

Fleet Management Best Practices and Benchmarking a Mixed Delivery Fleet

Fleet management best practices and industry standards for vehicle operations showed most commercial fleet acquisition strategies favor standardization or customization of COTS vehicles rather than purpose-built vehicles. To identify vehicle acquisition strategy best practices, the OIG benchmarked with foreign posts in a prior audit report¹³ and discussed best practices with the NAFA Fleet Management Association¹⁴ and General Services Administration (GSA). Our

research noted that customization of existing vehicles follows fleet management best practices found among foreign posts and Postal Service competitors. Developing a purpose-built vehicle for the operational needs of the Postal Service adds significant time and complexity to the overall acquisition timeline.

According to Delivery Operations headquarters officials, the Postal Service has implemented some of these best practices by utilizing a mix of COTS and purpose-built vehicles on the delivery routes best suited to them. As the Postal Service stated they are mandated by Congress to provide universal mail service to all locations in the United States, they believe this function is best accomplished using a uniquely designed RHD vehicle to deliver mail in a safe and operationally viable method in many locations. They have designed a purpose-built vehicle that can be used on most routes, which will allow the Postal Service to keep acquisition costs down and design a vehicle that is optimized for mail delivery. Purpose-built vehicles allow fleet personnel to specify exactly what they need in terms of operations; however, they are typically costlier to manufacture than COTS vehicles. Beginning in FY 2018, they have increased their vehicle reserves¹⁵ with additional LHD COTS vehicles so they can replace right-hand and left-hand drive vehicles that have repair costs that exceed specific repair thresholds, and in FY 2020 they began acquiring a RHD COTS vehicle.

To identify best practices associated with high-quality and reliable program schedules,¹⁶ the Postal Service's acquisition of the NGDV could use the *Schedule Assessment Guide*¹⁷ published by the U.S. Government Accountability Office (GAO) in December 2015. One such practice they identified for government

A program schedule is an essential basis for managing tradeoffs between cost, schedule, and scope. It is the means by which to gauge progress, identify and resolve potential problems, and promote accountability at all levels of the program.

13 FY 2015, the *Benchmarking of Delivery Fleet Replacement Strategies* (Report Number DR-MA-15-002, dated August 18, 2015).

14 The world's largest not-for-profit membership association for individuals who manage the vehicular fleet and mobility responsibilities for their employers.

15 Additional vehicles set aside for vehicle maintenance facility maintenance and training.

16 The program schedule allows management to decide between possible sequences of activities, determine the flexibility of the schedule according to available resources, predict the consequences of managerial action or inaction in events, and allocate contingency plans to mitigate risk.

17 *Schedule Assessment Guide Best Practices for Project Schedules* (GAO-16-89G, December 2015).

acquisition programs is a schedule risk assessment, which, when performed properly, is essential for managing a schedule, making progress, and identifying and resolving potential problems. Performing a schedule risk assessment could be used to help ensure adequate time has been incorporated for suppliers to obtain the appropriate production capacity needed for the NGDV project and to address technical challenges, design changes, integration risks, and other events that may occur during the production phase. The analysis can be used to determine the contingency, or reserve of time, and to identify high-priority risks.

“Performing a schedule risk assessment could be used to help ensure adequate time has been incorporated for suppliers to obtain the appropriate production capacity needed for the NGDV project and to address technical challenges, design changes, integration risks, and other events that may occur during the production phase.”

See [Appendix D](#) for a description of the GAO’s ten best practices associated with a high-quality and reliable schedule and their concepts.

The Postal Service conducted supplier risk assessments after the design review meetings to evaluate the vehicle design and program schedule risks, the suppliers’ progress in completing significant milestones, and any schedule risks in meeting Postal Service delivery dates. The risk assessments were not used however to mitigate or resolve potential problems, address technical challenges, integration risks, or other events that occur during the prototype design phase. As Postal Service officials stated, they purposefully limited feedback and oversight to suppliers to prevent potential unequal/biased influence on vehicle design among suppliers. In addition, vehicle performance in the prototype program and the suppliers’ ability to meet the needs of the Postal Service and adapt to challenges could be used as part of the evaluation criteria in production proposals.

From lessons learned during the prototype phase, Postal Service management allowed potential suppliers to propose the upcoming NGDV production schedule as part of their production RFP proposals. This approach should allow the suppliers sufficient time to obtain the appropriate production capacity needed to address technical challenges, design changes, integration risks, and other events that may occur during the NGDV production phase. The production schedule is one of the many evaluation factors that the Postal Service will consider prior to contract awards; however, the Postal Service should conduct a schedule risk analysis to identify the necessary schedule contingency and high priority risks. Without realistic NGDV production schedules and coordination with other program components and suppliers, the deployment schedule is at risk of delays and the NGDVs may experience critical safety issues.

Finally, in recent months, the global COVID-19 pandemic has impacted many companies and industries both financially and operationally, including the Postal Service and the automotive industry. The Postal Service anticipates a substantial drop in mail volume, resulting in a long-term impact that is forecasted to be significant. Automotive manufacturers and their supply chains across the globe have also been impacted during the pandemic. Given these constraints on the Postal Service, automotive industry, and other parties, the NGDV production schedule may be further delayed.

Considering the significant capital investment the NGDV program will require, in addition to the delays experienced in the NGDV prototype development phase, we believe a thorough assessment of the NGDV production timelines is warranted to determine the risk of further delays.

Recommendation #1

We recommended the **Vice President, Delivery Operations**, coordinate with the **Acting Vice President, Engineering Systems**, to perform a schedule risk assessment of the Next Generation Delivery Vehicle production timeline to evaluate the risk of further delays and determine whether modification to the mixed vehicle acquisition strategy is warranted.

Management's Comments

Management agreed with the finding and recommendation. Management noted that the report identified several factors that have impacted the schedule for awarding a contract to purchase a vehicle to replace the LLV and each activity resulting in the modification to the schedule was evaluated for the impact of extending the use of the LLV. As this was a competitive procurement, management stated they provided appropriate supplier oversight during the contract and build process while carefully avoiding any effort to steer the design of any competitor's offering. They also stated the OIG asserted that customization is the preference of other fleets for purpose-built vehicles, but failed to recognize that many commercial fleets are actually purpose-built (i.e., ambulances, fire trucks, garbage trucks, and even package delivery vehicles).

In response to the recommendation, management stated they will conduct a risk assessment of supplier-proposed NGDV design, development, testing, and preparation for production timeline schedules and determine if modification to the mixed vehicle acquisition strategy is warranted. In subsequent correspondence, management declined to provide a target implementation date.

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

Evaluation of Management's Comments

The OIG considers management's comments responsive to the recommendation and their planned actions should resolve the issues identified in the report.

Regarding management's comment about other fleets' preference for customization of vehicles, the OIG's research indicated that most commercial fleets favor customization of existing vehicles (i.e., modifying COTS vehicles, rather than developing purpose-built vehicles designed for needs unique to the organization). There is an existing COTS vehicle market for the specific vehicles that management mentioned, which allows for these other fleets to easily acquire and customize these vehicles. Prior to FY 2018, the Postal Service did not have a COTS vehicle option available to them for customization due to the unique requirements for curbside mail delivery.

We will continue to work with the Postal Service to obtain a target implementation date, as we believe the implementation of the recommendation is not dependent on contract award. The recommendation requires OIG concurrence before closure. Consequently, the OIG requests written confirmation when corrective actions are completed. Recommendation 1 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.

Appendices

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Appendix A: Additional Information

Scope and Methodology

Our scope includes an assessment of the Postal Service's acquisition strategy for delivery and collection vehicles; specifically, to identify the processes, decisions, and cost impact of delays in replacing aging delivery and collection vehicles from FYs 2015 through 2020. To perform this audit we:

- Interviewed headquarters Postal Service fleet management personnel to gain an understanding of vehicle fleet management policies/procedures and obtain points of contact for various functions within the fleet management process.
- Obtained information regarding the various functions within the fleet management process and conducted interviews with Postal Service fleet management and other Postal Service components, such as Delivery Operations, Engineering, and Supply Management officials.
- Interviewed the Postal Service fleet management and other Postal Service components to document its current and future vehicle acquisition plans and requirements for vehicle replacement strategies and the process used to develop, modify, and implement these strategies.
- Reviewed Postal Service-approved DARs, IRC presentations, and other strategic documents from FYs 2014 - 2020 to identify its past, current, and future vehicle replacement strategies for delivery and collection vehicles.
- Reviewed the acquisition schedule timelines for the different delivery and collection vehicles (including the NGDV) and identified changes and delays in the acquisition strategies, the reasons/causes for any delays or changes, and any impacts the Postal Service identified.

- Obtained information from Engineering regarding the weekly and monthly NGDV prototype testing reports and results, congressional presentations, and weekly vice president briefings to gain additional knowledge on the NGDV acquisition strategy and the prototype testing timeline phases.
- Reviewed consulting firm contract/scope of objective documentation from Supply Management to identify the type of work that has been performed and what work they may have asked the consulting firm to conduct for the Postal Service.

We conducted this performance audit from August 2019 through August 2020 in accordance with generally accepted government auditing standards and included such tests of internal controls as we considered necessary under the circumstances. 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 objective. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objective. We discussed our observations and conclusions with management on May 28, 2020, and included their comments where appropriate.

We assessed the reliability of data obtained from Postal Service operational systems, including EDW and Query 9 SEAM data by confirming our results with management, interviewing agency officials knowledgeable about the data, and conducting limited data testing. We determined that the data were sufficiently reliable for the purposes of this report.

Prior Audit Coverage

The OIG did not identify any prior audits or reviews related to the objective of this audit within the last five years.

Appendix B: Postal Service Mixed Delivery and Collection Fleet Vehicles Overview

Long Life Vehicles: These vehicles were commercially manufactured RHD vehicles produced from 1987-1994. The body is constructed of aluminum alloy and aluminum alloy in combination with plastic materials, having the necessary structural characteristics to provide the level of service and life expectancy. The body has a design goal of attaining a 24-year vehicle life cycle and the power train has a design goal of a minimum life expectancy of 12 years.



Source: March 2019 IRC presentation.

Flexible Fuel Vehicles: FFVs are RHD vehicles that can operate on E-85 fuel. They are of similar dimensions, capacities, and design specifications as the LLV. The body is constructed of aluminum alloy which, combined with plastic materials, have the structural characteristics to provide the necessary level of service and life expectancy. The body has a design goal of attaining a 24-year vehicle life cycle and the power train has a design goal minimum life expectancy of 12 years.



Source: Getty Images.

Minivans: The Postal Service purchased LHD vehicles to place on “park and loop” city delivery routes that do not require RHD support. Existing RHD LLVs and FFVs assigned to those city routes would then be redeployed to target rural routes requiring Postal Service owned RHD vehicles.



Source: March 2019 IRC presentation.

Mixed Delivery & Collection Vehicles (2-ton): The LHD Mixed Delivery and Collection vehicle fleet supports mail collection operations, parcel post delivery routes, parcel post and relay delivery for city carrier foot routes, and inter-station service. Some of these functions, such as collection and relay service, support internal Postal Service operations and others, such as parcel post deliver, directly to customers. These core activities require highly reliable vehicles because they entail longer driving distances and have critical service windows, and close ties to external service measurement.



Source: March 2016 Fleet Management Mid-Year Update.

RAM ProMaster Van: The Postal Service purchased RHD Ram ProMaster 2500 cargo vans to replace older minivans — not LLVs — and they are suited to meet the challenging demands of a Postal Service delivery vehicle. In the cargo area, aluminum shelves that can be easily folded up out of the way to make room for large boxes.



Source: March 2019 IRC presentation.

Appendix C: Delivery and Collection Vehicle Acquisitions

FYs 2014-2022 Delivery and Collection Vehicle Acquisition Commitments (Cost in Millions)

Fiscal Year	RHD Delivery Vehicles		LHD Delivery Vehicles		LHD Mixed Delivery & Collection Vehicles		Totals Delivery Vehicle Acquisitions	
	Vehicles	Cost	Vehicles	Cost ¹⁸	Vehicles	Cost	Vehicles	Cost
FY 2014							—	\$0.0
FY 2015			3,509	\$88.4	465	\$29.9	3,974	118.3
FY 2016			4,566	162.3	3,339	148.2	7,905	310.5
FY 2017			10,656	349.1	3,194	144.6	13,850	493.7
FY 2018			5,250	158.0			5,250	158.0
FY 2019							—	0.0
FY 2020	12,057	\$405.7	7,160	206.1			19,217	611.9
FY 2021	12,781	431.5					12,781	431.5
FY 2022	5,770	181.8					5,770	181.8
Total	30,608	\$1,019.0	31,141	\$964.0	6,998	\$322.7	68,747	\$2,305.7

Source: FY 2014-2020 Decision Analysis Reports.

¹⁸ Totals may not add due to rounding.

Appendix D: Best Practices for Project Schedules

According to the GAO,¹⁹ the ten best practices associated with a high-quality and reliable schedule and their concepts are as follows:

1. **Capturing all activities.** The schedule should reflect all activities as defined in the program's work breakdown structure, which outlines in detail the work necessary to accomplish a project's objective(s), including activities both the owner and contractors are to perform.
2. **Sequencing all activities.** The schedule should be planned so that critical program dates can be met. To do this, activities must be logically sequenced and linked — that is, listed in the order in which they are to be carried out and joined with logic. In particular, a predecessor activity must start or finish before its successor. Date constraints and lags should be minimized and justified. This helps ensure that the interdependence of activities that collectively lead to the completion of activities or milestones can be established and used to guide work and measure progress.
3. **Assigning resources to all activities.** The schedule should reflect the resources (labor, materials, travel, facilities, equipment, etc.) needed to do the work, whether they will be available when needed, and any constraints on funding or time.
4. **Establishing the duration of all activities.** The schedule should realistically reflect how long each activity will take. The same rationale, historical data, and assumptions used to estimate costs should be used to determine the duration of each activity. Durations should be reasonably short and meaningful and allow for discrete progress measurement. Schedules that contain planning and summary planning packages as activities will normally reflect longer durations until broken into work packages or specific activities.
5. **Verifying that the schedule can be traced horizontally and vertically.** The schedule should be horizontally traceable, meaning that it should link products and outcomes associated with other sequenced activities. Such links are commonly referred to as “hand-offs” and serve to verify that activities are arranged in the right order for achieving aggregated products or outcomes. The schedule should also be vertically traceable — that is, data are consistent between different levels of a schedule. When schedules are vertically traceable, lower-level schedules are clearly consistent with upper-level schedule milestones, allowing for total schedule integrity and enabling different teams to work to the same schedule expectations.
6. **Confirming that the critical path is valid.** The schedule should identify the program's critical path — the path of longest duration through the sequence of activities. Establishing a valid critical path is necessary for examining the effects of any activity's slipping along this path. The program's critical path determines the program's earliest completion date and focuses the team's energy and management's attention on the activities that will lead to the project's success.
7. **Ensuring reasonable total float.** The schedule should identify reasonable total float (or slack) — the amount of time a predecessor activity can slip before the delay affects the program's estimated finish date — so that the schedule's flexibility can be determined. The length of delay that can be accommodated without the finish date's slipping depends on the number of date constraints within the schedule and the degree of uncertainty in the duration estimates, among other factors, but the activity's total float provides a reasonable estimate of this value. As a general rule, activities along the critical path have the least total float. Unreasonably high total float on an activity or path indicates that schedule logic might be missing or invalid.

¹⁹ *Schedule Assessment Guide Best Practices for Project Schedules*, GAO-16-89G, December 2015.

8. **Conducting a schedule risk analysis.** A schedule risk analysis starts with a good critical path method schedule. Data about program schedule risks are incorporated into a statistical simulation to predict the level of confidence in meeting a program's completion date; to determine the contingency, or reserve of time, needed for a level of confidence; and to identify high-priority risks. Programs should include the results of the schedule risk analysis in constructing an executable baseline schedule.
9. **Updating the schedule using actual progress and logic.** Progress updates and logic provide a realistic forecast of start and completion dates for program activities. Maintaining the integrity of the schedule logic is necessary to reflect the true status of the program. To ensure that the schedule is properly updated, people responsible for the updating should be trained in critical path method scheduling.
10. **Maintaining a baseline schedule.** A baseline schedule is the basis for managing the program scope, the time period for accomplishing it, and the required resources. The baseline schedule is designated the target schedule and is subjected to a configuration management control process. Program performance is measured, monitored, and reported against the baseline schedule. The schedule should be continually monitored to reveal when forecasted completion dates differ from baseline dates and whether schedule variances affect downstream work. A corresponding basis document explains the overall approach to the program; defines custom fields in the schedule file; details ground rules and assumptions used in developing the schedule; and justifies constraints, lags, long activity durations, and any other unique features of the schedule.

Appendix E: Management's Comments



July 28, 2020

LAZERICK C. POLAND
DIRECTOR, AUDIT OPERATIONS

SUBJECT: Delivery Vehicle Acquisition Strategy
(Project Number 19-002-DRAFT)

Thank you for the opportunity to address the findings of the audit for Delivery Vehicle Acquisition Strategy. The United States Postal Service (USPS) delivers to about 160 million delivery points six days a week using the largest private vehicle fleet in the United States consisting of about 203,767 delivery and collection vehicles. The backbone of the USPS delivery fleet is the purpose built Right Hand Drive (RHD) Long Life Vehicle (LLV) with a planned service life of 24 years. The LLV was initially designed to be the sole vehicle for all delivery routes. However, as the USPS has expanded its delivery fleet over the years with commercial off-the-shelf (COTS) vehicles, the LLV has been mostly limited to routes with curb side delivery locations.

This report identifies several factors that have impacted the schedule to award a contract for the purchase of a vehicle to replace the LLV. Each activity resulting in the modification of this schedule was evaluated for the impact of extending the use of the LLV. In fact, the USPS solicited the vehicle manufacturing industry for existing commercial off-the-shelf (COTS) vehicles that could be modified to RHD to use in place of LLVs on routes with minimum curb side deliveries. In 2019 the USPS signed a purchase order for 15,000 RHD COTS to be purchased over the next three years.

The OIG's distinction between "customization" and "purpose-built" asserts customization is a preference to purpose-built vehicles by other fleets. However you fail to recognize that many commercial fleets are actually purpose built, i.e., Ambulances, firetrucks, garbage trucks and even package delivery vehicles. The main difference with USPS delivery vehicles is the need for a right-hand drive feature, a large cargo area for a growing package market and a seat that is positioned at the correct ergonomic height for box on post deliveries. This is unique to the requirement of the Postal Service for curbside mail delivery.

The Next Generation Delivery Vehicle (NGDV) program is a competitive procurement. Management provided appropriate supplier oversight during the contract and build process while carefully avoiding any effort to steer the design of any competitor's offering.

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Recommendation 1:

We recommend the Vice President, Delivery Retail Operations, coordinate with the Vice President, Engineering Systems, to perform a risk assessment of the Next Generation Delivery Vehicle production timeline to evaluate the risk of further delays and determine whether modification to the mixed vehicle acquisition strategy is warranted.

Management agrees with the recommendation that a risk assessment of the Next Generation Delivery Vehicle production timeline be conducted to evaluate the risk of further delays and determine whether modification to the mixed vehicle acquisition strategy is warranted.

Management Response / Action Plan:

Headquarters Vehicle Engineering will work with Headquarters Fleet Management and conduct a risk assessment of supplier proposed NGDV design, development, testing and preparation for production timeline schedules, and determine if modification to the mixed vehicle acquisition strategy is warranted.

Target Implementation Date:

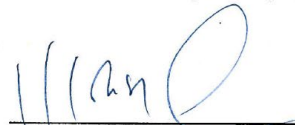
60 days after contract award

Responsible Official:

Manager of Vehicle Engineering
Manager, Fleet Management

E-SIGNED by SCOTT.R BOMBAUGH
on 2020-07-29 10:49:12 CDT

Scott R. Bombaugh
Vice President, Engineering Systems



Kevin L. McAdams
Vice President, Delivery and Retail Operations

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