STATEMENT OF

NEXT GENERATION DELIVERY VEHICLE EXECUTIVE DIRECTOR

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before the

House Committee on Oversight and Reform

Hearing: "It's Electric: Developing the Postal Fleet of the Future"

April 5, 2022

Good morning, Chairwoman Maloney, Ranking Member Comer and Members of the Committee. Thank you for calling this hearing on fleet electrification.

My name is Vicki Stephen, and I am Executive Director of the Postal Service's Next Generation Delivery Vehicle (NGDV) program. My team and I lead a rigorous project management function to help support the broad cross-functional preparation for the NGDV rollout, a cornerstone in our Delivering for America (DFA) 10-year Strategic Plan. The team also leads the execution of the electric vehicle charging infrastructure development and deployment to enable the electrification of our delivery fleet.

I have previously served in a broad variety of executive roles, including as Director of Emerging Business Technology, Lead Executive for Small Business Strategy Development, Director of Mailing Services, and Director of Brand Shipping, and in executive roles in Engineering including serving as the Director of Retail and Delivery Technology. I have worked in a variety of field and operational roles, serving as a Plant Manager, and in operations support and industrial engineering roles, both at the field and Area levels.

Weighing the Tradeoffs of Electrification

The Postal Service welcomes the opportunity to share more broadly both the opportunities and challenges that accompany our move to include a substantial order for electric vehicles in our NGDV delivery fleet procurement. As you know, on March 24, we placed an order for 50,000 vehicles — of which, 10,019 will be battery electric vehicles (BEV) — making good on our pledge to accelerate our electric vehicle strategy as our financial condition improves and as we refine our network and vehicle operating strategy. However, any consideration of our strategic opportunities and challenges must be grounded in a full understanding of not only our unique delivery mission and policy mandates, but also our organizational and financial constraints. We find that many discussions of Postal Service fleet electrification have overlooked these irrefutable limitations. It would be irresponsible for us to do so, however.

As part of our Universal Service Obligation, the Postal Service delivers to 163 million addresses, in all climates and topographies, six days per week. And Congress has directed that we must do so in a financially self-sufficient manner. This is an impressive daily accomplishment that serves the American people in such an important way. Our reach and responsibility are unmatched—delivering nearly half of global mail volume.

It is vital that we provide our over 200,000 mail carriers with appropriate vehicles to help support this daily service mission. We owe it to these employees and to the communities they serve to provide vehicles that allow carriers to efficiently complete their work, with advanced safety and security features, better fuel economies, and amenities we expect in our own, personal vehicles. The Postal Service's delivery vehicles are part of a very specific and robust mission, which cannot be compared to other private delivery or government fleets in nature, use case or scope. In addition to our unique use case, unlike other agencies that seek to electrify their fleets, the Postal Service is required by law to be financially self-sustaining and operate absent Congressional appropriations. As such, we need to make fiscally responsible decisions and be mindful of what we can afford and execute.

The recently passed *Postal Service Reform Act* helps create the financial headroom necessary to bring us closer to financial sustainability, but it is just one part of our DFA plan that requires significant self-help actions on our part. Acquiring the NGDVs – whether electric or not – is also

a part of the strategic plan, but on the investment side of the ledger. It must be accomplished to satisfy our delivery mission, but it does not address our current losses.

Replacing our aged fleet is a critical part of the organizational transformation of the Postal Service. But it is by no means *the only* critical part. It is well understood that electric vehicles and their infrastructure cost more to purchase than their combustion engine counterparts. Every additional dollar spent on buying electric vehicles is one fewer dollar that can be spent on a long list of other critical capital needs and operational objectives at the Postal Service. Similarly, every investment in the postal delivery network must be weighed against postal rate increases that might also be used, in part, to help pay for it.

The Postal Service remains in a crisis condition. We have many competing operational objectives that we are obligated to address in the immediate term. Our statutory mission is to provide universal postal services in a financially self-sufficient manner. Fleet electrification is a near term opportunity, but not a mission critical one. Our responsibility must be to make fiscally and operationally prudent decisions to ensure that we can serve the American people well beyond the next ten years. Our ambition can also include electrification, but it should not come at too severe a cost, nor should it interfere with other operational and financial objectives.

Even so, we understand there is a larger national interest in moving toward an energy efficient and environmentally sensitive future. We recognize this interest cannot overlook the largest portion of the federal vehicle fleet. In planning our vehicle acquisition strategy, we made the decision to do our part by participating in this national priority. But it is also our responsibility to do so without threatening our mission or thwarting our other organizational objectives. We cannot make decisions about our delivery fleet in isolation, and without reference to the many, often competing, priorities that we face. It would be negligent for an essential service agency with a delivery mission to overlook or under-prioritize:

- Our aging, and in many cases dysfunctional, facilities – many of which suffer from deferred maintenance due to neglect and disinvestment; and which are places of work for our 650,000-person workforce;
- The need to rationalize our delivery network, which was built in and for a different era and volume and mix of mail and packages, and which will influence our electrification rollout planning;
- Acquiring package sortation equipment and annexes to facilitate the flow of mail and packages; and
- Restoring the Postal Service as an employer of choice and career-worthy organization, including by investing in training and development and converting more positions from non-career to career.

We have gained substantial learnings around electrification of our fleet throughout the NGDV procurement process. This has continued following the contract award in February of 2021. These learnings, and our rich and comprehensive experience managing the vehicle fleet needed to support our service mission, informed our purchase order placed on March 24. We evaluated the route characteristics that are best suited to electrification. We analyzed the challenges and feasibility of installing charging infrastructure at the wide variety of over 17,000 facilities that may one day house electric vehicles. We studied the battery technology and capability evolution.

Over the same period, we have begun the implementation of the DFA plan. We are focused on the opportunities and tensions that exist when prioritizing between needed network improvements, route rationalization, facility and technology needs, and workforce considerations, to name a few. These considerations inform the tradeoffs required given our constrained financial condition and our sometimes-competing priorities.

Our recent order demonstrates our ambitious commitment to include electric vehicles as a significant part of our delivery fleet. We are compelled to act prudently to continue to meet our commitment to serve the American public, and we remain resolute in making decisions that are grounded in our financial situation and what we can realistically achieve operationally.

The Urgent Need for Replacement

Many of our 190,000 delivery vehicles have been on the road for more than 30 years and lack basic safety features, including air conditioning, air bags, and anti-lock brakes, which are standard in most vehicles today. Those vehicles also do not incorporate the most modern thinking in ergonomic design, which would help contribute to the health and safety of our employees. We have an urgent need to replace these vehicles that are powered by inefficient gasoline engines. There are also daily operational, maintenance, environmental and direct cost impacts associated with supporting our current delivery fleet.

The safety of the men and women of the Postal Service is our number one priority, and they have waited long enough for the NGDV. We owe it to our carriers and the communities we serve to provide safer, more efficient vehicles to fulfill our universal service obligation to deliver to 163 million addresses in all climates and topographies six days per-week. And we must continue to move forward.

The search for replacement vehicles for our delivery fleet, which started in 2015, resulted in the purpose-built, right-hand drive NGDVs that will deliver air conditioning and heating, improved ergonomics, and some of the most advanced vehicle and safety technology – including 360-degree cameras, advanced braking and traction control, a front-and rear-collision avoidance system that includes visual, audio warning, and automatic braking. The vehicles will also have increased cargo capacity to maximize efficiency and better accommodate the changing mail mix across mail and packages.

NGDV Feature Highlights:

The NGDV serves as the cornerstone for a future-ready delivery fleet that will address varying service requirements, shifting consumer demands, and enable accelerated integration and adoption of emerging technologies over time. It will provide carriers with more fuel-efficient vehicles and advanced safety features, while providing the expanded cargo capacity needed to support today's changing mail mix and package volumes.

This historic investment is part of a broader Postal Service strategy to transform our financial performance and customer service over the next 10 years through significant investments in people, technology, and infrastructure. We have been putting off this kind of capital investment for the better part of a decade given our precarious financial situation, but our DFA plan has made this significant step for the organization possible.

The NGDV program is just one piece in the Postal Service's Mixed Delivery Fleet Strategy, designed to effectively support delivery operations. This approach will enable the delivery fleet to leverage the most appropriate type of vehicle for each route based on the characteristics of that route. For routes that include very little "curbside delivery" to mailboxes located at the curbline, a less expensive Commercial Off the Shelf (COTS) Left Hand Drive vehicle may be a more cost-effective solution to complete delivery activities. Routes with high proportions of curbside deliveries require purpose-built, Right Hand Drive vehicles such as the NGDV to efficiently and ergonomically complete deliveries. This strategy helps moderate overall investment cost, while matching the right vehicle type to the right route.

The NGDV program provides for the introduction of internal combustion engine (ICE) and electric-powered, purpose-built vehicles that deliver significant reductions in emissions and improvements in fuel economy versus the existing delivery vehicle fleet. While the program calls for the fleet mix to be at least 10 percent battery electric vehicle (BEV), the Postal Service

recognizes a 100 percent mix of BEVs would deliver even greater emission benefits, and the program is designed with the flexibility to increase this mix.

We will continue to pursue the acquisition of additional BEVs as funding – from improvements in our financial position due to ongoing implementation the DFA plan, or congressional sources – becomes available, and as our operational strategy evolves and the electric vehicle infrastructure improves. But the process needs to keep moving forward, and the goal of electrification is only one of the factors we must manage in the context of our overall mission.

Unique Scope and Requirements

The Postal Service has very specific vehicle requirements to effectively support our unique service mission over the course of time. The required parameters are essential to operational efficiency, ergonomic design, and maintainability over decades of use. We have received criticism related to vehicle cost and deployment. Yet that criticism usually does not reflect an understanding that the NGDV is a purpose-built vehicle designed to meet our unique use requirements. In other words, the vehicle is more expensive than other options because it is purpose-built, to satisfy our right-hand drive, ergonomic, and maintenance requirements for 20+ years. Also, because the NGDV is purpose built, it represents a niche market that does not benefit from economies of scale. Comparisons to COTS vehicles are simply not valid because those are produced in large quantities for standardized use applicability. The NGDV procurement is what is known as a "boutique" procurement. Manufacturers cannot capitalize on their development costs for creating right hand drive (RHD) vehicles because the vehicle is unlikely to have broad use applications. Moreover, the cost differential between our ICE and BEV NGDV is comfortably within the range of price differentials of commercially available vehicles with both an ICE and a BEV drivetrain.

Myth: Cost for vehicle is too high

RHD: Our first specific vehicle requirement is for RHD in order to efficiently deliver to curbside mailboxes. Approximately 60 percent of all carrier routes with assigned vehicles are defined as "curbside delivery" routes and require a RHD vehicle for effective delivery. Additionally, routes that are characterized as "Park and Loop" or "Dismount" routes typically have some proportion of curbside deliveries, even if they also have some walking segments within the route. All of these route's benefit from use of RHD vehicles for safe ingress/egress from the vehicle, as well as optimization for the curbside delivery points.

Ergonomics: In order to support ergonomic curbside deliveries, the height of the windowsill on the right side of the vehicle must be much lower than in other vehicles so that the height of the sill is near or at the height of the mailbox. If the sill is higher than the mailbox, carriers must lift their arms and wrists above the sill while holding the mail/packages, and then drop their wrists to the level of the mailbox. The space is constrained, and results in difficult positioning and potential carpal tunnel impacts over the course of time. Carriers assigned to curbside delivery routes will go through this motion hundreds of times each day (on average, 500-600 times), 5 or more days per week, for years on end. To prevent repetitive motion injuries that could result from this exposure, the Postal Service specifies a RHD windowsill height that aligns the bottom of the window with the height of the mailbox, with a range of seat positions that place our carriers ranging from 5th percentile female to 95th percentile male in the optimum location, and enables a comfortable, smooth action for carriers to move mail from the vehicle into the mailbox.

Maintainability: The Postal Service has decades of experience in working with a variety of vehicles to support curbside mail delivery. In the 1970-80s, the Postal Service used a range of COTS vehicles. The results with COTS vehicles are very predictable: the wear and tear of postal delivery operations on vehicle components is so severe that COTS vehicles typically last 6-7 years, less than half of the expected useful life for this class of vehicle. COTS vehicles are not designed for the constant starts/stops every day, or for window operation to occur repeatedly through the operating day in bad weather, or even for the doors to be opened/closed repeatedly throughout the day. The vehicle frames are often subject to extensive wear and rust. The maintenance costs associated with supporting these operational needs are significant and extend well beyond COTS vehicle warranty coverage. In the late 1980s, the Postal Service broke this cycle, and shifted to a set of requirements that ruggedized key components of the vehicle to support a 20+ year life cycle. The result was the Long-Life Vehicle (LLV) – of which approximately 160,000 are still operating some 34 years later. This "ruggedized" requirement set is not present in COTS vehicles – and with the LLV, it resulted in a 40+ percent premium on the acquisition cost of the vehicle; however, it enabled the Postal Service to reliably operate and maintain these vehicles over the course of decades of hard daily use. Even COTS vehicles acquired within the last 10 years continue to fail at half of the expected life span, resulting in much more frequent vehicle replacements and associated costs.

Myth: Electrification should be 75 – 100 percent

Of the over 213,000 routes that require a vehicle to support delivery operations, there are 12,500 routes over 70 miles in length that are not candidates for electrification today without the (cost effective) availability of a denser battery. In addition, the Postal Service included an order for 5,000 All-Wheel Drive ICE vehicles in our NGDV order, in instances where the routes and climate are not favorable for BEV application. These vehicles will be deployed to areas with the most difficult winter climates and greatest average snowfall to ensure appropriate traction and maneuverability in these climates. Both of these constraints on BEV capacity will likely lessen with technological improvements over time, but these routes need to be eliminated from the consideration set for electrification based upon current and near-term foreseeable technology. The 70 percent electrification target (provided in response to recent inquiries from Congress regarding the impact that potential congressional funding could have) reflects route constraints and expected availability of sufficient BEV alternatives over the coming years. The Postal Service cannot affordably or realistically reach a higher electrification acquisition percentage by the end of the decade even if provided additional funding, absent technological breakthroughs at affordable price points.

Myth: Battery is too expensive and does not assume trends

The Postal Service has engaged in extensive review of battery capabilities and the materials supply market for battery development. The vast majority of automotive BEV batteries produced and available on the market are for 45 kWh batteries used in primarily passenger vehicle applications. These batteries are now produced in quantities of hundreds of thousands to millions. The cost of BEV batteries has certainly been declining over the last several years; however, the rate of decline, as shown by Bloomberg New Energy Finance (BNEF), is now flattening. Battery costs are currently projected to continue to decline slightly through the end of the decade.

The NGDV battery is a 94kWh battery, more than twice the size of the typical commercially produced, smaller batteries. By comparison to consumer applications, the NGDV is a much larger battery, there are fewer producers, fewer applications, and limited economies of scale to produce them in the marketplace. We also expect that the prices for larger batteries will continue to decline over time, but not at the rates that more high-volume consumer application batteries have declined.

There have also been recent impacts on the marketplace. Raw materials are controlled in very specific regions of the world, and the recent imposition of sanctions against Russia have upset global markets for production of nickel, an essential component in many lithium-ion battery chemistries. Dramatic price increases in nickel since March 2022 have raised EV industry concerns about automakers' lack of control over battery supply chains and the potential for more expensive raw material costs to lead to higher battery costs, after steady declines over the last decade.

The Postal Service now has a contract commitment in place, which locks in pricing and access to the required materials for the initial production quantity and gets the NGDV battery order into the production queue for these valuable resources.

Myth: Maintenance comparison between COTS and EVs was flawed

The Postal Service has more than 30 years of usage and maintenance experience for purpose-built, RHD vehicles. We have extensive records over this time, about the types of system failures and maintenance needs across a fleet of 160,000 vehicles that are used on the postal drive cycle every day for years on end. This extensive experience provides us with exceptional insights into the system components that are most likely to be subject to wear and tear, and the likely expectation that can be used for predictive maintenance purposes. And while the ICE NGDV is a more complex vehicle than the LLV and contains systems that do not exist on the LLV, it provides an exceptional, empirical model for assessing maintenance requirements on the NGDV for the decades ahead. Some systems will be very similar. Data on brake usage, tire wear, air filters, chassis and frame issues, body work – are all examples where our rich 30+ year history with the LLV is expected to very accurately inform expectations for the NGDV.

The Postal Service assembled a team of experts from our fleet management, vehicle engineering and supply management teams, and performed a comprehensive assessment of LLV data. The team organized the data into 22 vehicle subsystems, and assessed component by component, the level of work that would be required to support the same vehicle subsystems on the ICE NGDV. In addition, the team assessed expected requirements for the BEV NGDV. Where the corollary ICE system no longer exists in the BEV version of the vehicle, the associated costs were removed. Where the BEV system has components without Postal history, the team relied on manufacturer and industry research to assess potential impacts. For example, BEVs are much heavier than ICE vehicles, and as such, tire wear is expected to be higher. This factor was incorporated into the analysis. For systems that are common on both versions of the vehicle (Frame, Steering, Suspension, Lights, Body, Instrumentation, Wheels, etc.), the team used the same data.

The team also leveraged data points from the Department of Energy (DOE) and other government sources in completing these estimates. It is noteworthy that DOE and Argonne National Labs applied UDDS drive cycles in developing their recommendations; the Postal Service used our own drive cycle in developing our analysis. Also of note, the Argonne model assumed no maintenance is required on several BEV systems (such as transmission service, motor controllers, engine oil and coolant, or power electronics). BEVs require *less* maintenance, which is reflected in our analysis. But, certainly, BEVs are not maintenance-free. The Argonne model also does not include a mid-life battery replacement in its maintenance and repair costs. The Postal Service expects 20-year life vehicles, and specified 10-year batteries, so this cost was included in the analysis.

The team's comprehensive analysis is based on decades of data for vehicles that will be used in the exact same environment and drive cycles, and comprehensively evaluates the impact of the shift to the NGDV. We recognize that other observers, analysts and even agencies do not have the benefit of our use case-specific experience and data, so they are not able to reach the same informed conclusions.

Myth: Savings could be readily achieved with COTS or other producers

COTS vehicles represent only a small portion of the solution for the Postal Service. As noted above, approximately 60 percent of all routes with vehicles assigned are categorized as curbside delivery routes that require RHD vehicles, and design optimized for ergonomics. The Postal Service actively uses COTS vehicles in the delivery fleet, but as noted above, they are not ruggedized for our drive cycles, and typically fail at half of the expected service life of the asset. The Postal Service actively employs use of the single COTS RHD vehicle available on the market. This vehicle is not optimized for curbside delivery ergonomics – the windowsill is too high, and the "B-pillar" behind the driver door is far too far forward for the carrier to comfortably deliver mail into the required mailbox. In addition, the side mirror is positioned in such a way that it often will strike or impact with the mailbox or obstruct the carrier's access to the box – necessitating the carrier to pull up farther from the mailbox, sticking further into moving traffic, and for some carriers, the distance to avoid hitting the mirrors is so great that they have to park, dismount and walk to the box to make the delivery. When extrapolated across multiple delivery sites and multiple days of the week, these impacts have far-reaching effects on the efficiency of the curbside delivery process, and worse yet, on potential repetitive-motion injury to the carriers.

LHD COTS vehicles cannot be used to deliver to curbside delivery points and would dramatically increase costs and safety concerns for the delivery operation, as carriers would be on the wrong side of the vehicle to insert mail into the mailbox, and would need to dismount into active traffic, and walk around to the right-hand side of the vehicle to put mail into the mailbox. This is impractical and costly and introduces vast inefficiencies and safety risks into the process. These COTS vehicles are also wearing out and require replacement at the 6–7-year mark of their expected 13+ year service life, and thus must be replaced twice as often. The Postal Service actively uses COTS LHD vehicles on routes with very few curbside delivery points. These types of routes do not subject the vehicle to the same abusive stop-and-start USPS drive cycle as those on curbside delivery routes – and yet they still fail at half the expected service life. COTS LHD vehicles have a place in our fleet strategy, but do *not* provide a solution that can be extended to the majority of mounted routes. The Postal Service monitors

developments in the COTS light duty vehicle market and participates in active and ongoing evaluation of COTS alternatives, including potential COTS electric vehicles.

Myth: Our estimates for charging infrastructure are too high

The Postal Service has not yet released a solicitation for Electric Vehicle Supply Equipment (EVSE – or charging station equipment). Those who participate in the solicitation process will be able to submit proposals for evaluation, which could potentially include partnered offerings. All proposals submitted will be evaluated through the solicitation process and assessed for technical effectiveness as well as price. Those determinations will be made in the coming months.

17,768 delivery units have delivery vehicles departing daily in a mix of 39 percent urban locations, 14.5 percent suburban locations, and 46.5 percent rural locations. This incredibly diverse range of carrier facilities and locations may host new and potentially electric vehicles.

Installing infrastructure in a multitude of Postal facilities is challenging, but essential. Even the initial purchase order of 10,019 electric vehicles will strain resources to install infrastructure. The U.S. General Services Administration (GSA) notes that installation costs for EV charging stations for winter/spring 2022 are at least 50-60 percent of the total project. GSA estimates that if an EV charging station costs $7,000, the installation costs will be between $7,000 and $8,400, which is consistent with the Postal Service's estimates. Typical modifications required to install infrastructure will include electrical power panel or transformer upgrades, site surveys and permitting, installation of wiring from power panel to charging stations, and installation of charging station hardware, and may include electrical power panel or transformer upgrades.

The Work to Get Here

Contract Award

The NGDV procurement program formally began in January 2015. After several years of industry outreach, study, evaluation, and prototyping, the Postal Service conducted a robust competitive production competition and awarded Oshkosh Defense an infinite delivery/infinite quantity (IDIQ) contract to manufacture our NGDV in February 2021. The IDIQ contract provides the Postal Service the ongoing ability to purchase between 50,000 and 165,000 NGDVs over the 10-year contract period. The vehicles will be equipped with either fuel-efficient ICE or BEV powertrains.

ICE and BEV drivetrains can be purchased in any proportion by placing delivery orders throughout the contract life; however, our comprehensive Total Cost of Ownership (TCO) model to assess offerors and determine the appropriate mix of vehicles points to a substantially ICE fleet, due largely to higher acquisition and infrastructure costs for BEVs.

Total Cost of Ownership Analysis

In order to be prepared to evaluate delivery vehicle fleet alternatives and the appropriate mix of vehicles, the Postal Service developed a comprehensive TCO model to help us assess delivery fleet opportunities. The Optimal Fleet Mix model allows us to consider individual route characteristics for more than 200,000 carrier routes across the nation and assess the

appropriate vehicle to assign to a given route. For example, COTS vehicles are cheaper to acquire, but make sense to assign on routes with high proportions of “centralized delivery” (neighborhood box units with several delivery points concentrated together), and few curbside delivery points. NGDVs are typically assigned to routes with higher proportions of curbside delivery points since they are designed to efficiently and ergonomically support this type of delivery.

The model considers a very broad range of factors, including route composition; acquisition costs; fuel and electricity rates and 20-year expected pricing trends; monthly average temperature ranges across the country; annual snowfall; maintenance expectations; infrastructure costs; and vehicle type and drive train. These variables are assessed for each of the 200,000+ routes to align the optimal vehicle to the route. It also enables the Postal Service to see how the recommended mix of vehicles may change as a result of assessing individual variables, or for any given acquisition year.

Today it is simply more expensive to acquire a BEV than an ICE for similar vehicle models. Both consumer passenger vehicles and commercial light-duty vehicles available on the market exhibit anywhere from a 30 percent to a near 50 percent premium for BEVs versus comparable ICE. In addition to the vehicle acquisition cost differential, BEVs require funding for the charging system infrastructure as well.

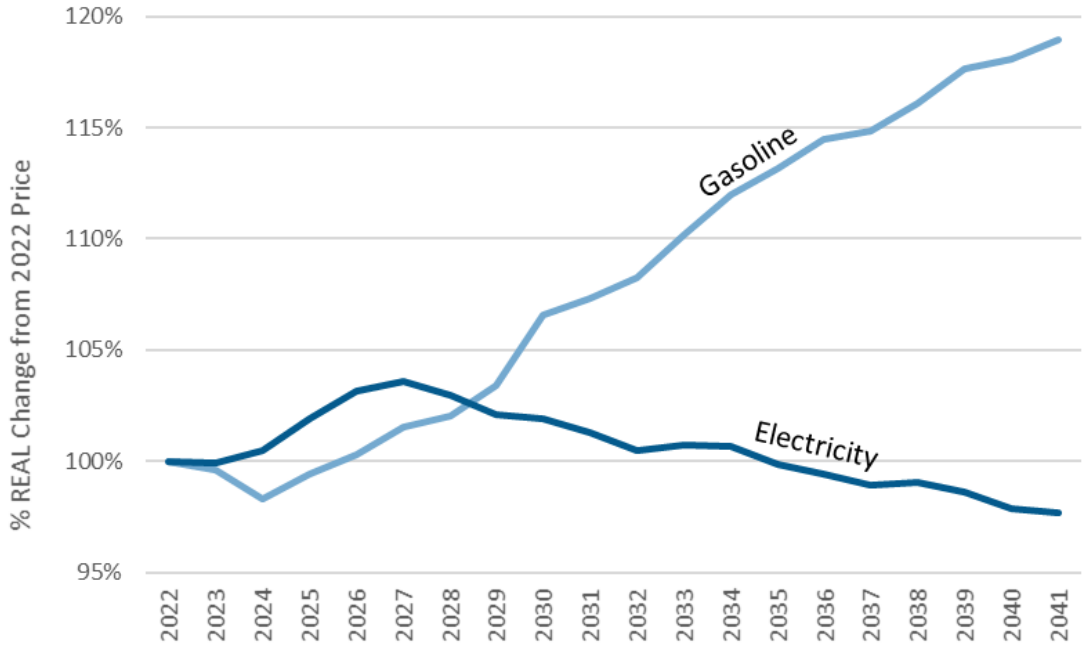
Given projected changes in the market, we expect to see both acquisition costs and battery costs decline before the end of the decade, but BEV options may not reach acquisition price parity with ICE vehicles for many years. Differentials between gasoline and electricity prices are also expected to widen further by the end of the decade. Both of these factors favor BEVs and will make BEVs a clear and compelling choice by later this decade. But the Postal Service has an urgent and immediate need to replace our 30+ year old LLVs with vehicles that are more fuel efficient, produce fewer emissions, and provide our employees and the communities they service with advanced safety features that are now the norm. The Postal Service needed to act now – while BEVs are clearly more expensive. Our TCO analysis shows that for an acquisition made in 2022, BEVs continue to remain more expensive than ICE throughout their 20-year expected life. The OIG’s recently published white paper shows the same results from their independently developed and executed TCO model.

BEVs are typically justified based on fuel and maintenance savings relative to ICE vehicles, so the Postal Service focused deeply on the analysis in these areas.

Fuel Costs:

The fuel cost assumptions in our TCO model were informed by the prices for both gasoline (in $/gallon) and electricity (in $/kWh) in 2020 real dollars. The model assumed 2022 national average fuel costs of $3.09/gallon and $0.109kWh and created future fuel prices based on data published by the US Energy Information Administration (EIA). This data was updated in 2021 by EIA and the Postal Service included these updates in subsequent analyses.

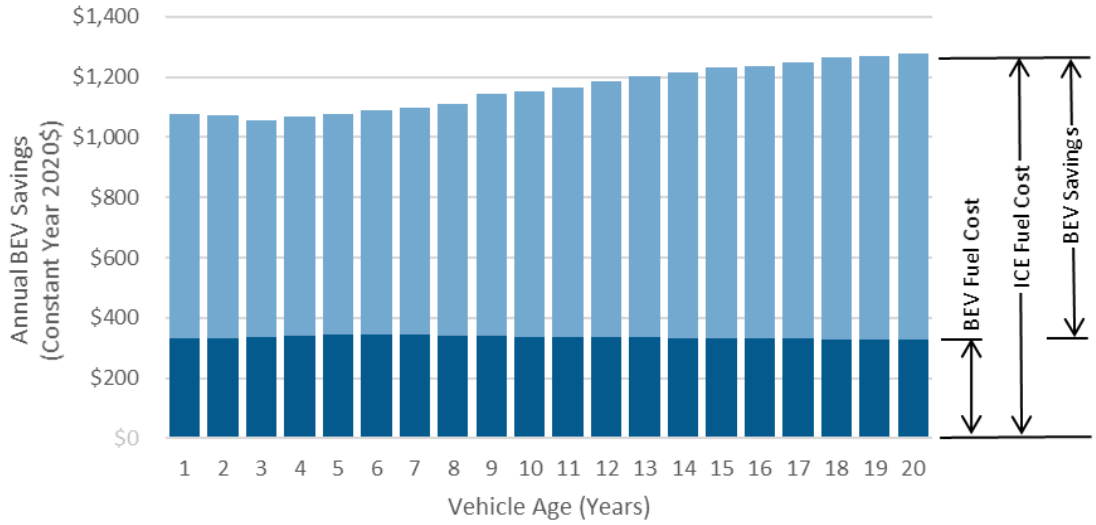
Forecasted 20-Year Real Fuel Price Indices



Source: U.S. Energy Information Administration (EIA)

As depicted in this chart, the USPS projects fuel cost savings for BEV vs ICE to equate to an annual average difference of $827 (per vehicle).

Forecasted 20-Year NGDV Fuel Cost Comparison



In early program planning, the Postal Service openly communicated our intent to acquire at least 5,000 BEV NGDVs within our vehicle delivery order in recognition of the coming shift in the marketplace. We have also continued to run sensitivity analyses to assess the impact of changes in key variables, such as fuel price. These analyses began to show small numbers of BEV vehicles in the vehicle mix recommendation, but well below the 10 percent level planned in the delivery order. The team ran scenarios with baseline gasoline prices at incrementally higher price levels up to $4/gallon. On March 16, 2022, the EIA published updated information in its *Short-Term Energy Outlook*, showing retail gasoline prices through the next couple of years. They project that gas prices will be at $3.79/gallon by the end of 2022, and at $3.33/gallon in 2023. The current escalation in gas prices certainly begins to favor a shift in the vehicle mix toward BEVs; however, these prices are expected to recede, and these lower values are well within the bounds of the TCO analysis. By completing the sensitivity analysis on gasoline prices and trends and given the changes in our financial situation as a result of Congress's enactment of the Postal Service Reform Act of 2022 and operational improvements being realized through our DFA plan, the Postal Service was able to adapt our capital plan and more than double the number of BEVs included in the NGDV delivery order to 10,019. This change is an acknowledgement of the shifting market conditions and is an excellent example of the utility of the TCO model in assessing changing conditions and adjusting accordingly.

Maintenance Costs:

To develop an assessment of maintenance costs, the Postal Service engaged a team of fleet maintenance and engineering experts to use our 30-year history on LLV maintenance on 160,000 vehicles, using the routes and drive cycle to which NGDVs will be subjected for the coming decades. The team used rich historical data to assess the impact on maintenance of shifting to NGDV, which includes a host of new technologies that will also require maintenance. The team prepared a system-by-system analysis of 22 vehicle systems present in the NGDV to assess expected impact to vehicle maintenance and determined projected impact for both ICE and BEV NGDVs. In some cases, the systems differ between BEV and ICE. For example, an ICE vehicle requires an alternator. There is no alternator on a BEV, but instead the BEV requires a DC-DC converter and an onboard charging unit. The team evaluated each system and component and prepared a comprehensive assessment, noting where systems were eliminated, and where new systems were introduced to account for required maintenance activity and related costs.

It is important to note that NGDVs have significantly more complexity and many systems that do not exist in today's LLV fleet. LLV's have no: airbags, anti-lock braking system, traction or stability control, electric parking brakes, collision warning systems or sensors, cameras or display screens, blind spot detectors, proximity warning systems, auto high-beam headlights, electronic locks or pushbutton start. All of these systems will require new support mechanisms – both for parts and labor – perhaps not significantly in the first years of operation, but certainly over the course of decades of use. Our maintenance history data is incredibly useful in identifying the types of issues that are expected to occur over time, and this thorough analytical approach is based on decades of experience, and supplier information for those new components.

Fundamentally, after this comprehensive analysis was completed, there are a few key takeaways that encapsulate our maintenance expectations:

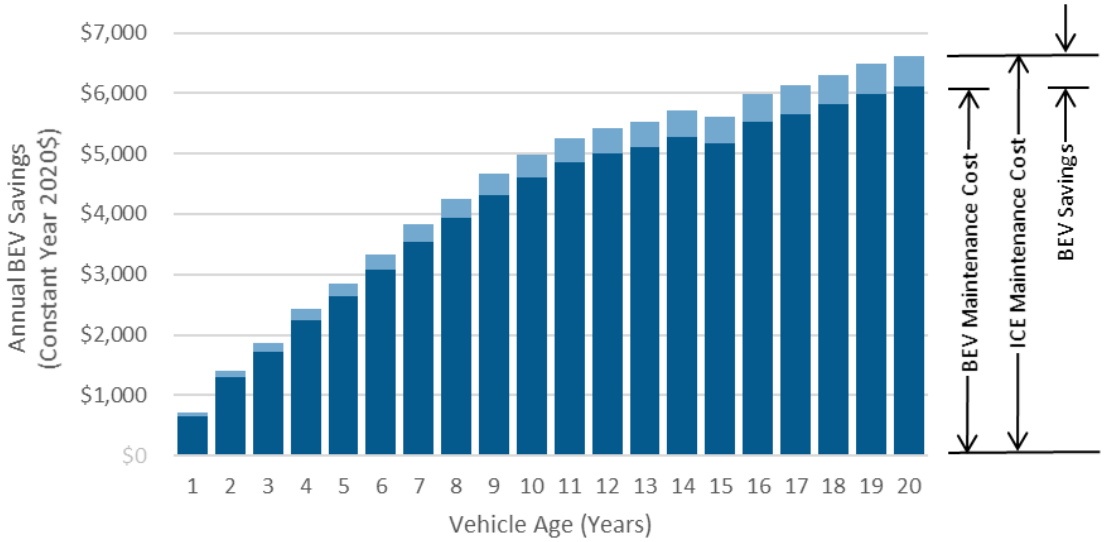
1) We expect NGDV BEVs to require 8 percent less maintenance support than ICE NGDVs, or a "92 percent maintenance ratio" – in other words, we expect to spend $0.92

on BEV maintenance for every dollar spent on ICE maintenance. The Department of Energy (DOE) completed a study that considered BEV maintenance should be at $0.60 for every dollar spent on ICE maintenance, or a 60 percent maintenance ratio. The Postal Service's ratio is higher than DOE's for several reasons, but notably:

a. DOE does not include the replacement cost for the BEV traction battery in its estimates. NGDV batteries have a service life of 10 years, so the Postal Service projections include the replacement cost of the battery approximately halfway through the vehicle's expected service life. The traction battery is the single greatest contributor to the cost differential between ICE and BEV and makes a significant difference in the considered maintenance costs and ratio.
b. DOE does not include maintenance costs for several of the key BEV systems, including the motor controllers, battery charger, power electronics, transmission service, 12 VDC converter, battery charger or charger connectors. These items are NOT maintenance-free, and the Postal Service expects they will need to be repaired or replaced during the life of the vehicle – especially a 20-year vehicle.

The Postal Service's analysis is based on our rich historical data – not projections or vendor cut sheets, but on actual vehicle usage over decades of use. We know the types of vehicle issues that occur for delivery fleet vehicles applied to our drive cycle over decades of use and have applied this experience to the analysis.

Forecasted 20-Year NGDV Maintenance



TCO Summary:

As shown here, both the fuel cost comparison and the maintenance comparison show that costs are lower for supporting and operating BEVs when compared to ICE. However, these relative benefits are not enough to overcome the higher BEV acquisition costs and the infrastructure costs over the 20-year life of the vehicle.

The TCO model is deeply rooted in decades of operational and maintenance experience with purpose-built vehicles optimized for mail delivery and used on the aggressive USPS drive cycle for years. The analysis is informed by rigorous study and evaluation by experts in this field, and

the model is built around expertise and data sets developed by governmental experts in these areas. The Postal Service's model has already been effectively used to conduct ongoing sensitivity analyses and was leveraged to help assess and change our investment and fleet decisions to reflect changing market conditions.

National Environmental Policy Act (NEPA) Requirements Were Carefully Followed

MYTH: The NEPA process conducted by the Postal Service is incomplete, nonresponsive and based on flawed analysis

NEPA requires federal agencies, including the Postal Service, to assess environmental impacts of major actions and consider reasonable alternatives. In early 2021, we initiated the Environmental Impact Statement (EIS) process for our Proposed Action, the purchase over ten years of 50,000 to 165,000 purpose-built RHD NGDV vehicles, at least 10 percent of which would be BEV.

We published a Notice of Intent on March 4, 2021, opening a 45-day public comment period. During this "scoping period," we consulted with the U.S. Environmental Protection Agency (EPA) and the Council on Environmental Quality (CEQ) regarding our plans for the EIS. As part of this consultation, in April and May of 2021, we solicited EPA's comments on our outline for the Draft EIS and the three reasonable alternatives to the Proposed Action under consideration – (1) 100 percent RHD BEV NGDV, (2) 100 percent RHD internal combustion engine (ICE) Commercial Off-the-Shelf (COTS) vehicles, and (3) the statutorily-required "No Action" Alternative. EPA recommended that we consider an additional alternative using hybrid-fuel or all-electric vehicles. In response, we added a fourth alternative, a LHD COTS BEV based on the Ford E-Transit, even though neither the Ford E-Transit nor any other COTS BEV was yet to market. On June 10, 2021, EPA informed us that it appreciated our incorporation of its comments and recommendations as well as the expanded analysis including an all-electric fleet.

Additionally, we publicly reported in February 2021 that we had allocated up to $482 million, of which only a small portion has been spent, for non-recurring engineering and production tooling costs as part of prudent agency planning in the event that our Proposed Action would be the ultimate result of our NEPA review. As this spending neither had an adverse impact on the environment nor limited our choice of reasonable alternatives, it was fully compliant with NEPA. Moreover, neither EPA nor CEQ provided any comment during our months-long consultation process claiming that the design and tooling work posed a problem under NEPA.

We published the Draft EIS on September 3, 2021, which initiated a second 45-day public comment period. We then published the Final EIS on January 7, 2022, initiating a mandatory 30-day wait period. In the Final EIS, we selected the Proposed Action of 50,000 to 165,000 RHD NGDV, with at least 10 percent being BEV and the remainder ICE, as our Preferred Alternative. After EPA requested additional time to review the Final EIS, we agreed to not issue a Record of Decision prior to February 14, 2022.

The 340-page EIS reflects a thorough study of factors including air quality, transportation, noise, socioeconomics, community services, utilities and infrastructure, energy and waste for all four alternatives. As detailed in the EIS, the two NGDV alternatives both resulted in beneficial impacts on air pollutant and greenhouse gas (GHG) emissions, transportation safety, traffic noise, community emergency services, and fuel (gasoline) consumption, versus the baseline, No Action alternative. Under the Preferred Alternative, our total emissions would decline by

nearly 6 million metric tons over 20 years, including a decrease in greenhouse gas emissions of 290,306 metric tons.

While the EIS expressly recognized that the 100-percent BEV NGDV alternative would result in about 200 percent fewer direct and indirect greenhouse gas emissions than the Preferred Alternative, we determined that due to the TCO differential, committing to over 10-percent BEV NGDV was not achievable absent additional funding or a change in financial condition. However, we also designed the Preferred Alternative with enough flexibility to permit us to increase the percentage of BEV NGDV if financial circumstances changed.

The NEPA process attracted more than 39,000 public comments from an array of stakeholders, and we responded to all of the public comments in the Draft and Final EISs. In addition, we carefully considered EPA's comments and requests for a public hearing submitted after the publication of the Final EIS. After thorough review and study, we determined that the EPA's requests for a supplemental EIS and public hearing would not add value to our already year-long review and were not legally required. Concluding that there was no legal or other basis to delay this critical program – a fiscally and environmentally responsible plan to modernize the federal government's largest and oldest vehicle fleet – we published our Record of Decision (ROD) on February 23, 2022, concluding the NEPA process. This ROD also included a point-by-point response to EPA's comments on the Final EIS.

We are proud of the thousands of hours that have been devoted to the NGDV EIS. It is a thorough, professional record of our efforts to take a hard look at the NGDV's environmental impacts, consider reasonable alternatives and mitigation, and consult the public and agencies such as CEQ and EPA. This is what NEPA requires. It does not mandate particular results or substantive outcomes -- NEPA does not require that we select the option with the least environmental impact.

Congressional Engagement

Over the past year, we have made our experts available to policymakers in Congress and the Administration, as policymakers pursued efforts to secure funding to achieve a majority electric Postal delivery vehicle fleet over the next 10 years. Advocates in the Senate, House and Biden Administration have each expressed support at some level for funding electrification of the Postal fleet; but the rate of electrification was sooner and at a higher quantity than our resources and planning contemplated. During the course of these discussions, we have explained the unique Postal use case, vehicle characteristics, route characteristics, financial tensions, and facility and infrastructure considerations. We have provided analysis of the costs of higher fleet electrification percentages (the added differential cost of BEV over ICE vehicles) and charging infrastructure cost. We have pointed out that the NGDV order enables the flexibility needed to increase the level of electrification if funding is provided by Congress or financial conditions improve based upon our own efforts as a result of the implementation of the DRA, even after the order was placed.

It is important to underscore that these discussions with Congress differ in a meaningful way from Administration and Congressional ambition for the non-Postal federal fleet. The non-Postal federal fleet would require appropriations for every dollar of electric vehicle cost since all other agencies are on-budget appropriated agencies. In contrast, the Postal delivery fleet electrification funding being considered by Congress is only for the differential in cost for electrifying vehicles. Most of the vehicle cost would still be borne by the Postal Service, based on the assumption we would buy a vehicle anyway, even if not electric.

Congress has also contemplated some additional funding for supplementary charging infrastructure. We have also engaged in discussions of whether the Postal Service should play a role in public charging infrastructure. That discussion has led to an appreciation that while the Postal Service could potentially play a discrete and limited role, that role is not yet clearly defined and there must be a better understanding of the government-wide strategy before the efficacy of any role for the Postal Service can be evaluated and determined.

Recent Order is Significant and Responsible

On March 24, 2022, the Postal Service announced its initial NGDV order with Oshkosh Defense for 50,000 vehicles – a minimum of which will be for 10,019 BEVs. In doing so, we are making good on our pledge to accelerate our electric vehicle strategy by increasing the quantity of BEVs as our financial condition improves and as we refine our network and vehicle operating strategy. The 10,019 specific delivery routes identified present the best initial application for electric vehicles based on route characteristics and infrastructure opportunities.

Since the NGDV contract was first announced, and consistent with our stated commitment, we have continuously evaluated and adjusted our vehicle purchase strategy based on our future network initiatives, ongoing review of BEV application to our operational strategy, and our financial outlook as we undertake our ongoing implementation of the DFA plan. Based upon this work and our improving outlook, we have determined that increasing our initial electric vehicle purchase from 5,000 to 10,019 makes good sense from an operational and financial perspective.

It is essential to point out that a switch cannot be flipped with regards to the deployment of either ICE or BEV vehicles. Because of the impressive new functionality, both drivetrain versions will require training and transition. The electric vehicles will also require installation of charging infrastructure at all the facilities where they will ultimately be deployed. Because of their height and dimensions, at some locations, facility modifications may also be necessary. Additional training will also be required to operate electric vehicles.

It is important to differentiate between the NGDV *contract* awarded in February of 2021 (funding non-recurring engineering and tooling), and the *delivery order for vehicles* that was signed (under the contract) on March 24 of this year (2022). There has been a fair amount of misunderstanding about how the quantities of the order will be deployed and when. As a reminder, the contract is an IDIQ procurement with a minimum of 50,000 vehicles and a maximum of 165,000. The minimum order quantity will be satisfied by the March order. The order placed in March will result in vehicles delivered within a four-year window (2023-2027).

The production years begin in the third quarter of each year and straddle calendar years. Accordingly, the first vehicles will be delivered beginning in late 2023 and through the second quarter of 2024, with a quantity of 5,000 vehicles as production ramp-up begins. As an aside, a number of those initial vehicles will be allocated to training purposes, and “training the trainers,” so that the deployment is assured of success. In production year 2024-25, 15,000 vehicles will be delivered. In 2025-26, the peak annual manufacturing quantity will be achieved at 20,000 vehicles. In 2026-2027 we expect the remaining 10,000 of the March 24 delivery order to be deployed. If a second order is placed it could occur at any time and depending on when, the production output could remain steady as stipulated by the order.

The flexibility in the NGDV contract allows for future increases in the mix of BEVs on existing orders in subsequent production years, should additional funding become available from internal or other sources, and if the use case for BEVs continues to improve. Through the NGDV program, the Postal Service's commitment to the fiscally responsible roll-out of electric-powered vehicles for America's largest and oldest federal fleet remains ambitious and on schedule. It is expected the NGDVs will begin appearing on carrier routes in late 2023.

Conclusion

The successful signing of the NGDV purchase contract was the culmination of years of careful needs analysis and procurement discipline, all linked to our unique operational imperatives. The resulting NGDV purpose-built delivery vehicles are long overdue and richly deserved by our carriers and the American people they serve. The opportunity to electrify at least 10,019 electric vehicles is a meaningful step in the direction of broader electrification that is a priority for many of our stakeholders. At the same time, the Postal Service must ensure that we make prudent decisions from both a financial and operational perspective, to ensure that we meet our statutory mission of providing universal postal services to the American people in a financially sustainable manner.