FINAL

Environmental Impact Statement
United States Postal Service

Next Generation Delivery Vehicle Acquisitions

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Cover Sheet

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Title: Final Environmental Impact Statement for Purchase of Next Generation Delivery Vehicles

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Final Environmental Impact Statement

Abstract: This Final Environmental Impact Statement (FEIS) analyzes the environmental impacts of a range of alternatives for the proposed purchase over ten years of 50,000 to 165,000 delivery vehicles to replace the same number of existing delivery vehicles. This FEIS was prepared pursuant to the requirements of the National Environmental Policy Act of 1969 (NEPA), its implementing procedures at 39 CFR 775, and the President's Council on Environmental Quality Regulations (40 CFR parts 1500-1508), to evaluate the environmental impacts of the proposed purpose-built Next Generation Delivery Vehicle (NGDV) alternative versus commercial-off-the-shelf (COTS) vehicle alternatives and a "No Action" alternative.

Timing of Agency Action: The U.S. Environmental Protection Agency's publication of the FEIS in the Federal Register begins a 30-day waiting period. Following the waiting period, the Postal Service will make a final decision regarding the Proposed Action and publish a Record of Decision.

Summary: The U.S. Postal Service proposes to purchase over ten years 50,000 to 165,000 purpose-built, right-hand-drive (RHD) vehicles – the NGDV – to replace existing delivery vehicles nationwide that have reached the end of their service life. While the Postal Service has not yet determined the precise mix of powertrains, under the Proposed Action, at least 10 percent of the new vehicles would have battery electric (BEV) powertrains with the remainder being internal combustion engine (ICE). In this FEIS, the Proposed Action is compared against Alternative 1.1 (100 percent RHD COTS ICE vehicles), Alternative 1.2 (100 percent left-hand-drive COTS BEVs), and the No Action Alternative.

In terms of potential environmental impacts, the Proposed Action, and Alternatives 1.1 and 1.2 would result in beneficial impacts on transportation safety, traffic noise, air pollutant and greenhouse gas emissions, community emergency services, and fuel (gasoline) consumption. The Proposed Action and Alternatives 1.1 and 1.2 would also result in no to negligible impact on economics, employment, environmental justice, traffic, accessibility, parking, public transportation, noise, community utility services, utility availability and demand capacity, energy consumption, and solid and hazardous waste treatment and disposal.

The Proposed Action is the preferred alternative because it fully meets the Purpose and Need by providing a purpose-built RHD vehicle capable of meeting performance, safety, and ergonomic requirements for efficient carrier deliveries to businesses and curb-line residential mailboxes over the entire nationwide system. Moreover, the Proposed Action is the most achievable given the Postal Service's financial condition as the BEV NGDV has a significantly higher total cost of ownership than the ICE NGDV, which is why the Proposed Action does not commit to more than 10 percent BEVs. The Proposed Action was drafted to permit the Postal Service the flexibility to increase the percentage of BEVs should additional funding become available.

The COTS Alternatives 1.1 and 1.2 would not meet the Postal Service's Purpose and Need as neither would provide the same operational or ergonomic benefits as the purpose-built NGDV. Finally, the No-Action Alternative, in addition to having the highest potential environmental impacts of all the alternatives, would not satisfy the Purpose and Need as aged and end-of-life delivery vehicles with outdated safety features and poor performance characteristics would not be replaced leaving the Postal Service unable to fulfill its primary mission to deliver the nation's mail.

EXECUTIVE SUMMARY

This Final Environmental Impact Statement (FEIS) assesses the existing environmental conditions and potential impacts of the proposed delivery vehicle replacement of existing aged and end-of-life vehicles for the Postal Service. The Postal Service proposes to purchase and deploy over a ten-year period 50,000 to 165,000 vehicles to replace, nationwide and on a one-to-one basis, existing delivery vehicles that have reached the end of their service life. These replacement delivery vehicles would be purpose-built, right-hand drive (RHD) Next Generation Delivery Vehicles (NGDV) or commercial-off-the-shelf (COTS) vehicles. While the Postal Service has not yet determined the precise mix of the powertrains in the new vehicles to be purchased, the Postal Service proposes that the new vehicles consist of a mix of internal combustion engine (ICE) vehicles and battery electric vehicle (BEV) powertrains, with at least 10 percent BEVs. The actual timeline and quantities of NGDV or COTS vehicles purchased, and delivery vehicle types replaced, would be contingent upon the supplier's production and delivery capabilities and the Postal Service's operational needs, including individual carrier route needs, and the Postal Service's financial position.

Purpose and Need (Section 2): The purpose of the Proposed Action to replace the end-of-life and high-maintenance delivery long-life vehicles (LLVs) and flexible fuel vehicles (FFVs) with new vehicles that have more energy-efficient powertrains, updated technology, reduced emissions, increased cargo capacity and improved loading characteristics, improved ergonomics and carrier safety, and reduced maintenance costs. The timing, type, and number of new NGDV vehicles and their deployment are based on the best available current information for preparation of this EIS.

The current outdated delivery vehicles, some as many as 34 years in operation, are inefficient, increasingly unreliable, costly to maintain, and lack certain modern safety and operational features needed for mail carriers. The Postal Service plans to deploy a new generation of RHD vehicles that incorporates the latest advancements in automotive technologies and better serves operations, employees, and customers. Given the mail mix changes that have occurred and additional package growth expected as e-commerce sales continue to rise, new delivery vehicles would need a larger cargo area that also allows easier retrieval of packages than existing, outdated RHD vehicles. The Proposed Action is needed to replace these outdated delivery vehicles to improve safety and ergonomics for Postal Service carriers and to enable the Postal Service to meet its statutory mandate to maintain efficient nationwide delivery of the mail and to provide prompt, reliable, and efficient services to patrons.

Alternatives Evaluated (Section 3): This FEIS analyzes two NGDV Hypothetical Maximum scenarios for the Proposed Action and two COTS vehicle alternatives along with the No-Action Alternative to consider the full potential range of potential environmental impacts:

- Proposed Action Hypothetical Maximum scenario (Purchase and Deployment of 90 Percent ICE NGDV and 10 Percent BEV NGDV),
- Proposed Action Hypothetical Maximum scenario (Purchase and Deployment of 100 Percent BEV NGDV),
- Alternative 1.1 (Purchase and Deployment of 100 Percent RHD COTS ICE Vehicles), and
- Alternative 1.2 (Purchase and Deployment of 100 Percent Left-Hand Drive [LHD] COTS BEVs).

Environmental Consequences (Section 4): The Proposed Action scenarios and Alternative 1.2 would result in beneficial impacts on transportation safety, traffic noise, air pollutant and GHG emissions, community emergency services, and fuel (gasoline) consumption. Alternative 1.1 would result in beneficial impacts on transportation safety, traffic noise, air pollutant and GHG emissions, community emergency services, but result in higher fuel consumption compared to that of the replaced vehicles. The 100 percent BEV NGDV and COTS BEV scenarios would provide greater benefit on traffic noise reduction than would the ICE NGDV and COTS ICE scenarios, since BEVs are quieter than ICE vehicles at low speeds. Additionally, the 100 percent BEV NGDV and COTS BEV scenarios would require less lubricants, oils, and greases compared to existing ICE vehicles. BEVs would have route length and other operational constraints for thousands of routes and spent BEV batteries would be an additional source of hazardous waste. While much of this material would be reclaimed or recycled, BEV battery recycling methods in the U.S. are currently limited and vary in recovery capabilities.

The Proposed Action scenarios and Alternatives 1.1 and 1.2 would result in no to negligible impact on economics, employment, environmental justice, traffic, accessibility, parking, public transportation, engine noise from ICE vehicle operation, community utility services, utility availability and demand capacity, energy consumption, and solid and hazardous waste treatment and disposal.

The No-Action Alternative would not satisfy the Purpose and Need for the purchase of new delivery vehicles to replace aged delivery vehicles with outdated safety features and poor performance characteristics. Impacts would remain unchanged, and the benefits from replacing end-of-life delivery vehicles with modern vehicles would not be realized.

Cumulative Impacts (Section 5): Impacts from the Proposed Action NGDV Hypothetical Maximum and Alternative 1.1 and 1.2 scenarios would not have the potential for significant adverse cumulative impacts on nationwide environmental resources when considered in combination with other actions nationwide. Because existing delivery vehicles would be replaced with newer delivery vehicles, impacts on environmental resources generally are expected to be less than current impacts, including the No-Action Alternative. Therefore, the Proposed Action and Alternatives 1.1 and 1.2 scenarios would not result in a significant adverse cumulative impact on nationwide environmental resources.

Mitigation (Section 6): Implementation of the Proposed Action NGDV Hypothetical Maximum or Alternative 1.1 and 1.2 scenarios would serve to mitigate the existing impacts on environmental resources from the No-Action Alternative (continued operation of the high-maintenance and end-of-life delivery vehicles). No further mitigation measures would be necessary.

Preferred Alternative (Section 4-11.2): The Postal Service's preferred alternative is the Proposed Action - to purchase and deploy up to 90 percent ICE NGDV with at least 10 percent BEV NGDV. This Preferred Alternative provides a purpose-built RHD vehicle that would meet the Postal Service's Purpose and Need by providing the performance, safety, and ergonomic requirements for efficient Postal Service carrier deliveries to businesses and curb-line residential mailboxes over the entire nationwide system. This Preferred Alternative is also the most achievable given the Postal Service's financial condition, as the ICE NGDV is significantly less expensive than the BEV NGDV and does not have the same route length and other operational constraints as the BEVs. Finally, the 90 percent ICE NGDV Preferred Alternative would result in less fuel consumption and reduced direct and indirect greenhouse gas emissions as compared to the existing delivery vehicles being replaced.

Although the BEV NGDV alternative would result in about 200 percent fewer direct and indirect greenhouse gas emissions than the 90 percent ICE NGDV Preferred Alternative, committing to purchase more than 10 percent BEV NGDV as part of the Preferred Alternative is not achievable, absent additional funding, as the 100 percent BEV NGDV Preferred Alternative is $2.3 billion more expensive than the 90 percent ICE NGDV Preferred Alternative for an order of 75,000 vehicles (see Table 3-1.1). Furthermore, acquiring 100 percent BEV NGDV for the full 165,000 amount of the Proposed Action would require more than $1 billion dollars in additional investment (see Section 3-1.1).

Alternative 1.1, to purchase and deploy 100 percent RHD COTS ICE vehicles, would also not meet the Postal Service's Purpose and Need. While RHD COTS ICE vehicles would have some of the modern safety and customized operational features available in the NGDV, the interior layout doors, and window arrangements are not optimized or ergonomically designed for Postal Service operations nor for delivery to curb-line mailboxes.

COTS ICE vehicles would not provide the same operational or ergonomic benefits as the purpose-built NGDV. For example, they would not have body components designed for frequent and repetitive use, leading to expected higher maintenance and repair costs than the NGDV, and would have body components that need to be replaced more frequently than those purpose-built for the NGDV. In addition, this alternative would result in higher fuel consumption compared to that of the replaced vehicles, and higher than the ICE NGDV Preferred Alternative. In addition, the body and frame of COTS ICE have been found to last eight to 12 years on average, while the body and frame of the NGDVs are designed to last a minimum of 20 years.

Alternative 1.2, to purchase and deploy 100 percent LHD COTS BEVs, also would not meet the Postal Service's Purpose and Need, as, being LHD, the COTS BEVs would not support curb-line deliveries. In addition, the COTS BEVs would have route length and other operational constraints that would not allow deployment of BEVs on certain routes. Although the COTS BEV market and technology is rapidly evolving, LHD BEVs are still in development and currently available only in small quantities. RHD COTS BEVs are not currently available or otherwise marketed by commercial manufacturers for future development.

The No-Action Alternative, or status quo, would not meet the Postal Service's Purpose and Need. It would not provide any replacement vehicles for accident-damaged, high-maintenance, and end-of-life delivery vehicles. It would not meet the Purpose and Need to provide more energy-efficient vehicles, updated technology, increased cargo capacity and improved loading characteristics, improved ergonomics and carrier safety, and reduced maintenance costs. Further, it would result in higher fuel (gasoline) usage than both the Proposed Action Hypothetical Maximum scenarios and Alternative 1.2, and greater air emissions than the Proposed Action and Alternative 1.1 and 1.2 scenarios.

Compliance Statement: This EIS has been developed in compliance with NEPA; the regulations implementing the National Environmental Policy Act (NEPA [Title 40 Code of Federal Regulations [CFR] Parts 1500–1508]); and the Postal Service's regulations for NEPA compliance set forth at 39 CFR Part 775.

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1 INTRODUCTION

The United States Postal Service (USPS), an independent establishment of the executive branch of the United States Government, has prepared this Final Environmental Impact Statement (FEIS) pursuant to the National Environmental Policy Act (NEPA) to evaluate the potential environmental impacts of the Proposed Action - the purchase and deployment of up to 165,000 Next Generation Delivery Vehicles (NGDV) over a ten-year period. The EIS analyzes the potential environmental impacts associated with the Proposed Action and Alternatives, including the No-Action Alternative. The objectives of the Proposed Action are to replace high-maintenance and end-of-life delivery vehicles and ensure continuity of service.

1-1 National Environmental Policy Act Regulatory Background

The EIS has been developed in compliance with NEPA; the regulations implementing NEPA (Title 40 Code of Federal Regulations [CFR] Parts 1500–1508); and the Postal Service's regulations for NEPA compliance set forth at 39 CFR Part 775.

1-2 Postal Service Delivery Fleet Management Evaluation and Decision-Making Process

The Postal Service owns and operates a delivery fleet of approximately 212,000 active vehicles consisting of both purpose-built vehicles as well as commercial off-the-shelf (COTS) vehicles. Purpose-built vehicles were built specifically for the purpose of delivering mail. COTS vehicles are publicly available and purchased directly from the vehicle manufacturer with minor modifications.

The current delivery fleet is made up of four basic vehicle types:

- Purpose-built vehicle (Long-Life Vehicle [LLV] and Flexible Fuel Vehicle [FFV]) – which are Right Hand Drive (RHD) and optimally designed and built vehicles, specifically for the function of delivering mail on a curb-line route;
- Left Hand Drive (LHD) COTS vehicle (Ram ProMaster® and minivans) – suitable for when the route does not require mail to be delivered to a curb-line route;
- Mixed delivery and mail collection vehicle (2-ton) – similar in use and function to the LHD COTS ProMaster® but with approximately 150 percent more cargo capacity; and
- RHD COTS vehicle (Mercedes Metris) – includes cargo capacity between the two current LHD COTS vehicle models; vehicle can be used on routes to deliver to curb-line mailboxes; it does not provide the same operational or ergonomic benefits as the purpose-built vehicle.

The Postal Service determined the RHD purpose-built vehicles (LLV and FFV), which have far exceeded their planned life, need to be replaced to reduce their ever-escalating maintenance costs and to take advantage of current safety and technology advancements.

1-3 Overall Vehicle Acquisition Strategy

1-3.1 COTS & Purpose-Built Vehicles

The Postal Service is in a multi-year planning and acquisition process of replacing its aging fleet of mail delivery vehicles with a future class of delivery vehicles, and considered various options to meet the Postal Service's delivery vehicle needs. While the longer-term solution to its vehicle needs (the purpose-built NGDV) was in prototype development and testing, the Postal Service conducted a Programmatic Environmental Assessment (PEA) in 2017 (USPS 2017a), and Record of

Environmental Consideration (REC) in 2020 for the acquisition and deployment of new COTS delivery vehicles over a six-year period to stabilize its delivery fleet and in furtherance of its statutory Universal Service Obligation (39 United States Code [USC] 101). The new COTS vehicles are replacing accident-damaged, end-of-life and high-maintenance delivery vehicles and accommodate increases in delivery points and route growth.

1-3.2 NGDV Acquisition Strategy

The NGDV would incorporate new technologies to accommodate a changing and diverse mail mix, reduce maintenance costs, incorporate improved safety and ergonomic features, improve service, reduce emissions and the fleet's carbon footprint, and produce operational savings.

The Postal Service's NGDV acquisition strategy consists of three phases. Phase 1, completed in 2015, concentrated on identifying potential sources and evaluating supplier qualifications to establish a list of prequalified suppliers eligible to participate in Phase 2, the NGDV Prototype Program.

Phase 2 provided for the competitive development, delivery and testing of curb-line delivery prototype vehicles. Suppliers delivered prototype vehicles to the Postal Service starting in 2017, and the Postal Service completed all testing by March 2019. Following testing, the Postal Service developed a comprehensive Statement of Work (SOW) for the production of NGDV that included lessons learned from the prototype phase testing.

The NGDV Production Program, Phase 3, is for the purchase of 50,000 to 165,000 purpose-built vehicles to replace the LLVs and FFVs as part of the overall USPS mixed fleet strategy under a single contract. The Production Phase includes the requirement for domestic final assembly of all NGDV in the continental United States (U.S.) and incorporation of emerging vehicle technologies for alternative fuel capability.

Each phase of the NGDV acquisition strategy is further described in the following sub-sections.

1-3.2.1 NGDV Request for Information, Prototype Development, and Evaluation

On January 20, 2015, the Postal Service issued a Request for Information (RFI) and Prequalification/Sources Sought for its NGDV Acquisition Program via the Federal Business Opportunities website. The purpose of the RFI was to inform prospective suppliers of the Postal Service's preliminary/draft specification and plans for acquiring the fleet replacement NGDV. As part of the RFI issuance, the Postal Service included a prequalification component to narrow the field of prospective suppliers to those most qualified to meet the NGDV acquisition objectives. The Postal Service received 34 submissions in response to the RFI, and prequalified 15 suppliers. In October 2015, the Postal Service issued a Request for Proposal (RFP) to the 15 prequalified suppliers (determined from the RFI) to submit their prototype proposals. In September 2016, the Postal Service awarded contracts to six suppliers (one of the six suppliers subsequently withdrew from the prototype phase) for 44 prototype vehicles as part of the NGDV prototype phase, including internal combustion, mild hybrid, and plug-in hybrid electric vehicles.

In Fall 2017, the suppliers delivered their prototypes and the Postal Service began testing of the prototypes in various locations across the country. The testing included:

- Component testing of selected high-use components;
- Laboratory testing (for emissions and fuel economy in accordance with Environmental Protection Agency [EPA] and the Postal Service driving cycle);
- Field Testing (live operational testing at six Postal Service facilities across the nation with USPS carriers);

- 24,000-mile durability testing (durability obstacles and road course);
- Accelerated durability cycle (beyond that expected in a normal service environment); and
- Cold weather testing.

The Postal Service completed testing of the prototype vehicles in March 2019 and gained valuable information to consider regarding the composition of the future delivery vehicle fleet. Following testing, the Postal Service consulted with many stakeholders including members of Congress, federal agencies, the automotive industry, postal unions, and employees to develop a best-in-class RFP for the NGDV Production vehicles. The Postal Service issued the NGDV Production RFP on December 27, 2019 to the five NGDV prototype suppliers and notified other major vehicle suppliers in order to ensure wide notification within the vehicle industry and obtain any interest in potential participation or subcontract contribution.

1-3.2.2 Selection and Description of Production NGDV

The NGDV Production SOW provided to the five suppliers incorporated key features for NGDV design with carrier safety and ergonomics in mind, based on lessons learned from testing and continued stakeholder feedback. The features include:

- A walk-in cargo with large capacity designed to meet future package growth;
- RHD configuration to allow for curb-line delivery;
- Ergonomic design for ease of delivery; and
- Improved delivery efficiency.

Offerors provided NGDV Production proposals and pricing to the Postal Service in July 2020. The proposals included internal combustion engine (ICE) vehicles and battery electric vehicles (BEVs); the proposals did not include a hybrid production vehicle. The Postal Service then evaluated proposals to determine which offeror provided the Postal Service with the best value by weighing technical evaluation factors/risk and the Total Cost of Ownership (TCO). The evaluation team used the following criteria to evaluate the offerors' technical ability to develop, produce, deliver, and support production quality of the NGDV for the Postal Service:

- Design Quality and Technical Approach - Reliability, Maintainability, Fuel Economy and Emissions, and Safety and Ergonomics;
- Supplier Capability - Engineering Capability, Production and Delivery, Service and Parts, and Quality; and
- Past Performance - Prototype Performance and Supplier's Prior Performance.

The TCO calculation for each offeror incorporated purchase costs, maintenance costs, fuel costs and, if applicable, BEV charging infrastructure costs. Relevant cost data are presented in Appendix C.

On February 23, 2021 the Postal Service announced a contract award, contingent on the satisfactory completion of the NEPA process, to Oshkosh Defense, LLC (Oshkosh) for the future production of the NGDV. The Oshkosh production contract requires an NGDV production vehicle that can support two powertrain alternatives - a modern and efficient ICE or a more environmentally friendly BEV powertrain. At the time of awarding the contract, the Postal Service placed an order that funds the production design, assembly tooling, and factory start-up costs to support the production of both vehicle types in parallel, and either powertrain can be ordered under the contract in whatever ICE/BEV mix the Postal Service desires.

The NGDV production platform provides the latest safety systems to protect carriers, a flexible powertrain to demonstrate the Postal Service's commitment to sustainability, increased cargo capacity for more efficient delivery of packages, and is telematics compatible for predictive maintenance and operational benefits. The NGDV can also be retrofitted to keep pace with advances in BEV technologies.

The production NGDV platform and features are illustrated in Figure 1-3.1.

Figure 1-3.1
Production NGDV Platform and Features

1-3.2.3 Production Expectations

The production contract specifies assembly of the NGDV in the U.S. and, contingent on the satisfactory completion of this NEPA process, the Postal Service anticipates placing the first order of production quantity vehicles in 2022, with the resulting first NGDV ready for delivery in 2023.

The Postal Service has committed to a minimum quantity of 10 percent BEVs and is seeking additional funding to increase this quantity. The immediate imperative is to provide Postal Service carriers with a safe, reliable, efficient, and ergonomic delivery vehicle. A phased approach is being used to achieve this goal and roll out new vehicles as quickly and efficiently as possible.

1-3.3 Limits of Environmental Impact Assessment

This FEIS analysis is limited to the actions and alternatives described in Section 3. The timing, type, and number of new NGDV vehicles and their deployment are based on the best available current information for preparation of this FEIS. The ultimate number, configuration, and timing of the NGDV procured would depend upon the final needs of the Postal Service and the supplier's production and delivery capabilities. Deviation from the analysis herein that is deemed to be significant by the Postal Service would be analyzed through the preparation of a Supplemental EIS as necessary and appropriate.

1-3.4 Actions Not Included in the Proposed Action

The Postal Service is continuously assessing its fleet of delivery vehicles in order to identify and replace vehicles that have reached or exceeded their scheduled life expectancy, as well as those that are too costly to maintain due to major accident repair or significant mechanical repair. As a result of this ongoing fleet management process the Postal Service has made other minor purchases for replacement of fleet vehicles. These vehicle replacements are regular, on-going activities that have continued over many years and are represented in the baseline conditions.

The Proposed Action and alternatives specifically address the purchase and deployment of the NGDV, or new COTS vehicles, needed to replace the aging fleet of RHD delivery vehicles. During the period while the production and procurement of the new NGDV and COTS vehicles is implemented, the Postal Service would continue to procure COTS vehicles as both replacements of the aging vehicles and to accommodate delivery route growth. The Postal Service previously addressed COTS vehicle procurement actions under NEPA; these purchases are separate from the Proposed Action herein and are therefore not addressed in this FEIS. The FEIS focuses only on Postal Service operations-related actions associated with the Proposed Action and alternatives, as defined in Section 3.

The Postal Service maintains its current fleet of delivery vehicles through Vehicle Maintenance Facilities (VMFs) located nationwide throughout its network of facilities. Replacing the aging vehicles on a one-for-one basis would not result in the need for additional VMFs to maintain the NGDV. Therefore, this EIS does not address new VMF construction. Expansions of Postal Service facilities are not currently anticipated. Interior and exterior alterations of some Postal Service facilities could be required as a result of the Proposed Action, for replacement of VMF bay doors and center-post vehicle lifts, and installation of charging stations for BEVs where needed. The Postal Service could also construct a new vehicle maintenance training facility in the future. The Postal Service would conduct appropriate environmental review at the local level per Postal Service Handbook RE-6 (2015) as needed. Postal Service environmental checklists, screening analyses, and stand-alone, project-level Environmental Assessments would be employed on a facility-specific basis to assess the extent of impacts from any facility-related actions.

1-4 Public and Stakeholder Involvement

The Postal Service's Notice of Intent (NOI) to prepare an EIS for purchase of the NGDV was published in the Federal Register (FR) on March 4, 2021 (86 FR 12715). The public and agency scoping and comment period extended through April 5, 2021. In addition, the Postal Service mailed the NOI directly to various stakeholders, including the United States Environmental Protection Agency (EPA), the Council on Environmental Quality (CEQ) and Postal Service union representatives. During this scoping and comment period, the Postal Service timely received 1,753 letters from interested parties, including the EPA, the New York University School of Law Institute for Policy Integrity, and the Elders Climate Action group, with the majority being form letters.

The Postal Service announced the availability of the Draft EIS (DEIS) in the FR on August 26, 2021 (86 FR 47662). In the FR Notice of Availability (NOA) notice, the Postal Service solicited comments during a 45-day public comment period. The Postal Service made the DEIS available by download from a publicly available webpage (*http://uspsngdveis.com/*), and filed the DEIS with the EPA. The EPA published a NOA of the DEIS and made a copy of the DEIS available via the EPA's EIS Database on September 3, 2021; this notice extended the EIS comment due/review period to October 18, 2021. The EPA requested an extension for submittal of their comments on the DEIS, and the Postal Service agreed to an informal extension until October 25, 2021 for EPA's comments.

In total, 37,511 public and agency comments were timely received, with the vast majority being form letters. Comments were received from EPA; Bay Area Air Quality Management District; the International Union, United Automobile, Aerospace & Agricultural Implement Workers of America ("UAW") through Eubanks & Associates, PLLC; New York University, Institute for Policy Integrity; EarthJustice; the Sierra Club, Natural Resources Defense Council; Environmental Defense Fund; Center for Biological Diversity; Union of Concerned Scientists; and Elders Climate Action, among others. All comments timely received on the DEIS were carefully considered by the Postal Service and responded to, and additional information incorporated into this FEIS as appropriate.

Copies of the NOA notices for the DEIS, List of Stakeholders (Table B1-1), and a NOA Stakeholder letter example are included in Appendix B (Appendix "B1 - Notice of Availability of DEIS and Comments/Responses"). Appendix B1 also presents a summary of the public and agency comments timely received on the DEIS; and in Table B1-2 (Appendix B1), presents the Postal Service's responses to the timely received comments, including a summary of edits made to the DEIS in response to the comments received.

A NOA of the FEIS is being published in the FR and sent to identified Stakeholders, and a copy of the FEIS is being made available on the publicly available webpage *http://uspsngdveis.com/*. The NOA announces a 30-day waiting period beginning on the date of EPA's publication of the FEIS in the Federal Register. Following the waiting period, the Postal Service will make a final decision regarding the Proposed Action and publish a Record of Decision. Relevant documents are presented in Appendix B (Appendix "B2 - NOA of FEIS").

2 PURPOSE OF THE PROPOSED ACTION

The Postal Service has “as its basic function the obligation to provide postal services to bind the Nation together through the personal, educational, literary and business correspondence of the people. It shall provide prompt, reliable, and efficient services to patrons in all areas and render postal services to all communities.” (Universal Service Obligation [39 USC 101]).

The Postal Service has been a self-supporting Independent Establishment of the Executive Branch of the United States Government since 1971 when Congress assigned the Postal Service the “general duty” to “maintain an efficient system of collection, sorting, and delivery of the mail nationwide” (39 USC 403(b)). In order to carry out this obligation, the Postal Service has the “specific powers” to:

- “provide for the collection, handling, transportation, delivery, forwarding, returning, and holding of mail, and for the disposition of undeliverable mail” (39 USC 404(a)(1)); and
- “determine the need for post offices, postal and training facilities and equipment, and ... provide such offices, facilities, and equipment as it determines are needed” (39 USC 404(a)(3)).

The purpose of the Proposed Action is to replace the end-of-life and high-maintenance LLVs and FFVs with vehicles with more energy-efficient powertrains, updated technology, reduced emissions, increased cargo capacity and improved loading characteristics, improved ergonomics and carrier safety, and reduced maintenance costs. Once the Proposed Action is complete, the future delivery fleet is anticipated to include up to 165,000 purpose-built NGDV with a mix of ICE and BEV powertrains. Ultimate quantities are dependent upon the Postal Service’s operational needs, including individual carrier route needs, and financial position.

2-1 Need for the Action

The Postal Service operates one of the world’s largest civilian government fleets consisting of approximately 212,000 active delivery vehicles of various classes of purpose-built and COTS vehicles. The majority of these vehicles are on the road delivering mail at least six days per week in every community. Purpose-built vehicles are RHD and built specifically for the purpose of delivering mail, while COTS vehicles are commercially available and purchased directly from the vehicle manufacturer with minor modifications to accommodate mail deliveries.

Within the current Postal Service delivery vehicle fleet, approximately 155,000 are purpose-built RHD, light-duty delivery vehicles with a payload capacity of approximately 1,000 pounds and cargo stowage capacity of approximately 108 to 121 cubic feet. They use outdated powertrain and emission vehicle technologies, and do not include some safety-related features that are standard today. They consist of approximately 135,000 purpose-built LLVs, manufactured by Grumman Allied from 1987 to 1994, and 20,000 purpose-built FFVs manufactured by Ford/Utilimaster in 2000 and 2001. The FFVs are similar to the LLVs and have the ability to operate on gasoline or an ethanol fuel blend (E85). Examples of an RHD LLV and RHD FFV are shown in Figure 2-1.1 below.

Figure 2-1.1
Example of RHD LLV (on left) and RHD FFV (on right) (OIG 2020)

The current Postal Service purpose-built LLVs and FFVs are near or at the end of their useful life. The expected service life of LLVs is 24 years and these vehicles currently average 30 years in age.

The LLV consists of a modified General Motors chassis designed for the Chevrolet S10 with a custom aluminum body. While the all-aluminum body has resisted corrosion exceptionally well over the years, the main powertrain components have been replaced multiple times and now must be acquired through aftermarket manufacturing. This has significantly increased repair costs, while reducing vehicle performance and reliability. In fact, the Postal Service was required to contract with an alternative supplier to reverse engineer and manufacture the chassis frame to ensure that the LLV could still be kept in service. This has caused the average annual maintenance cost of the LLV to exceed $5,000 annually and, for 7 percent of the LLVs, to exceed $10,000 annually. In addition, they are less fuel efficient and do not support future delivery needs given projected changes in market demand, mail mix and an increasing number of delivery points.

The LLVs do not have certain modern safety features that are standard in vehicles today, such as airbags and anti-lock brakes. They also do not have air conditioning, back-up cameras, intermittent windshield wipers, blind-spot warning systems, daytime running lights, or seatbelt reminders.

The Postal Service replaces vehicles when it determines that replacement is less expensive than continued maintenance of the existing vehicles. This determination is based on a formula that accounts for maintenance cost, acquisition cost, and efficiency benefits. The goal is to maintain a mixed fleet of delivery vehicles that incorporates new technology to accommodate a diverse mail mix, enhance safety, improve service, reduce emissions, and produce operational savings.

The RHD LLVs and FFVs are designed to deliver to curb-line residential mailboxes from the driver's RHD seat and are used to deliver mail on city and rural routes across the country. When these vehicles were first deployed, the mail consisted primarily of letters and the cargo space was an upgrade from the prior Postal Service Jeeps. A fundamental shift has occurred over the last decade that has resulted in a large decrease in letter and flats volume and large increases in parcel volume and the total number of delivery points. Postal Service delivery vehicles now need an increased cargo capacity and better access to the parcels in the cargo area and need RHD configuration for optimal ergonomics and efficiencies for deliveries to curb-line residential mailboxes. Specific design requirements of the NGDV include RHD configuration, the ability to access the cargo area of the vehicle before exiting the vehicle, increased ceiling height, and increased cargo capacity.

In summary, current outdated delivery vehicles, many as much as 34 years in operation, are inefficient, increasingly unreliable, costly to maintain and lack certain modern safety and operational features needed for mail carriers. The Postal Service plans to deploy a new generation of RHD vehicles that incorporates the latest advancements in automotive technologies and better serves operations, employees, and customers. Given the mail mix changes that have already occurred and additional package growth expected as e-commerce sales continue to rise, new delivery vehicles will need a larger cargo area that also allows easier retrieval of packages than existing, outdated RHD vehicles. Replacement of these outdated delivery vehicles will enable the Postal Service to meet its Congressional mandate to maintain efficient nationwide delivery of the mail and to provide prompt, reliable, and efficient services to patrons.

3 DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

3-1 Proposed Action – Purchase and Deployment of up to 165,000 NGDV

The Postal Service's Proposed Action is the purchase over a ten-year period of 50,000 to 165,000 purpose-built, RHD NGDV to replace existing delivery vehicles nationwide that are approaching the end of their service life. While the Postal Service has not yet determined the precise mix of the powertrains in the new vehicles to be purchased, the Postal Service further proposes that the new vehicles consist of a mix of ICE and BEV powertrains, with at least 10 percent BEVs.

The planned NGDV acquisition ten-year period would begin in 2023 and would replace high-maintenance and end-of-life delivery vehicles, including LLVs and FFVs, over a ten-year period. The actual timeline and quantities of NGDV purchased and delivery vehicle types replaced would be contingent upon the Postal Service’s operational needs, including individual carrier route needs, and financial position.

The production NGDV platform is shown in Figure 1-3.1. The NGDV would have RHD configuration to allow for curb-line deliveries, ergonomic design for easy entry and improved delivery efficiency, a walk-in with larger cargo capacity than current delivery vehicles, ability to access the cargo area without exiting the vehicle, increased ceiling height, and the capability for telematics data and information to enhance vehicle monitoring and predictive maintenance. Safety features would include backup and 360-degree cameras, blind spot warning, anti-lock braking system, automatic electronic parking brake, front/rear braking, and air bags. The NGDV would also include air-conditioning, which is not available in LLVs or FFVs.

The replaced Postal Service delivery vehicles would be scrapped or sold for parts, similar to how replaced vehicles are currently disposed.

3-1.1 NGDV Powertrains Available

The flexible NGDV design platform would allow the Postal Service to replace its high-maintenance cost and aging fleet, match technology to operational needs, control costs and avoid costly delays and setbacks. Current plans are for the new vehicle purchases to consist of a mix of ICE and BEV powertrains to support the environmentally sustainable technology goal for the Postal Service’s fleet, with at least 10 percent BEVs. The Postal Service would accelerate its electric vehicle strategy by increasing the percentage of BEV powertrains if its financial condition changes or it receives additional funding for this purpose.

The 20-year estimated total costs for NGDV powertrains are presented in Table 3-1.1. The estimated cumulative total costs are based on costs for vehicle purchase, freight, training, manuals, technical data package, pre-delivery production costs, charging infrastructure, 20 years’ estimated fuel and utility costs, and maintenance. The TCO uses an NGDV order quantity of 75,000, not the Proposed Action’s potential maximum of 165,000, as the Postal Service determined that 75,000 was a more realistic initial vehicle quantity. As noted in response to Comment 13 in Appendix B, the Postal Service projects that the average infrastructure costs per facility for BEV will continue to grow due to increases in BEV infrastructure costs as the Postal Service installs charging infrastructure at more logistically challenging facilities (e.g., extremely small or large sites, sites in locations where the power grid requires upgrades) to enable a full BEV NGDV fleet. This would require over $1 billion more in additional investment for the potential maximum scenario of 165,000.

Relevant cost data and methodology are presented in Appendix C.

Table 3-1.1
20-Year Cumulative Estimated Total Costs for NGDV Powertrains

NGDV Powertrain	ICE NGDV	BEV NGDV
Total Estimated Cost [1]	$ 9.3 Billion	$ 11.6 Billion

[1] Present value [rounded] based on purchase of 75,000 vehicles)

The production contract is flexible and allows the Postal Service to continue to evaluate opportunities for electrification for any order placed throughout its ten-year period. Powertrain and BEV technology will undoubtedly evolve and improve over the available 20-year life of the NGDV, so the Postal Service selected a flexible design platform that can accommodate advancements in powertrain technology, including emerging BEV and ICE powertrain alternatives. Vehicles purchased with ICE powertrains will be capable of being retrofitted to alternative BEV powertrain technology if it is advantageous for the Postal Service to do so.

Current specifications for the ICE and BEV NGDV are provided Tables 3-1.2 and 3-1.3 below.

Table 3-1.2
ICE NGDV Specifications

Design Specification	Estimated Value
Curb Weight (pounds [lbs])	5,560
Gross Vehicle Weight Rating (GVWR) (lbs)	8,501
Payload (lbs)	2,941
Engine Size	2.0 liter, 4 cylinder (cyl)
Mileage	14.7 miles per gallon (mpg) (without air conditioning) 8.6 mpg (with air conditioning)

Table 3-1.3
BEV NGDV Specifications

Design Specification	Estimated Value
Curb Weight (lbs)	6,670
GVWR (lbs)	8,877
Payload (lbs)	2,207
Battery Type / Size	Lithium-ion battery with Nickel Manganese Cobalt / 94 kilowatt hour (kWh)
Range on Single Charge (miles)	70 (with and without air conditioning)

The Postal Service's BEV NGDV requirements also include the ability to charge to a minimum driving range of 70 miles within eight hours. The BEV NGDV would be expected to discharge around 20 percent of battery capacity under average conditions because of the low average delivery route mileage. This would limit battery degradation and may not require charging every day. The BEV NGDV could fully recharge during non-business hours. For more information on battery usage and the minimum driving range of 70 miles, see Response to Comments 10 and 11 and Appendix B.

Operational limitations and certain Postal Service delivery environments would currently limit the use of electric-only vehicles. These limitations include environmental conditions, facility constraints, a lack of available infrastructure, and approximately 12,500 delivery routes where route length make electric vehicles unfeasible or impractical. For example, BEV NGDV on the approximately 12,500 routes that exceed 70 miles might not have sufficient power to complete the route, especially as the battery ages and has less capacity. The current number of delivery routes that are not suitable for BEV NGDV based on route length equate to approximately 5 percent of current routes. Additionally, other routes are currently unsuitable for BEV NGDV due to environmental conditions and facility constraints.

Limitations exist with extreme cold climates where the use of heaters could reduce the available mileage by up to 50 percent. Facility constraints include smaller and/or leased properties, such as strip mall locations, which may have limited space for charging infrastructure, be located in areas that utilities cannot readily provide adequate power from the grid, and/or require landlord approval for construction activities (e.g., utility drops, conduit runs, transformer installation, and updates to distribution panels/circuit breakers). While these routes are not currently suitable for a BEV NGDV, the Postal Service acknowledges that battery technology will improve in the future and these routes may become suitable for a BEV in future years.

The Postal Service would evaluate ICE and BEV NGDV deployment based on existing nationwide delivery route characteristics and other established factors to prioritize potential placement of the two powertrains. Route characteristics for placement of BEV NGDV would prioritize longer routes that maximize fuel and maintenance savings, routes located in mild temperature ranges, routes with frequent and numerous curb-line stops, and/or states with proactive BEV policies and regulations. While the Postal Service anticipates its BEV driver training will employ techniques such as "one-pedal driving," the low vehicle speed and precision stops required for delivery operations would minimize the opportunity to capture energy through regenerative braking.

3-1.2 NGDV Maintenance and Support

The NGDV would replace existing high-maintenance and end-of-life delivery vehicles on a one-to-one basis. No new Postal Service VMFs would be required, as the Postal Service's more than 300 existing VMFs, as well as commercial garages for unscheduled repairs throughout the country, would continue to conduct maintenance on all delivery vehicles, including the NGDV. While the deployment of new NGDV would result in less vehicle maintenance, it would result in minimal to no changes to the total Postal Service vehicle maintenance workforce due to shifting of maintenance from third-party commercial garages to the Postal Service's existing VMFs.

Depending on the overall final NGDV dimensions and weight, existing VMF bay doors could need replacement or modification to accommodate the NGDV's higher and wider dimensions as compared with existing Postal Service delivery vehicles. Most (approximately 90 percent) existing vehicle lifts in the Postal Service's VMFs would accommodate the ICE and BEV NGDV and not require modification or replacement. However, center-post lifts (approximately 10 percent) at VMFs servicing BEV NGDV would require modification or replacement because the center posts would interfere with underside access of the vehicles for access/replacement of the battery.

The Postal Service would assess VMFs, processing, delivery and retail facilities where BEV NGDV would be deployed to determine whether BEV charging or infrastructure capabilities can be accommodated. Interior and exterior alterations could be necessary to install charging stations. Interior alterations for BEV infrastructure would vary based on site size and the number of charging stations needed. Power upgrades (e.g., rewiring, the addition of an electrical distribution box with circuit breakers or multiple electrical power entrances and multiple main power distribution panels) would likely be required at these facilities. Construction of a special outbuilding could be necessary based on power requirements, as could installation of a substation with a large transformer. Power supply from the interior of a facility could be connected to an exterior wall-mounted charging station, placed in trenches for exterior ground-level charging stations, or attached to overhead structures (e.g., canopy, gantry, or telephone pole) for suspended charging stations in delivery vehicle parking lots.

Construction could include trenching and backfilling, pavement removal and replacement, relocating utilities and drains, etc. Construction equipment requirements could range from trenching equipment, concrete drills, and typical electrical installation equipment (e.g., meters, and electric and conduit-related tools) to excavators, concrete saws, heavy lifting equipment, parking lot grading and paving equipment, and landscaping- and drainage-related installation equipment, depending on Postal

Service facility size and the quantity of charging stations needed. Exterior alterations are expected to be within existing facility footprints, such as delivery vehicle parking areas, which are previously disturbed areas. The timing, type, and duration of construction at each facility would be based on the number and types of NGDV to be maintained or deployed at a particular facility. Specific facility locations where new vehicles will be deployed and where alterations may be needed are not known at this time. Additionally, the extent and types of alterations necessary for each Postal Service facility location are not known at this time.

The Postal Service could also construct a new vehicle maintenance training facility in the future. As discussed in Sections 1-3.1 and 4-2, site-specific facility alterations and this potential new training facility are not included in the detailed evaluation of the action alternatives that specifically address the purchase and deployment of new Postal Service vehicles. Appropriate NEPA reviews at the local level would be conducted in the future, as needed.

The use of smart charging stations would permit options for charging to include management of individual charging station power levels, prioritization of vehicles to be charged, accommodation of demand charge periods, prioritization of charging hours, specification of hours desired for charging (late nights through early mornings), and the ability to override normal charging protocols to meet special needs. At Postal Service facilities where BEV NGDV are deployed, charging would take place and occur primarily overnight from approximately 6:00 p.m. to 9:00 a.m.

3-1.3 NGDV Powertrain Mix

The Postal Service's Proposed Action, the purchase and deployment of up to 165,000 NGDV, would include a mix of vehicles with different powertrain systems (ICE and BEV), with at least 10 percent BEVs. The Postal Service has not yet determined the precise mix of the ICE and BEV powertrains in NGDV to be purchased. For the purposes of determining the range of environmental impacts associated with the Proposed Action, this FEIS will present and analyze the two ends of the NGDV powertrain mix range. Therefore, for this FEIS the Postal Service has included two Proposed Action hypothetical maximum scenarios, as described below, to consider the full potential range of environmental impacts. The environmental impacts for ICE/BEV mixes within the Proposed Action’s range would fall within the range of the two hypothetical maximums.

3-1.3.1 Purchase and Deployment of 90% ICE NGDV and 10% BEV NGDV

The purchase and deployment of 90 percent ICE NGDV and 10 percent BEV NGDV in the total NGDV production orders over the ten-year period is one of the two hypothetical maximum scenarios evaluated in this EIS. The Postal Service is firmly committed to a future that includes electric vehicles in its delivery vehicle fleet and has committed to acquisition of at least 10 percent BEV NGDV.

3-1.3.2 Purchase and Deployment of 100% BEV NGDV

The purchase and deployment of 100 percent BEV NGDV in the total NGDV production orders over the ten-year period is the other hypothetical maximum scenario evaluated in this FEIS, although, as discussed in Section 3-1.1, at this time BEVs are not feasible or practical at 100 percent of Postal Service routes.

3-2 Alternative 1 – Purchase and Deployment of up to 165,000 COTS Vehicles

Alternative 1 would involve the purchase and deployment of up to 165,000 COTS vehicles over the same ten-year period. COTS vehicles are commercially available and purchased directly from the vehicle manufacturer with minor modifications to meet Postal Service delivery requirements. In order to meet the Postal Service purpose and need, the COTS delivery vehicles would need to be RHD vehicles. The COTS vehicles would replace existing high-maintenance, and end-of-life RHD delivery vehicles on a one-to-one basis, the same as the NGDV Proposed Action.

The Postal Service currently has both LHD and RHD COTS ICE vehicles in its fleet, with RHD vehicles offering several operational and ergonomic benefits as compared with LHD vehicles. LHD vehicles do not meet the Postal Service's purpose and need because they are not configured for optimal ergonomics and efficiencies for deliveries to curb-line residential mailboxes. LHD COTS ICE or BEVs would not be as ergonomic or efficient for Postal Service delivery operations (particularly to curb-line residential mailboxes) when compared to RHD vehicles.

RHD COTS vehicles, which can be used on routes to deliver to curb-line mailboxes, do not provide the same operational or ergonomic benefits as the purpose-built NGDV. Existing RHD COTS vehicles do not provide a walk-in cargo compartment, hold fewer mail trays at the front of the vehicle, have window openings that limit ergonomic movements, and restrict internal access to cargo areas (i.e., they are accessible only from outside the vehicle). Also, existing RHD COTS vehicles do not have body components designed for frequent and repetitive use resulting in significantly higher maintenance and repair costs, and will need to be replaced more frequently than the NGDV (maximum expected life of a COTS body and frame is 12 years compared to 20 for the NGDV). Additionally, RHD COTS vehicle models would have some, but not all, of the enhanced safety and customized operational features available in the NGDV that are optimal for Postal Service delivery operations.

Examples of current Postal Service COTS vehicles are shown in Figure 3-1.1.

Figure 3-1.1
Current COTS ICE Vehicles (Left – LHD Ram ProMaster®, Right – RHD Mercedes Metris)

3-2.1 COTS Vehicle Maintenance and Support

The new COTS vehicles would replace existing high-maintenance and end-of-life delivery vehicles on a one-to-one basis. No new Postal Service VMFs would be required. The more than 300 existing VMFs, as well as commercial garages for unscheduled repairs throughout the country, would continue to conduct maintenance on all delivery vehicles, including the new COTS vehicles. While the deployment of new COTS vehicles would result in less vehicle maintenance than the vehicles subject to replacement, it would result in minimal to no changes to the total Postal Service vehicle maintenance workforce due to shifting of maintenance from third-party commercial garages to the Postal Service's existing VMFs.

COTS vehicles would be maintained and serviced at existing Postal Service VMFs and unscheduled repairs would be conducted at commercial garages nationwide, the same as with NGDV. The COTS BEVs would require similar alterations to accommodate new charging infrastructure within affected existing VMFs and delivery units as for the BEV NGDV. Charging station installation and use is expected to be similar as for the BEV NGDV. Additionally, alterations (e.g., bay doors, lifts) at existing VMFs could be required, depending on the new COTS vehicle's overall dimensions and powertrains. As discussed in Sections 1-3.1 and 4-2, site-specific facility alterations are not included in the detailed evaluation of the action alternatives that specifically address the purchase and deployment of new Postal Service vehicles. Appropriate NEPA reviews at the local level would be conducted in the future, as needed.

3-2.2 COTS Vehicle Powertrain Mix

The Postal Service has not yet determined the precise mix of the ICE and BEV NGDV powertrains for the Proposed Action. Likewise, the precise mix of COTS ICE and BEV powertrains for Alternative 1 would depend on the Postal Service’s operational needs and financial position, along with the COTS vehicle capabilities.

For the purposes of determining the range of environmental impacts associated with Alternative 1, this FEIS will present and analyze two ends of the COTS powertrain mix range. Therefore, the Postal Service has included two Alternative hypothetical maximum scenarios, as described below, to consider the full potential range of environmental impacts associated with this Alternative.

3-2.2.1 Alternative 1.1 - Purchase and Deployment of 100% RHD COTS ICE Vehicles

The purchase and deployment of all RHD COTS ICE vehicles in the total production orders over the ten-year period is Alternative 1.1. Specifications and performance data for an in-use Postal Service COTS ICE vehicle model (the RHD Metris) are shown in Table 3-2.1.

Table 3-2.1
RHD COTS ICE Vehicle Specifications

Specifications	Metris
Curb Weight (lbs)	4,122
GVWR (lbs)	6,614
Payload (lbs)	2,425
Engine Size	2.0 liter, 4 cyl
Mileage (mpg)	6.3[1]

[1] Actual Postal Service average mileage for RHD Metris vehicles.

For the analyses, this vehicle type with the above specifications and performance data will be evaluated, since a LHD COTS ICE vehicle would not meet the purpose and need.

3-2.2.2 Alternative 1.2 - Purchase and Deployment of 100% LHD COTS BEVs

The purchase and deployment of 100 percent LHD COTS BEVs in the total production orders over the ten-year period is Alternative 1.2, although at this time BEVs are not feasible or practical at 100 percent of Postal Service routes and there is no commercially available RHD COTS BEV.

The COTS BEV market and technology is rapidly evolving. These vehicles are still in development and currently available only in small quantities. There is no RHD COTS BEV currently available or otherwise marketed by commercial manufacturers for future development. As explained in detail in Section 2-2, a LHD delivery vehicle does not meet the Postal Service’s purpose and need for curb-line delivery. However, in order to consider the full range of impacts and in response to public comments requesting such an analysis, the FEIS will evaluate a 100 percent COTS BEV hypothetical maximum scenario using a LHD COTS BEV.

The COTS BEV evaluated in this FEIS is a LHD delivery vehicle advertised as of the time of the DEIS preparation and projected to be commercially available by 2023 in a comparable size configuration to the NGDV. This does not mean necessarily that a COTS BEV, whether LHD or RHD, is operationally feasible or practical for the Postal Service. The LHD COTS BEV model selected for evaluation for environmental impacts, based on market research and manufacturer-advertised specifications as of the time of the DEIS preparation is shown in Figure 3-2.1.

Figure 3-2.1
LHD COTS BEV

Source: Ford Media Center 2021.

Current manufacturer-advertised specifications for the LHD COTS BEV used in this analysis are shown in Table 3-2.2.

Table 3-2.2
LHD COTS BEV Specifications

Specifications	Ford E Transit (Extended High Model)
Curb Weight (lbs)	6,188
GVWR (lbs)	9,428
Payload (lbs)	3,240 (maximum)
Battery Type / Size	400 Volt Lithium-ion / 67 kWh
Range on Single Charge (miles)	108 (with and without air conditioning)

The Postal Service's COTS BEV charging and range requirements will be assumed to be the same as the BEV NGDV requirements (i.e., the ability to charge to a minimum driving range of 70 miles within eight hours on a single charge with all vehicle accessories operating).

3-3 No-Action Alternative

The Postal Service’s delivery fleet would be maintained at the status quo under the No-Action Alternative; existing vehicles such as the examples shown in Figure 3-1.1 would continue to be used. The fleet would continue to operate at its current level, with no replacement vehicles for accident-damaged, high-maintenance, and end-of-life vehicles.

The Postal Service would incur increasingly higher maintenance costs by continuing to operate LLVs and FFVs and other delivery vehicles past their life expectancy and repairing, maintaining, and operating the existing vehicles. Vehicle breakdowns and increased maintenance could result in service failures that could erode the Postal Service’s customer base. Larger cargo capacity would not be available to meet expected future package growth. Improved delivery efficiency from better ergonomic design and improved information for predictive maintenance through new telematics data would not be possible. The latest safety systems, such as cameras, blind side warning, and automatic parking brakes would not be available to better protect mail delivery personnel and the public.

Postal Service facilities would require no alterations associated with continued use of the existing vehicles.

3-4 Alternatives Considered but not Analyzed in Detail

3-4.1 Leasing and Deployment of up to 165,000 Vehicles

The existing RHD LLVs and FFVs purchased from commercial suppliers are purpose-built vehicles to meet Postal Service requirements and are currently not available for lease. It is not an option to replace the RHD LLVs and FFVs with a leased RHD vehicle of the same type that would meet Postal Service requirements. A new General Services Administration (GSA) solicitation to build and deliver a new purpose-built RHD vehicle for lease would not be cost- or time-effective and was dismissed. Likewise, leasing COTS delivery vehicles would not be cost-effective and was dismissed. In past COTS delivery procurement actions, the Postal Service determined that leasing costs associated with COTS delivery vehicles exceed a COTS vehicle acquisition scenario by more than three times, with no return on investment (see Appendix C). Lastly, leasing vehicles, whether purpose-built or COTS, removes any flexibility the Postal Service might have should it elect to maintain the vehicles over a longer period of time.

3-5 Resource Areas Affected

The Proposed Action and Alternatives 1.1 and 1.2 would affect the following resources and topics related to the replacement of high maintenance and end-of-life delivery vehicles with new delivery vehicles: socioeconomics, transportation, noise, air quality, community services, utilities and infrastructure, energy, solid and hazardous materials and waste. These resource areas and related topics are addressed for the action alternatives and the No-Action Alternative in the detailed analysis herein.

4 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

4-1 Introduction

This section describes the affected (existing) environment for each resource and then describes the potential environmental consequences due to implementation of the Proposed Action or Alternatives 1.1 or 1.2, and the No-Action Alternative. It is important to note that the Proposed Action and Alternatives are national in scope, with vehicles to be distributed across the Postal Service's national delivery network.

As discussed in Section 3, the Proposed Action would be the purchase and deployment over a ten-year period of up to 165,000 purpose-built, RHD NGDV, at least ten percent of which would be BEVs. Two hypothetical maximum scenarios for the Proposed Action are evaluated herein: (1) the purchase and deployment of up to 90 percent ICE (ICE NGDV Hypothetical Maximum) with at least (10 percent) BEV NGDV, and (2) the purchase and deployment of 100 percent BEV NGDV (BEV NGDV Hypothetical Maximum). Alternative 1.1 is the purchase and deployment of 100 percent COTS ICE vehicles, and Alternative 1.2 is the purchase and deployment of 100 percent COTS BEVs. The hypothetical distribution by year for the purchase, deployment, and replacement of delivery vehicles (for both the Proposed Action and Alternatives 1.1 and 1.2) is presented in Appendix D. The No-Action Alternative represents the baseline condition or *status quo* in which high-maintenance and end-of-life delivery vehicles would not be replaced with new delivery vehicles.

Discussion of potential impacts focuses on direct and indirect impacts and whether the impacts are significant. Direct Impacts are caused by the action and occur at the same time and place. Indirect Impacts are caused by the action and are later in time or removed in distance, but are still reasonably foreseeable. Potential impacts are addressed for each resource in terms of the significance of potential impacts in relation to baseline conditions or the No-Action Alternative.

The Proposed Action, being national in scale and scope, has the potential to impact resources throughout the U.S. The specific actions that the Postal Service would take as part of the initiative are located in geographically diverse areas (urban, suburban, and rural). Because of the wide variety of natural and manmade environments and the complexity of resources potentially affected, this section characterizes resource impacts in general terms.

This FEIS examined potential impacts in terms of the significance of the impact. To assess the significance of an impact, the Postal Service first identified the relevant context and whether the impact would be negligible, minor, moderate, or major. The Postal Service then determined whether the impact was significant, based on the requirements in 40 CFR 1501.3(b). Four types and levels of impact were considered during the analysis:

- Beneficial Impact – The impact would be beneficial in nature.
- No or Negligible Impact – No impact is anticipated, or the impact is barely perceptible or measurable.
- Moderately Adverse Impact – An impact is anticipated, but the impact does not meet the context/intensity significance criteria for the specified resource.
- Significant Impact – An impact is anticipated that meets the context/intensity significance criteria for the specified resource.

The Postal Service also used this approach to evaluate cumulative impacts, which focus on the combined, incremental effects of actions within a particular area and within a particular time frame.

4-1.1 Existing Vehicle Fleet

The Postal Service currently has a combined delivery fleet of approximately 212,000 active delivery vehicles comprised of approximately 135,000 RHD LLVs, 20,000 RHD FFVs, 50,000 COTS delivery vehicles and 7,000 COTS mixed delivery vehicles. The majority of the current delivery fleet has been in operation for over 30 years; the vehicles are inefficient, increasingly unreliable, costly to maintain and do not include certain modern safety features nor operational features needed by mail carriers. The Postal Service has been replacing existing delivery vehicles as they reach their end-of-life or begin to incur excessive maintenance costs with COTS vehicles, pending the development of a longer-term solution to its vehicle needs (i.e., the NGDV).

4-1.1.1 Delivery Vehicle Performance

RHD vehicles offer several operational and ergonomic benefits as compared with LHD vehicles. LHD vehicles are not configured for optimal safety, ergonomics and efficiencies for deliveries to curb-line residential mailboxes when compared to purpose-built RHD vehicles. The existing RHD COTS vehicles hold fewer mail trays at the front of the vehicle, have window openings that limit ergonomic movements, have less cargo space, and restrict internal access to cargo areas (i.e., they are accessible only from outside the vehicle).

The Postal Service’s end-of-life purpose-built RHD delivery vehicles are inefficient, increasingly unreliable, costly to maintain, and not energy-efficient as compared to modern vehicles. Also, the Postal Service's COTS delivery vehicles do not have body components designed for frequent and repetitive use compared to the purpose-built RHD delivery vehicles, increasing vehicle downtime due to more frequent maintenance and repairs. Furthermore, the RHD COTS vehicles, which can be used on routes to deliver to curb-line mailboxes, do not provide the same operational or ergonomic benefits for the carrier as a purpose-built vehicle.

4-1.1.2 Safety and Carrier Conditions

The Postal Service’s existing purpose-built delivery vehicles do not have certain modern features such as airbags, anti-lock brakes, air conditioning, back-up cameras, intermittent windshield wipers, blind-spot warning systems, daytime running lights, or seatbelt reminders found on more modern vehicles. The Postal Service’s existing delivery vehicles also do not provide optimal conditions for carrier efficiency and comfort. Existing LLVs have a windowless cargo area, fewer mail trays at the front of the vehicle, and window openings that limit ergonomic movements, and restrict internal access to cargo areas (i.e., they are accessible only from outside the vehicle). They have circulating fans but no air conditioning, limiting carrier comfort during warmer outdoor temperatures.

RHD vehicles are safer for carriers than LHD vehicles, as LHD-configured vehicles require exiting the vehicle into the roadway when delivering to curb-line mailboxes on the right side of the vehicle.

4-1.1.3 Vehicle Life Expectancy

The majority of RHD purpose-built vehicles (LLV and FFV) have far exceeded their planned life expectancy of 24 years. The NGDV would be designed to provide an effective minimum service life of 20 years. A COTS ICE delivery vehicle such as a well-maintained Ford Transit is expected to last from ten to 15 years before requiring extensive upgrades (Motor and Wheels 2021); however, this is expected to be far less for vehicles placed in delivery service due to frequent and repetitive delivery start/stops. For high mileage postal delivery routes, COTS vehicles have an expected life of six years, while lower mileage postal delivery routes have an eight- to ten-year expected life. COTS BEVs have a typical manufacturer’s warranty of three years or 36,000 miles. Expected battery lifetime is up to ten to twelve years under normal vehicle operations, without frequent, repetitive starts and stops.

4-1.1.4 Maintenance

The Postal Service conducts ongoing regular and as-needed maintenance of the delivery fleet to ensure the fleet is available for operational needs. The age and maintenance costs of individual vehicles are tracked to support the decision-making process for a continuous vehicle replacement program. Vehicle replacement begins when the vehicle approaches end-of-life (which for the LLV fleet is 20 years or more).

LLVs have an estimated life of 24 years, and some are more than 30 years old. The LLV all-aluminum body has resisted corrosion exceptionally well over the years, although the main powertrain components have been replaced multiple times and now must be acquired through aftermarket manufacturing. This has significantly increased repair costs, while reducing vehicle performance and reliability. In fact, the Postal Service was required to contract with an alternative supplier to reverse engineer and manufacture the chassis frame to ensure that the LLV could still be kept in service. This has caused the average annual maintenance cost of the LLV to exceed $5,000 and, for 7 percent of the LLVs, to exceed $10,000 annually. Existing delivery vehicles, including LLVs as well as FFVs and COTS vehicles, require more maintenance on body components and drivetrains, and thus have higher maintenance costs than newer delivery vehicles.

The NGDV body, frame, and associated permanently attached structures are designed to maintain design function for 20 years. All vehicle components are repairable/replaceable, including parts availability for replacement over the service life of the vehicle.

COTS ICE vehicles require maintenance similar to existing ICE delivery vehicle routine maintenance requirements. They have, however, been shown to be less reliable in the long run compared to the purpose-built vehicles. BEVs are generally more mechanically reliable than ICE vehicles and would require less scheduled maintenance since BEVs have fewer moving parts (no engine or conventional transmission) and fluids to change (USDOE 2021).

4-1.1.5 Changing Mail Characteristics

In fiscal year (FY) 2020, the Postal Service processed 129.2 billion pieces of mail (including 64.1 billion pieces of marketing mail), 7.3 billion packages, and delivered them to 161.4 million delivery points, six (and sometimes seven) days a week (USPS 2021a). When the LLVs were first purchased in 1987, the mail consisted primarily of letters and flats. Over the last decade a fundamental shift has occurred, resulting in a large decrease in letter and flats volume and large increase in parcel volume as well as an increase in the total number of delivery points. By FY 2030, total mail volume is projected at approximately 75 billion pieces, a 55 percent decrease from FY 2011; and total parcel volume is projected at approximately 6.6 billion pieces, a 100 percent increase from FY 2011 (USPS 2021a). The LLVs do not support future delivery needs given these projected changes in market demand, parcel mix and an increasing number of delivery points. Postal Service delivery vehicles now need an increased cargo capacity and better access to the parcels in the cargo area.

4-1.2 Existing Postal Service Facilities

The Postal Service's last-mile delivery fleet operates nationwide from more than 17,000 Post Office locations, Stations and Branches. The Postal Service maintains its fleet of vehicles at Postal Service-owned or leased VMFs strategically located throughout the nation, and uses local commercial vehicle repair and maintenance shops when needed. Delivery vehicles are parked overnight at various Post Office locations. These facilities typically have designated parking lots, garages, and spaces for delivery fleet vehicles; however, some facilities must utilize street parking or shared parking with other buildings.

Existing Postal Service VMFs and commercial repair and maintenance shops responsible for maintaining the current vehicles, would continue to maintain the replacement vehicles, with less dependence on commercial repair shops due to less required maintenance. Due to the vehicle size difference between the existing vehicles and NGDV, incidental changes to existing facilities may be required. In the event that an existing facility cannot feasibly be modified, new facilities may need to be constructed on USPS property.

4-1.3 Existing Workforce

The Postal Service currently has approximately 212,000 active delivery fleet vehicles. Delivery vehicles include LLVs, FFVs, COTS delivery and mixed delivery vehicles. These vehicles are supported by more than 5,000 automotive technicians, mechanics, body repair personnel, and stockkeepers at more than 300 VMFs. Deployment and maintenance of new NGDV or COTS vehicles would result in minimal to no changes to the total Postal Service vehicle maintenance workforce. The workforce at the Postal Service's existing VMFs, as well as commercial garages for unscheduled repairs throughout the country, is adequate for conducting maintenance on all new delivery vehicles.

4-2 Resources Not Studied in Detail

The Proposed Action and Alternatives 1.1 and 1.2 involve the acquisition and deployment of NGDV or COTS delivery vehicles to replace end-of-life delivery vehicles. The ICE vehicles or BEVs could require interior and exterior alterations to existing VMFs such as bay doors, and/or lift replacement in a small percentage of existing facilities. Additionally, for BEVs, interior and exterior construction to accommodate charging infrastructure and charging stations would be needed. Specific Postal Service facility locations where new vehicles would be deployed and where alterations may be needed are not known at this time. The extent and types of alterations necessary for each Postal Service facility location are not known at this time.

Any alterations needed for the deployment and operation of the NGDV or COTS is expected to be made within the footprint of existing Postal Service property. As discussed in Section 1-3.1, site-specific facility alterations and a potential new training facility are not included in the detailed evaluation of the action alternatives that specifically address the purchase and deployment of new Postal Service vehicles.

Therefore, the following resources would not be affected by the nationwide action, and are not evaluated in detail herein: water, geology, soils, prime farmland, vegetation, wildlife, threatened and endangered species, wetlands and floodplains, cultural resources, land use, wild and scenic rivers and coastal zone. Facility impacts related to construction for needed alterations would comply with federal and state environmental requirements and regulations, and the Postal Service would complete appropriate NEPA reviews at the local level in the future, as needed.

- Prime farmland, vegetation, wildlife, threatened and endangered species, wetlands and floodplains, land use and wild and scenic rivers would not be impacted because the alterations would occur within existing facilities' footprints that have already been developed.
- Lift replacements could encounter contaminated soils and groundwater during removal of existing lifts and installation of new lifts. The Postal Service would follow applicable federal, state and local regulatory requirements to address any contamination present. Contaminated soils would be disposed of offsite per regulatory requirements.
- Construction for installation of charging stations would incorporate appropriate erosion and stormwater runoff control measures such as silt fencing around the disturbed areas until re-vegetated or restored after construction.

- Charging stations could be installed at National Register of Historic Places (NRHP)-eligible facilities. A site-specific NEPA evaluation, including Section 106 consultation, would be conducted as required to minimize impacts.
- Construction at facilities within the coastal zone would comply with coastal zone consistency requirements.

4-3 Socioeconomics

4-3.1 Socioeconomics – Background and Regulatory Setting

Socioeconomics encompasses the basic economic and social attributes associated with the human environment, particularly economic status, employment, and demographics. NEPA directs federal agencies to identify and address as appropriate the socioeconomic impacts of proposed actions and alternatives, prior to making a decision.

Environmental justice (EJ) addresses EJ issues as directed by Executive Order (EO) 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations and EO 14008, Tackling the Climate Crisis at Home and Abroad*. EO 12898 directs agencies to address environmental and human health conditions in minority and low-income communities. The intent of EO 12898, EO 14008, and related directives and regulations is to ensure that low-income and minority populations do not bear a disproportionate burden of negative effects resulting from proposed federal actions.

As an Independent Establishment of the Executive Branch of the U.S. Government, certain EOs, including those mentioned above, do not apply to the Postal Service. However, the Postal Service endeavors to fulfill the spirit of those non-mandatory requirements and consider the impacts of its actions on EJ communities of concern. This includes locations with high concentrations of minority and low-income populations. (USPS 2017)

4-3.2 Socioeconomics – Affected Environment

The following sections describe the socioeconomic conditions within the nation with respect to Community Economics, Employment, and Minority and Low-Income Populations.

4-3.2.1 Community Economics

The Postal Service plays an essential role in commerce by providing basic, fundamental and affordable mail services to the U.S. population. American opinions of the Postal Service are very positive according to a Pew Research Center Survey released in 2020; approximately 91 percent of respondents had a favorable view of the Postal Service, higher than any other federal agency. (Pew Research Center, 2020a)

In 2020, the Postal Service had more than 34,000 Post Office locations, Stations, and Branches in the U.S., which made it the nation's largest retail network – larger than Walmart (approximately 4,700 U.S. locations) and Starbucks (more than 15,000 U.S. locations). (USPS 2021b) (Walmart 2021) (Starbucks, 2021). The Postal Service operates an extensive transportation, delivery, and distribution network to accomplish delivery of its services. In FY 2020, the Postal Service had approximately 644,000 employees (Table 4-3.1); delivered more than 129 billion pieces of mail to more than 161 million delivery points. The number of delivery points increased to 161.3 million in FY 2020, an increase of 0.92 percent as compared to FY 2019; but the number of total routes decreased 0.10 percent as compared to the prior year. (USPS 2020a)

Table 4-3.1
2020 Key Postal Service Statistics

Fiscal Year Statistics (first 3 columns); % Change from Prior Year (last 2 columns)	FY 2020	FY 2019	FY 2018	FY 2020	FY 2019
Operating Revenue (in millions)	$73,123	$71,136	$70,622	2.79%	0.73%
Total Mail and Package Volume (in millions of units)	129,171	142,562	146,402	-9.39%	-2.62%
Total Postal Service-managed Offices, Stations and Branches	31,330	31,322	31,324	0.03%	-0.01%
Total Employees (both Career and Non-Career)	644,033	633,108	634,447	1.73%	-0.21%
Total Delivery Points (in millions)	161,374	159,901	158,558	0.92%	0.85%
Total Number of Delivery Routes	231,579	231,807	231,843	-0.10%	-0.02%
Total Number of Delivery and Collection Vehicles (0.5 - 2.5 tons)	207,945	204,274	208,133	1.80%	-1.85%
Total Postal Vehicles	**231,541**	**228,940**	**232,602**	**1.14%**	**-1.57%**

Source: USPS, 2020a. Fiscal Year 2020 Annual Report to Congress, An Essential Public Service. Updated May 2021

The Postal Service positively and directly impacts communities by providing employment at local facilities throughout the nation and through expenditures to local service providers for utilities and supplies associated with the operations and maintenance of its vehicles and facilities. Indirect benefits to other sectors of the local economy occur as a result of direct expenditures by employees and to suppliers, such as increased purchases at retail gas stations and commercial garages.

The 165,000 delivery vehicles proposed for replacement (primarily LLVs and FFVs) consumed about 180 million gallons of fuel (gasoline) in FY 2020 for delivery operations, with the majority purchased at local retail outlets and the remainder purchased from bulk fuel suppliers.

4-3.2.2 Employment

As a major employer, the Postal Service expends approximately 2.1 billion dollars in salaries and benefits every two weeks providing employment in local communities across the nation (USPS, 2021b). U.S. total employment was approximately 203.8 million jobs in 2019; government and government enterprises represented approximately 12.1 percent of the workforce in FY 2019, less than FY 2010 (14.3 percent) and FY 2000 (13.9 percent) (Bureau of Economic Analysis 2021).

The Postal Service had 644,033 employees in FY 2020 of which 495,941 were career employees and 148,092 were non-career employees (Table 4-3.1). Approximately 0.12 percent of the total U.S. workforce, or 242,189, were career delivery carriers (USPS 2020a).

The Postal Service is a leading employer of women and minorities according to Pew Research. In May 2020, The Pew Research Center recognized USPS as “more racially and ethnically diverse than the U.S. labor force as a whole” (Pew Research Center 2020b). The overall U.S. workforce is approximately 78 percent white, while approximately 57 percent of the Postal Service workforce is white. Black Americans make up 13 percent of the national workforce; but comprise 23 percent of the Postal Service workforce (Pew Research Center, 2020b).

4-3.2.3 Minority and Low-Income Populations

The intent of EO 12898, EO 14008 and related directives and regulations is to ensure that minority and low-income populations do not bear a disproportionate burden of negative effects resulting from federal actions.

Minorities include individuals who identify themselves as members of the following population groups: American Indian or Alaskan Native, Asian, Native Hawaiian or Other Pacific Islander, Black, Hispanic, or two or more races. For the purposes of EJ analyses, the minority population for a community consists of all non-white individuals as well as all Hispanic or Latino individuals (i.e., of both white and non-white racial origin). CEQ guidance states “minority populations should be identified where either (a) the minority population of the affected area exceeds 50 percent, or (b) the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis” (CEQ 1997).

Low-income populations are identified where individuals have incomes below the U.S. poverty guidelines, updated yearly by the U.S Department of Health and Human Services. A low-income population is either a group of low-income individuals living proximately to one another or a set of individuals who share common conditions of environmental exposure or effect (CEQ 1997).

The Postal Service delivery network serves delivery points in all communities across the nation, regardless of minority or income status. Minority populations in the U.S. are rising. In 2019, the U.S. had a minority population of 39.9 percent; an increase from 2018 (38.9 percent) and 2017 (38.5 percent) (Table 4-3.2) (USCB 2018a, 2019b, 2019a). The southern portion of the U.S. has a larger share of minorities than the northern portion (PRB.org 2021). As of 2019, the percentage of people with incomes below the U.S. poverty guidelines, fell to 13.4 percent of the population, from 14.1 percent (2018) and 14.6 percent (2017) (USCB 2017, 2018b, 2019c).

Table 4-3.2
Racial Composition and Poverty Status of the United States, 2017 - 2019

Racial Composition	**2019**	**2018**	**2017**
White	60.7%	61.1%	61.5%
Minority	39.3%	38.9%	38.5%
Black or African American	12.3%	12.3%	12.3%
American Indian and Alaska Native	0.7%	0.7%	0.7%
Asian	5.5%	5.4%	5.3%
Native Hawaiian and Other Pacific Islander	0.2%	0.2%	0.2%
Other Race	0.2%	0.2%	0.2%
Two or More Races	2.4%	2.4%	2.3%
Hispanic or Latino	18.0%	17.8%	17.6%
Percent Below Poverty Level	13.4%	14.1%	14.6%

Source: (USCB, 2017, 2018a, 2018b, 2019b, 2019c, 2019a)

4-3.3 Socioeconomics – Environmental Consequences

4-3.3.1 Proposed Action and Alternatives 1.1 and 1.2

Community Economics

Under the Proposed Action ICE NGDV Hypothetical Maximum, the purchase and deployment over a ten-year period of ICE NGDV would be more fuel efficient (see Energy Requirements and Conservation, Section 4-9.3.1, below) than the existing end-of-life delivery vehicles, resulting in lower overall Postal Service fuel (gasoline) purchases and corresponding reductions in air emissions (see Air Emissions, Section 4-6.3.2). Additionally, replacing any of the current ICE vehicles with BEVs, such as under the BEV NGDV Hypothetical Maximum, would lower the Postal Service's total future fuel purchases for its delivery fleet. Alternative 1.1 (COTS ICE vehicles) would increase fuel (gasoline) consumption due to lower average mpg than the average mpg of the existing delivery fleet (see Section 4-9.3.3), while replacement of the aged delivery vehicles would decrease air emissions (see Section 4-6.3.4). Local retail outlets and bulk fuel suppliers would experience a decrease in revenue under both Proposed Action Hypothetical Maxima and under Alternative 1.2 (COTS BEVs). Local utility providers would experience an increase in revenue due to the Postal Service's purchase of electricity to power BEVs at its facilities (see Section 4-6.3.1).

The economic impact due to a reduction in purchase of delivery vehicle replacement parts would be partially offset by the scrapping or resale for parts (see Section 4-10.3.1). The need for commercial garage maintenance due to unscheduled repairs of vehicles is anticipated to decrease, as high-maintenance cost vehicles would be removed from the fleet, and maintenance time and money could be focused on preventive maintenance of newer vehicles.

The adverse impacts to commercial fuel retailers and bulk fuel suppliers from lower overall fuel sales; economic benefits from scrapping or resale of parts, waste management and disposal; and adverse economic impacts to commercial garages due to less need for unscheduled repairs would be insignificant compared to the nationwide economy.

Employment

Vehicle replacements would not change the number or location of delivery personnel or vehicle maintenance employees, the number of vehicles on a national basis, or the number of VMFs. Due to less maintenance anticipated for the new vehicles, the Postal Service would, however, be less reliant on third-party commercial shops for repair and off-cycle maintenance of its delivery vehicles; the number of Postal Service vehicles repaired by these shops would be low compared to the total number of vehicle repairs performed on an annual basis. Thus, neither Postal Service carrier or nor vehicle maintenance employment would be impacted.

Minority and Low-Income Populations

Since deliveries would continue to be made to the more than 161 million delivery points regardless of socioeconomic status, both the Proposed Action and Alternatives would result in no impact on minority or low-income populations in terms of mail service or disproportionately high adverse economic effect.

The Postal Service would evaluate ICE and BEV deployment based on existing nationwide delivery route characteristics and other established factors to prioritize potential placement of the two powertrains. Route characteristics for placement of BEVs would include routes located in mild temperature ranges, longer routes that maximize fuel and maintenance savings routes with frequent and numerous curb-line stops, and/or states with proactive BEV policies and regulations.

Both the Proposed Action and Alternatives would result in negligible beneficial impacts on air quality due to higher emission controls as compared to the high-maintenance and end-of-life delivery vehicles being replaced. Both the Proposed Action and Alternative 1.2 would result in negligible beneficial impacts on air quality due to better gas mileage of the newly purchased vehicles as compared to the high-maintenance and end-of-life delivery vehicles being replaced. Such beneficial impacts would occur regardless of race or socioeconomic status.

Both the Proposed Action and Alternatives would also result in safety and ergonomic improvements for delivery employees and the general public, and decrease the risk of accidents due to mechanical failure or fewer modern safety features associated with the existing delivery vehicles. These beneficial impacts would occur regardless of race or socioeconomic status.

4-3.3.2 No-Action Alternative

Community Economics

Revenues to local service providers for utilities and supplies associated with the operations and maintenance of the Postal Service's vehicles and facilities would not change. Indirect benefits to other sectors of the local economy occur as a result of direct expenditures by employees and to suppliers, such as increased purchases at retail gas stations and commercial garages

Delivery vehicle breakdown incidents would increase over time as the vehicles continue to age. The need for unscheduled repairs would increase, and requests for maintenance, as well as maintenance costs would increase. Commercial garages would likely experience increased revenues.

Employment

Continued use of the existing delivery vehicles would result in no changes to the total Postal Service carrier or vehicle maintenance workforce. The workforce at the Postal Service's existing VMFs, as well as commercial garages for unscheduled repairs throughout the country, would continue to perform maintenance on all delivery vehicles.

Minority and Low-Income Populations

Unlike the Proposed Solution and Alternatives 1.1 and 1.2, the No-Action Alternative would not enhance the safety of delivery personnel or the general public, as the end-of-life delivery vehicles do not have certain modern safety or operational features and breakdowns could occur on roadways at inopportune times. All customers, regardless of race or socioeconomic status, could experience delays in mail delivery as individual delivery vehicles experience maintenance issues.

4-4 Transportation

4-4.1 Transportation – Background and Regulatory Setting

State Departments of Transportation (DOTs) are generally responsible for their state highway systems and the federal highways and interstates within their boundaries. Arterials, connectors, rural roads, and local roads are typically the responsibility of county or city governments. Local governments determine whether a noise impact analysis is required for proposed actions. The threshold used to determine whether a transportation impact analysis is needed, and the definition of the threshold can vary by jurisdiction. The Postal Service is not subject to local requirements, but often follows those transportation regulations and thresholds. The Institute of Transportation Engineers (ITE) publication *Transportation Impact Analyses for Site Development* (ITE 2010) suggests that in lieu of a locally preferred or required determinant, an appropriate threshold is the addition of 100 or more new inbound or outbound vehicle trips during the surrounding area or adjacent roadway’s peak hour of traffic.

4-4.2 Transportation – Affected Environment

Postal Service delivery routes are located in urban, suburban and rural areas. Urban areas are generally characterized by a complex and extensive system of roads, including major freeways, arterials, and surface streets. Urban roads typically support high levels of traffic, which often result in roadway segment and intersection congestion. Suburban environments can be characterized by fewer roads and a predominance of two-lane and four-lane roads. Generally, rural roads have lower traffic volumes with minimal congestion.

4-4.2.1 Overview of the Postal Service Transportation Network

The Postal Service transportation network is responsible for moving large volumes of mail and packages from a mailer or domestic point of entry to a receiver or domestic point of export. The transportation fleet is divided into two major categories: Logistics, which is responsible for moving mail and packages to and from processing facilities, and Delivery, or "Last Mile," which is responsible for moving mail and packages between Post Offices and delivery points in the community. This EIS is focused on the Delivery fleet of vehicles. This transport occurs primarily on city streets, county roads, and major highways.

4-4.2.2 Traffic

Over 122 million cars and almost 160 million trucks were registered in the U.S. in 2018 (USDOE 2021). The Postal Service delivery fleet of more than 217,000 custom-built and COTS vehicles traveled approximately 1.2 billion miles in FY 2019; the current active delivery fleet is approximately 212,000 vehicles. The delivery vehicles travel roads and highways in both city and rural environments with varying traffic densities and levels of congestion. Carriers typically pick up mail and leave on delivery routes in the morning primarily before 10:00 a.m., after morning rush hour. These carriers complete their routes and typically return to the facility in the mid-afternoon before evening rush hour.

4-4.2.3 Safety, Accessibility, and Parking

Site circulation, parking, and accessibility for most Postal Service facilities comply with the Postal Service Handbook RE-4, *Standards for Facility Accessibility* (USPS 2005). Parking areas for Postal Service vehicles are typically gated or otherwise access-controlled for authorized users. Any parking or vehicle safety-related issues identified are handled per Postal Service safety requirements. Designated public parking is available at most Post Offices, Branches, and Stations.

The Postal Service emphasizes safety for all aspects of the transportation network. Postal Service policy document Handbook EL-804, *Safe Driver Program* (USPS June 2013), provides driver safety guidance and policies and also addresses or references safety standards related to Postal Service vehicles. In addition, the Postal Service follows local standards for additional traffic safety at the facility level. Vehicle incidents are tracked and used to address safety issues and improve Postal Service safety performance.

The existing, end-of-life delivery fleet vehicles do not have certain modern safety features such as airbags, anti-lock brakes, air conditioning, back-up cameras, intermittent windshield wipers, blind-spot warning systems, daytime running lights, or seatbelt reminders found on more modern vehicles.

4-4.2.4 Public Transportation

The Postal Service works to minimize petroleum use by encouraging carpooling and public transportation, and expanding use of web-based technologies for meetings and training. Some Postal Service employees use public transportation to travel to and from work each day or periodically where available. This public transportation is typically located in metropolitan areas near the Postal Service's facilities. Where available, the Postal Service encourages employees to participate in ride-share and trip-reduction programs. In addition, the Postal Service maintains a Commuter Benefits Program that offers tax-free cost benefits that promote various commuting options, including public transit and vanpooling (USPS 2020).

4-4.3 Transportation – Environmental Consequences

4-4.3.1 Proposed Action

Traffic

Under either the ICE NGDV Hypothetical Maximum or the BEV NGDV Hypothetical Maximum, the Proposed Action would have no or negligible impact on traffic. As high-maintenance and end-of-life vehicles would be replaced at various postal locations on a one-for-one basis, there would be no increase in the number of delivery vehicles or routes or Postal Service employee commuter trips.

Safety, Accessibility, and Parking

The NGDV's modern safety features such as airbags, anti-lock brakes, air conditioning, back-up cameras, intermittent windshield wipers, blind-spot warning systems, daytime running lights, or seatbelt reminders would improve operational safety as compared to use of the existing delivery vehicles. Additionally, the RHD-configuration of the custom-built NGDV would be safer that LHD options for carriers and the public during deliveries to curb-line mailboxes, as it would not require the carrier to exit the vehicle for deliveries.

Under both Hypothetical Maxima, the Proposed Action would have no or negligible impact on access to Postal Service facilities and parking. Parking areas for Postal Service delivery vehicles are dedicated, and there would be a one-for-one replacement of aged delivery vehicles. Thus, there would be no or negligible impact on access to Postal Service facilities and parking. BEV charging stations would be installed within dedicated Postal Service vehicle parking areas, and would not impact existing public parking available at Post Office locations, Branches, and Stations.

Public Transportation

The Proposed Action scenario would have no impact on Postal Service employee use of public transportation, or participation in ride-share and trip-reduction programs or the Postal Service's Commuter Benefits Program.

4-4.3.2 Alternative 1.1 – 100% RHD COTS ICE Vehicles

Traffic

Alternative 1.1 would have no or negligible impact on traffic. There would be no increase in the number of delivery vehicles or routes, or Postal Service employee commuter trips.

Safety, Accessibility, and Parking

The new RHD COTS ICE vehicles would have modern safety features such as airbags, anti-lock brakes, air conditioning, back-up cameras, intermittent windshield wipers, blind-spot warning systems, daytime running lights, or seatbelt reminders. Modern safety features would improve operational safety as compared to use of the existing delivery vehicles. Additionally, the RHD-configuration would be safer for carriers and the public during deliveries to curb-line mailboxes, as it would not require the carrier to exit the vehicle for deliveries.

Alternative 1.1. would have no or negligible impact on access to Postal Service facilities or parking. Parking areas for Postal Service delivery vehicles are dedicated, and there would be a one-for-one replacement of aged delivery vehicles.

Public Transportation

Alternative 1.1 would have no impact on Postal Service employee use of public transportation, or participation in ride-share and trip-reduction programs or the Postal Service's Commuter Benefits Program.

4-4.3.3 Alternative 1.2 – 100% LHD COTS BEVs

Traffic

Alternative 1.2 would have no or negligible impact on traffic. There would be no increase in the number of delivery vehicles or routes, or Postal Service employee commuter trips.

Safety, Accessibility, and Parking

The new LHD COTS BEVs would have modern safety features such as airbags, anti-lock brakes, air conditioning, back-up cameras, intermittent windshield wipers, blind-spot warning systems, daytime running lights, or seatbelt reminders. This would improve operational safety as compared to use of the existing delivery vehicles. However, LHD COTS vehicles would require carriers to exit the vehicle for curb-line deliveries. Thus, LHD COTS BEVs would not provide the operational and ergonomic benefits of RHD vehicles and therefore would not provide the same safety performance for mail carriers.

Alternative 1.2 would have no or negligible impact on access to Postal Service facilities and parking. Parking areas for Postal Service delivery vehicles are dedicated, and there would be a one-for-one replacement of delivery vehicles. BEV charging stations would be installed within dedicated Postal Service vehicle parking areas, and would not impact existing public parking available at Post Office locations, Branches, and Stations.

Public Transportation

Alternative 1.2 would have no impact on Postal Service employee use of public transportation, or participation in ride-share and trip-reduction programs or the Postal Service's Commuter Benefits Program.

4-4.3.4 No-Action Alternative

Traffic

Existing traffic levels associated with current Postal Service operations would not change as a result of the No-Action Alternative. There would be no change in traffic levels associated with mail delivery or delivery carrier commuter trips under the No-Action Alternative. As a result of not replacing the existing end-of-life delivery vehicles, the vehicles could experience more frequent breakdowns, potentially resulting in safety concerns and traffic delays on roadways.

Safety, Accessibility, and Parking

Carriers would continue to drive the existing high-maintenance and end-of-life delivery vehicles that do not have certain modern safety features such as airbags, anti-lock brakes, air conditioning, back-up cameras, intermittent windshield wipers, blind-spot warning systems, daytime running lights, or seatbelt reminders. Improvement in operational safety would not be realized. The existing delivery vehicles could experience more frequent breakdowns, potentially resulting in safety concerns for carriers and the public. No change in existing accessibility to Postal Service facilities or parking would occur.

Public Transportation

There would be no change in use of public transportation as a result of the No-Action Alternative, nor would there be a change in Postal Service employee participation in ride-share and trip-reduction programs or the Postal Service's Commuter Benefits Program.

4-5 Noise

4-5.1 Noise – Background and Regulatory Setting

Noise can be an unwanted sound that interferes with or disrupts normal human activities. The principal human response to noise is annoyance. Inadequately controlled noise can present a danger to health and welfare, particularly in urban areas. Major sources of noise are traffic, machinery and equipment, and commercial noise sources (EPA 2021a). The Noise Control Act of 1972 (42 USC §4901 et seq.,1972) establishes a national policy to promote a noise environment free from noise that would jeopardize health and welfare. The primary responsibility for noise control lies with state and local governments. Noise pollution also is addressed in the Clean Air Act (Subchapter IV and Title IV – Noise Pollution). Additional background information is presented in Appendix E.

Many noise sources, such as vehicle traffic and construction, generate noise and contribute to the impact on the total noise environment. This noise is generally transitory and represents a negligible contribution to the overall noise environment. Response to noise varies, depending on the type and characteristics of the noise, distance between the noise source and receptor, receptor sensitivity, and time of day. A noise-sensitive receptor is defined as a land use where people involved in indoor or outdoor activities may be subject to stress or considerable interference from noise. Noise-sensitive locations or facilities include residential dwellings, hospitals, nursing homes, educational facilities, and libraries.

Vehicle noise is comprised of three general sources: aerodynamic noise (air passing over vehicles), propulsion noise (engine, exhaust, and drivetrain), and tire-pavement noise (tires rolling on roadway surface). Primary noise from BEVs is caused by wind resistance and tire noise, while primary noise from ICE is caused by propulsion noise. Propulsion noise from a BEV is quieter than from an ICE vehicle at speeds less than 15 miles per hour because propulsion noise generated by the ICE vehicle dominates any aerodynamic and tire-pavement noise.

4-5.2 Noise – Affected Environment

Recommended noise levels in urban and suburban environments generally range from 45 dBA, (decibels [A-weighted scale]) (indoor) to 55 dBA (outdoor), depending on the time of day and location (residential or commercial land use) (King, et.al. 2012). Day-night sound levels measured at over 100 residential sites in urban and suburban areas across the U.S. ranged from approximately 50 to 75 dB (Bishop and Simpson 1977).

Postal Service facilities are located primarily in more urban or suburban settings. Noise levels in these environments vary continuously over a period of time depending on the contributing sound sources within the noise environment. Existing delivery vehicle maintenance operations contribute to ambient noise around VMFs; and traffic from delivery vehicles contributes to ambient noise around Postal Service facilities during vehicle arrivals and departures, primarily before 10:00 a.m., after morning rush hour, and return in the mid-afternoon before evening rush hour. The Postal Service follows an internal anti-idling policy that is supportive of local noise ordinances. Vehicle maintenance operations are primarily conducted inside VMFs, and each delivery event occurs at a specific destination over a very short duration. Therefore, Postal Service delivery vehicle-related operations have minimal effects on the overall existing ambient noise conditions within affected neighborhoods, with noise levels dominated by other traffic and daily activities.

4-5.3 Noise – Environmental Consequences

4-5.3.1 Proposed Action

Under both the ICE NGDV Hypothetical Maximum and BEV NGDV Hypothetical Maximum, the Proposed Action would have no adverse impact on the noise environment. The number of delivery vehicles or routes would not increase. BEVs are expected to be 4 to 5 dB quieter than the ICE vehicles at low speed (6 to 12 miles per hour [mph]), while the difference in emitted noise from the two drivetrains would be similar at speeds above approximately 19 mph when tire/road noise would dominate (Danish Road Directorate 2015).

No change in existing noise levels from Postal Service delivery and delivery vehicle maintenance operations would occur under the Proposed Action. Nor would additional noise be emitted from charging batteries.

4-5.3.2 Alternatives 1.1 and 1.2 – COTS Vehicles

Alternatives 1.1 and 1.2 would have no adverse impact on the noise environment. There would be no increase in the number of delivery vehicles or routes. The COTS vehicles would be quieter than the aged delivery vehicles being replaced due to more modern technology, resulting in a beneficial reduction in emitted noise. The ICE vehicles are expected to be 4 to 5 dB louder than the BEVs at low speed (6 to 12 mph). However, the difference in emitted noise between the ICE and BEV powertrains would be similar at speeds above approximately 19 mph when tire/road noise would dominate (Danish Road Directorate 2015).

No change in existing noise levels from Postal Service delivery and delivery vehicle maintenance operations would occur under either Alternative 1.1 or 1.2. Nor would additional noise be emitted from charging batteries.

4-5.3.3 No-Action Alternative

Under the No-Action Alternative, new delivery vehicles would not be purchased and high-maintenance and end-of-life delivery vehicles would continue to be maintained until maintenance was no longer feasible. Emitted noise from the delivery fleet and Postal Service facilities would remain the same. The No-Action Alternative would have negligible impact on noise environment.

4-6 Air Quality

4-6.1 Air Quality – Background and Regulatory Setting

4-6.1.1 Clean Air Act and National Ambient Air Quality Standards

The Clean Air Act (CAA) directs the EPA to protect and improve air quality across the U.S. As a requirement of the CAA, the EPA established National Ambient Air Quality Standards (NAAQS) for six criteria pollutants in order to protect public health and welfare nationwide. These criteria pollutants are carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), sulfur dioxide (SO_2), lead (Pb), and particulate matter [measured as less than 10 microns in aerodynamic diameter (PM_{10}) and less than 2.5 microns in aerodynamic diameter ($PM_{2.5}$)]. (see Appendix F)

Attainment areas are geographic areas that are and have historically been in compliance with the NAAQS; nonattainment areas violate a NAAQS for the applicable pollutant; and maintenance areas have transitioned from nonattainment to attainment and are required to adhere to maintenance plans to ensure continued attainment. The CAA requires states to develop a general plan to attain and maintain the NAAQS in all areas of the country and a specific plan known as a State Implementation Plan (SIP) to attain the NAAQS for each area designated nonattainment.

The CAA also lists 187 air toxins, known as hazardous air pollutants (HAPs). Toxic air pollutants include several substances that are known or suspected to cause cancer or other health effects in humans when they are exposed to certain levels of the pollutants. Of the 187 HAPs, 93 have been identified as mobile source air toxics (MSAT) from vehicles and non-road equipment and nine MSAT are considered priority MSAT (Acetaldehyde, Acrolein, Benzene, 1,3-butadiene, Diesel particulate matter plus diesel exhaust organic gases [diesel PM], Ethylbenzene, Formaldehyde, Naphthalene, and Polycyclic organic matter [POM]).

The Postal Service adheres to Occupational Safety and Health Administration (OSHA) requirements and standards for the protection of personnel who may be exposed to air pollution from its ICE vehicles. Future work would continue to be performed in accordance with OSHA requirements and standards.

4-6.1.2 General Conformity

The purpose of the General Conformity rule is to ensure that federal activities do not cause or contribute to a violation of NAAQS or otherwise delay attainment of NAAQS. Therefore, federal entities are required to demonstrate that the total direct or indirect emissions from a federal action will conform to the SIP or not otherwise interfere with a state's ability to attain and maintain the NAAQS. The General Conformity rule applies to all federal actions that are taken in designated nonattainment or maintenance areas with some exceptions, including actions with associated emissions below specified de minimis levels.

The EPA established de minimis emission levels for each criteria pollutant to limit the need to conduct conformity determinations for federal projects with minimal emission increases. De minimis levels vary by pollutant and also depend on the severity of the nonattainment status for the areas of concern as presented in Table F-2 in Appendix F. When the total direct and indirect emissions from a proposed project are below the de minimis levels, the project would not be subject to a conformity determination.

4-6.1.3 Greenhouse Gas

Global climate change is a transformation in the average weather of the Earth, which can be measured by changes in temperature, wind patterns, and precipitation. Scientists have identified human-related greenhouse gas (GHG) emissions as a significant contributor to global climate change (NOAA 2021). GHGs effectively trap heat in the atmosphere and influence Earth's temperature, causing the greenhouse effects. The key GHGs emitted by human activities are carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O). GHGs differ in their ability to trap heat. To account for this, a weighting factor called the Global Warming Potential (GWP) is defined for a gas relative to the heat-trapping ability of the same mass of CO_2, and emissions are normally expressed in terms of CO_2 equivalents (CO_2e). For example, the GWP of CO_2 is 1, whereas the GWP of N_2O is 298 for a 100-year timescale.

The CEQ's NEPA Guidance on GHG and climate change impact assessment is currently under review. In the absence of updated guidance, GHG emissions and climate change impact were assessed based on the *Final Guidance for Federal Departments and Agencies on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in National Environmental Policy Act Review* (CEQ 2016). The 2016 guidance explains that the analysis should consider (1) the potential effects of a proposed action on climate change as indicated by assessing GHG emissions, and (2) the effects of climate change on a proposed action and its environmental impacts.

4-6.1.4 Social Cost of Greenhouse Gas (Carbon)

The Postal Service voluntarily complies with the requirements of various EOs. EO 13990 (86 FR 14 [January 25, 2021]) re-established the Interagency Working Group and directed it to ensure that Social Cost of GHG (also referred to as the Social Cost of Carbon or SCC) estimates reflect the best available science and work towards approaches that take into account, climate risk, environmental justice, and intergenerational equity (Interagency Working Group 2021). These SC-GHG estimates are interim values developed under EO 13990 for use in benefit-cost analyses until updated estimates of the impacts of climate change can be developed based on the best available science and economics. The EO instructs the Interagency Working Group to undertake a fuller update of the Social Cost of GHG estimates by January 2022 that takes into consideration the advice of the National Academies and other recent scientific literature.

The SCC is an assigned marginal cost used to facilitate a policy and decision-making assessment of the costs and benefits of increased GHG emissions. The SCC is the monetary value of the net harm to society associated with a marginal increase in emissions in a given year, or the benefit of avoiding that increase. In principle, the Social Cost of GHG includes the value of all climate change impacts, including (but not limited to) changes in net agricultural productivity, human health effects, property damage from increased flood risk and natural disasters, disruption of energy systems, risk of conflict, environmental migration, and the value of ecosystem services. The assessed cost would provide a benchmark for the economic evaluation of a proposed action. The SCC is used to estimate in dollars all economic damage as to how much it is worth today to avoid the damage that is projected for the future.

4-6.2 Air Quality – Affected Environment

4-6.2.1 Air Emissions

Mobile Sources

Existing Postal Service mobile source air emissions include operation of approximately 212,000 active delivery fleet vehicles, including the 165,000 delivery vehicles that would be replaced, as well as other vehicles used in its air and surface transportation operations.

Stationary Sources

Stationary air pollution sources at Postal Service facilities can include boilers, emergency power generators, painting operations, parts washers, and fuel storage tanks. Replacing the high-maintenance and end-of-life delivery vehicles on a one-to-one basis would not result in the need for additional facilities to maintain the new vehicles, nor in changes in existing or additional stationary sources. Current Postal Service stationary sources minimally impact air quality; operations follow applicable regulatory requirements, and the Postal Service applies for and complies with applicable environmental permits where required. No air emissions are expected to be emitted from electric battery charging stations that would be installed at Postal Service facilities to support BEVs. Since stationary source air impacts are not anticipated, stationary emissions were not assessed in this EIS

4-6.2.2 General Conformity

Air quality conditions vary widely across the geographic area in which the Postal Service operates the vehicles planned for replacement. The EPA has designated nonattainment areas for criteria pollutants throughout the U.S. based on historical compliance data against NAAQS.

4-6.2.3 Greenhouse Gas

The Postal Service generates GHG emissions from facility energy use, transportation fuel use, waste generation, employee commuting, contracted transportation services, and other sources. The Postal Service's target is to reduce, by FY 2025, GHG emissions by 30 percent from its 2008 baseline, and through 2019, the USPS had achieved a 28.3 percent reduction toward its goal (USPS 2020).

Delivery fleet vehicles emit a variety of gases during their operations, some of which are GHGs, including CO_2, CH_4, and N_2O. The nationwide total GHG emissions, or "carbon dioxide equivalent (CO_2e)," currently generated by the Postal Service and calculated based on 2019 data are estimated to be 6,374,480 Metric Tons (MT) CO_2e (USPS 2020), which consist of:

- 2,199,409 MT CO_2e direct emissions including owned vehicles and building heating,
- 1,901,846 MT CO_2e of energy indirect emissions including purchased electricity and steam, and
- 2,273,225 MT CO_2e of other indirect emissions including transmission and distribution losses, employee air and ground business travel, employee commuting, contracted wastewater treatment, and contracted solid waste disposal.

4-6.3 Air Quality – Environmental Consequences

4-6.3.1 Analysis Methodology

Air Emissions

The estimate of nationwide air emissions from each of the Proposed Action Hypothetical Maxima and Alternatives was calculated based on the total number of vehicles, the mileage per year and the emission factors. Because of the one-to-one vehicle replacement and no planned increase in total route length, the miles associated with the new delivery vehicles would be the same as the replaced delivery vehicles on a nationwide basis. Given the ten-year timeframe, the overall net changes in combined emissions after the completion of the action were compared in lieu of year by year comparisons. The analysis used the EPA-recommended MOtor Vehicle Emission Simulator (MOVES) model, a state-of-the-science emission modeling system that estimates emissions for mobile sources for criteria pollutants, GHGs, and air toxics, in order to calculate the direct emissions associated with the Postal Service vehicles.

The EPA released MOVES3 in January 2021 (Federal Register 86 FR 1106); the release announcement started a two-year transportation conformity grace period that ends of January 9, 2023. The EPA continues to update this new model with the most recent release of MOVES3.01 in March 2021, and the states are still testing and developing inputs in adopting this new model version within the two-year grace period. Therefore, MOVES2014b, an earlier version that is still valid for use, was used to estimate vehicular emission factors for this EIS.

MOVES predicts tailpipe, brake, and tire wear emissions from vehicles, and provides emission factors in grams/mile. Therefore, the air analysis used vehicle miles in order to calculate the emissions, rather than the information associated with gallons of fuel or miles per gallon. The emissions estimates are based on average miles of the Postal Service vehicle and the conservative emission factors calculated from the MOVES model (grams/mile): emission factors of winter months for CO, $PM_{2.5}$, PM_{10}, and SO_2 and the emission factors of summer months for VOC, NOx, CO_2, CO_2e, CH_4, and N_2O. Air conditioning factors were already incorporated by using summer emission factors for GHG.

The MOVES model does not account for emissions from generation of electricity for BEVs. It assumes fully electric vehicles have no tailpipe or evaporative emissions and that brake and tire wear emissions are identical to conventional vehicles. Therefore, only particulate matter ($PM_{2.5}$ and PM_{10}) emissions are associated with brake and tire wear from BEV operation, while all six criteria pollutants emissions are associated with ICE vehicle operation.

The MOVES model has an option to select nationwide emission, select a specific location, or to select an individual project location as model input to calculate emission factors. The analysis selected Westchester County, New York to be consistent with the Postal Service's 2017 Programmatic Environmental Assessment. This County was selected for the Programmatic Environmental Assessment to be a representative location because it was the area with the greatest number of high maintenance-cost LLVs to be replaced. Choosing a different location would not result in noticeable changes in the emission factors and will not result in changes in emissions. Therefore, it remains a valid approach for this nationwide analysis and provides consistency among Postal Service NEPA assessments.

The EIS analysis is a programmatic nationwide analysis based on the nationwide number of vehicles and nationwide miles of travel per vehicle rather than regional or local level of data. Regional impact differences would be very small compared to the overall fleet in use for any region. The nationwide analyses demonstrated a net decrease in emissions and a by-regional analysis would likewise yield a net decrease in emissions regardless of location; therefore, the analysis was performed based on nationwide level using nationwide emission data.

The air emission rates for all criteria pollutants are reported in English tons per year (tpy) as this unit is consistent with regulatory air permitting and air emission inventory guidance for criteria pollutants.

Mobile Source Air Toxics (MSAT) analysis is not required for the Proposed Action but is qualitatively analyzed herein. The Federal Highway Administration (FHWA) in conjunction with the EPA has developed an Interim Guidance (2016) that discusses when and how to analyze MSAT impact within the NEPA review process. In the guidance, the FHWA documented three categories for analyzing MSAT, depending on specific project circumstances (i.e., no analysis, qualitative, or quantitative). A project that does not change traffic volume and mix is considered a project with no meaningful MSAT impact and no analysis is warranted. Since the Proposed Action and Alternatives would replace old vehicles with new and cleaner models without increasing traffic volumes, it would result in no meaningful MSAT impact and thus no analysis is warranted.

For the same reason, since the Proposed Action would replace old vehicles with new and cleaner models without increasing traffic volumes, no potential impacts of future fleet criteria pollutants and VOC emissions are expected on human health and thus no human health analysis is warranted.

General Conformity

The applicability of the General Conformity rule was determined based on the net changes of the total emissions that could occur in any nonattainment or maintenance area as a result of the Proposed Action scenarios and Alternatives.

Greenhouse Gas

The potential effects of the Proposed Action and Alternatives on climate change were evaluated by estimating GHG emissions from several elements. The EIS considered current regulations on GHG emissions under the NEPA requirements. Furthermore, the Postal Service followed the EPA's recommendation and used the EPA's 2016 Final GHG Guidance. As a result, the EIS provides comprehensive estimates of both direct and indirect GHG emissions that can be reasonably quantified using the most recent regulatory planning tools and addresses both the GHG emissions impact on climate change and the climate change impact on the proposed program. The 2016 CEQ guidance does not establish any quantity of GHG emissions as “significantly” affecting the quality of the human environment or give consideration to the effects of GHG emissions and climate change over other effects on the human environment. Therefore, instead of comparing the estimated GHG emissions from each action to a certain threshold, the estimated GHG emissions from each of the Proposed Actions and Alternatives were compared. Each action’s emissions were calculated as a percentage of the total emissions generated by the Postal Service.

The indirect emissions were also quantified due to electricity consumption from the proposed BEVs and fuel (gasoline) consumption from the proposed ICE vehicles. Lastly, the aggregate direct and indirect Social Cost of the GHG emissions associated with each of the Proposed Actions and Alternatives were calculated as a combined impact analysis.

The EIS discusses the programmatic impacts on a national level as compared to a project-level impact on a local- or state-level. The programmatic nationwide evaluation used current federal regulations in the analysis of GHG emissions. Due to the programmatic nationwide nature of the action, state regulations were not considered, and since using state regulations under development is speculative, they were also not used in the analysis.

GHG emissions are reported in Metric Tons (MT) as this unit is consistent with regulatory air permitting and air emission inventory guidance for GHG.

Direct Tailpipe GHG Emissions

The direct tailpipe nationwide GHG emission changes associated with each of the Proposed Action scenarios and Alternatives were calculated as the emission change of CO_2e. The method of calculating direct tailpipe GHG emissions using the MOVES model is the same as for the criteria pollutants described in the previous “Air Emissions” Section.

Energy Consumption GHG Emissions

The environmental “footprint” of fuel purchases was further evaluated to better understand the environmental impacts using different tools such as the Emissions & Generation Resource Integrated Database (eGRID) (EPA 2021d) and/or Greenhouse Gases, Emissions, and Energy use in Technologies (GREET) (Argonne National Laboratory). This aggregated analysis includes energy (e.g., indirect emissions associated with electricity consumption by BEVs) and operation (e.g., direct emissions from fuel consumption by ICE vehicles), but does not include a full life cycle cost (e.g., vehicle production, etc.).

The combined direct tailpipe GHG emissions derived from the MOVES model and the indirect GHG emissions associated with energy consumption by vehicle fuel associated with the Proposed Action and Alternative scenarios were used to evaluate the total aggregated GHG emissions. eGRID was used to obtain the emission profiles associated with the U.S. power sectors and the eGRID database was used to estimate upstream emissions from the powerplant for the electrical energy used for the proposed BEVs. In order to compare the upstream life cycle analysis between BEV and ICE, the GREET model was additionally used to estimate the comparable upstream emissions for fuel production (e.g., gasoline) used for proposed and existing ICE vehicles.

eGRID

The EPA’s scoping comments, dated April 2, 2021, recommended use of eGRID data, which includes the latest publicly available EPA data to evaluate upstream indirect emissions associated with BEVs. Therefore, the Postal service followed the EPA’s recommendation and used the EPA’s eGRID database to obtain the emission profiles associated with the U.S. power sectors. The Postal Service recognizes that eGRID data do not calculate emission decades into the future, as eGRID was originally developed based on currently available power sector data and not based on future data. The EIS calculation to estimate the emissions associated with the upstream power source is based on the most current publicly available data (2019). eGRID output emission rates are shown in lb/kWh.

eGRID provides the upstream emissions data by each region. Regional differences related to BEVs would depend on the power (fuel) source, for the powerplant(s) in the region, while regional differences for ICE would also depend on the geographic source of the gasoline (fuel) and emissions would differ based on season, weather, road conditions, etc. The Postal Service's vehicle miles traveled (VMT) contributions on a regional level compared to existing regional emissions inventory are and would continue to be negligible. As described in the following sections, the nationwide analyses in the EIS demonstrated a net decrease in emissions as compared to the No Action Alternative, a positive benefit of the Proposed Action and COTS Alternatives. A by-regional analysis would likewise yield a net decrease in emissions and differences from the nationwide analyses would be negligible. Because the nationwide analyses demonstrated a net decrease in emissions, a by-regional analysis would likewise yield a net decrease in emissions regardless of the upstream fuel type for electricity, and the analysis was performed based on a nationwide level using nationwide average upstream data from “all fuels” rather than separating individual fuel types using eGRID for BEV.

This EIS is a programmatic nationwide analysis based on the nationwide number of vehicles and nationwide miles of travel per vehicle rather than regional or local level of data. Therefore, the analysis was performed based on nationwide levels using nationwide data with the “all fuel” selection (average of various fuels) rather than regional data with individual fuel selections. The analysis provides a programmatic nationwide evaluation to preserve this flexibility and appropriately represents the national coverage.

The Postal Service recognizes that there would be grid gross losses, which is the percentage of generated electricity that is lost in the process of supplying it to consumers known as line losses, power losses, or transmission and distribution losses from power plant to end use. eGRID output emission rates do not account for any line losses between the point of consumption and the points of generation. Because there are line losses, one kilowatt hour of electricity consumption requires a little more than one kilowatt hour of electricity generation. The nationwide grid gross loss rate is 5.1 percent in the continental U.S, based on the eGRID database. Because of the grid gross losses, it is expected that the calculated upstream emissions associated with BEV could be slightly (e.g., 1.05 times) greater than the emissions estimated in this EIS.

GREET

In order to compare the upstream life cycle analysis between BEV and ICE, the GREET model was additionally used to estimate the comparable upstream emissions for fuel production (e.g., gasoline) used for ICE. The GREET model was run with the LHD Vocational vehicle type and based on flexible fuel gasoline vehicles. The vehicle types “light commercial truck” in MOVES and “vocational vehicles” in GREET are the most representative vehicles based on the size and weight of the Postal Service’s vehicles, and the vehicle types between MOVES and GREET were matched as closely as possible in the EIS.

Using the GREET model, inputs were specified on well-to-pump (WTP) by selecting correct paths for the analysis, on the SIMULATION Tab by input of each year of analysis individually, by selecting the time of innovation of the technology, and by selecting appropriate vehicle parameters. No changes were made to the actual emission and characterization factors, as these are part of the GREET predictions in the DATA EDITOR tab. More specific information about how the GREET model was run is described in Appendix F. Other than the project-specific inputs (vehicle type, geography [nationwide], year of vehicle deployment, and fuel type), no other modifications to the GREET model were made.

Nationwide upstream emissions estimated based on eGRID and GREET models include upstream emissions of the fuel cycle. Fugitive emissions from pipeline components and tank breathing loss should be already accounted for as a part of air permits or air emissions inventory for the upstream sources, not including fugitive emissions from potential pipeline leaks or leaking underground storage tanks. As such, it is likely that the magnitude of these fugitive emissions is generally negligible relative to point sources. Therefore, the EIS considered the fugitive emissions as negligible and therefore would not change the conclusion of this nationwide analysis. The Postal Service recognizes that these risks exist, but the risks are not quantifiable related to the Postal Service's Proposed Action and Alternatives.

Effects of Climate Change

The EIS also evaluated whether climate change would impact the Proposed Action scenarios and Alternatives.

Social Cost of Greenhouse Gas (Carbon)

Based on the social costs of CO_2, CH_4, and N_2O provided in the U.S. Interagency Working Group (IWG) interim technical guidance (IWG 2021), the aggregate social cost of the GHG emissions was calculated in five-year intervals for a 20-year project life span after 2030. The Social Cost of GHG was estimated based on ten-year total emissions in GHG after completion of the project as the basis to forecast lifespan Social Cost of GHG in every five-year interval (as a five-year milestone), for each of the Proposed Actions and Alternatives. This approach likely provides higher Social Cost of GHG benefits than an approach using every intermediate year of emissions before completion of the project in year 2032. The Social Cost of GHG would be the same after completion of the project in 2033 and beyond under either approach.

The estimates consider discount rates of 2.5 percent, 3 percent, and 5 percent plus a fourth value, selected as the 95th percentile of estimates based on a 3 percent discount rate. The fourth value was included to provide information on potentially higher-than-expected economic impacts from climate change, conditional on the 3 percent estimate of the discount rate. This range reflects the current range of variability assessing the present value of future climate change damages. The higher discount rate results in a lower present value for future climate change damages.

4-6.3.2 Proposed Action – 90% ICE NGDV with at least 10% BEV NGDV

Air Emissions

Under this Hypothetical Maximum, the estimated operational emissions on an annual basis for the Proposed Action is presented in Table 4-6.1. Overall, there would be a net-emissions decrease for all applicable pollutants. Therefore, under the ICE NGDV Hypothetical Maximum, the Proposed Action would have a beneficial effect on current air quality as compared to existing conditions or to the No-Action Alternative. Detailed calculations of direct air emissions using the MOVES model are presented in Appendix F.

Table 4-6.1
Net Air Emission Changes from Nationwide Action (90% ICE NGDV and 10% BEV NGDV) Calculated Based on MOVES Model

Air Emissions	VOC (tpy)	NO_x (tpy)	CO (tpy)	$PM_{2.5}$ (tpy)	PM_{10} (tpy)	SO_2 (tpy)	CO_2e (MT)
New 90% ICE NGDV	9.60	10.65	402.74	11.61	76.43	1.97	280,565
New 10% BEV NGDV	N/A	N/A	N/A	1.07	8.24	N/A	N/A
Replaced Vehicles (LLVs/FFVs/Metris)	-935.99	-2,264.31	-11,496	-59.14	-136.72	-3.72	-537,415
Net (Total)	**-926.39**	**-2,253.67**	**-11,093**	**-46.47**	**-52.06**	**-1.75**	**-256,850**

tpy = Tons per Year N/A = Not applicable
MT = Metric Tons
1.102 English Short Tons = 1 Metric Ton

General Conformity

On a national scale, the one-to-one delivery vehicle replacement under this Hypothetical Maximum is anticipated to affect operational emissions in certain nonattainment or maintenance areas. However, because no increase in travel route and/or vehicle travel miles would occur, there would be a net reduction in emissions for all criteria pollutants within all affected nonattainment or maintenance areas nationwide due to the use of new vehicles operating with less air emissions. Instead of assessing area-level net emission changes, this analysis assumed that the area-level net emission changes would follow the same trend as the nationwide scale. Accordingly, as shown in Table 4-6.1, the calculated potential emissions decrease for all pollutants in any nonattainment or maintenance area would be below any de minimis threshold for all applicable criteria pollutants; therefore, the General Conformity rule does not apply to the Proposed Action under this Hypothetical Maximum.

Greenhouse Gas

<u>Direct Tailpipe GHG Emissions</u>

Under this Hypothetical Maximum, the Proposed Action would result in an emission decrease of 256,850 MT of CO_2e (Table 4-6.1), thus having a beneficial effect on current GHG emissions. This action would result in less reduction in direct tailpipe GHG emissions by 280,565 MT of CO_2e as compared to the 100 percent BEV scenarios, and thus have less benefit than the BEV action scenarios; but it has a greater reduction in direct tailpipe GHG emissions by 31,174 MT of CO_2e as compared to Alternative 1.1.

<u>Energy Consumption GHG Emissions</u>

As shown in Table 4-6.2, the total net aggregated emissions for this Hypothetical Maximum indicate a 290,306 MT decrease in CO_2e compared to the No-Action alternative, indicating a beneficial effect on current GHG emissions. This Proposed Action with 90 percent ICE NGDV and 10 percent BEV NGDV would result in less reduction in the aggregated CO_2e emissions by 574,907 MT as compared to the Proposed Action's 100 percent BEV NGDV, less reduction in the aggregated CO_2e emissions by 826,424 MT as compared to Alternative 1.2, but more benefit (reduction) of CO_2e emissions by 63,879 MT as compared to Alternative 1.1. Current Postal Service generated-GHG emissions would be reduced by approximately 5 percent under this Proposed Action, as compared to the total USPS GHG emissions addressed in 4-6.2.3.

Table 4-6.2
Net Aggregated (Direct and Indirect) Air Emission Changes (90% ICE NGDV and 10% BEV NGDV) Calculated Based on MOVES, eGRID, and GREET Models

Air Emissions	VOC (tpy)	NOx (tpy)	CO (tpy)	$PM_{2.5}$ (tpy)	PM_{10} (tpy)	SO_2 (tpy)	CO_2e (MT)
New 90% ICE NGDV	880.29	1,186.20	929.60	91.75	294.00	822.14	995,643
New 10% BEV NGDV	NA[1]	41.27	NA[1]	5.59	NA[1]	38.10	46,748
Replaced Vehicles (LLVs/FFVs/Metris)	-1,903.42	-3,570.48	-12,081.32	-148.19	-378.47	-915.03	-1,332,698
Net (Total)	**NA**[1]	**-2,343**	**NA**[1]	**-51**	**NA**[1]	**-55**	**-290,306**

tpy = Tons per Year
MT = Metric Tons
1.102 English Short Tons (ton) = 1 Metric Ton (MT)
Notes:
[1] NA = not available, as eGRID does not provide VOC, CO, and PM_{10} emissions factor data for the upstream sources. Therefore, the aggregated net emissions for VOC, CO and PM_{10} were not calculated.
[2] The emissions increase associated with New 90 percent ICE NGDV is a summation of direct tailpipe emissions based on the MOVES model and indirect emissions estimated based on the GREET model. The indirect emissions represent air emissions associated with the fuel (e.g., gasoline) cycle from well pad to fuel pump that corresponds to the fuel purchases (e.g., energy consumption) by ICE.
[3] The emission increase associated with New 10 percent BEV NGDV is a summation of direct tailpipe emissions based on the MOVES model and indirect emissions estimated based on eGRID. The indirect emissions represent air emissions associated with electricity generation from U.S. electric power sector that corresponds to the electricity purchases (e.g., energy consumption) by BEV. Because of the grid gross losses (5.1 percent in continental U.S), it is expected that the calculated upstream emissions associated with BEV could be slightly (e.g., 1.05 times) greater than the emissions estimated in this EIS.
[4] The emission decrease associated with Replaced Vehicles (LLVs/FFVs/Metris) is a summation of direct tailpipe emissions based on the MOVES model and indirect emissions estimated based on the GREET model.

Effects of Climate Change

No effects of climate change are expected.

Social Cost of Greenhouse Gas (Carbon)

Table 4.6-3 provides the estimated total social costs of carbon from the Proposed Action under this Hypothetical Maximum, starting from 2030 as the Proposed Action is near completion. The social costs of carbon are based on operational emissions per year in five-year increments over the estimated 20-year project lifespan.

Table 4-6.3
Calculated Social Cost of Carbon (90% ICE NGDV and 10% BEV NGDV)

Operational Year	5% Discount Rate ($, US Dollars)	3% Discount Rate ($, US Dollars)	2.5% Discount Rate ($, US Dollars)	3% 95th Percentile Discount Rate ($, US Dollars)
2030	-5,498,055	-17,618,744	-25,236,314	-52,381,640
2035	-6,365,706	-19,055,123	-27,263,765	-57,804,880
2040	-7,225,573	-20,828,337	-29,291,215	-63,213,561
2045	-8,153,479	-22,533,511	-31,333,225	-68,128,329
2050	-9,267,583	-24,306,725	-33,106,439	-73,282,774

Notes:
[1] Social Cost of GHG was estimated based on ten-year total emissions in GHG after completion of the project as the basis (from Table 4-6.2) to forecast lifespan Social Cost of GHG in five-year intervals. This approach likely provides higher Social Cost of GHG benefits than an approach using every intermediate year of emissions before completion of the project in year 2032. The Social Cost of GHG would be the same after completion of the project (2033 and beyond) under either approach.
[2] The aggregated emission changes from the Proposed Action are shown to decrease; resulting in negative values for the corresponding social cost, which represents savings of the anticipated social cost in the future.

Under this Hypothetical Maximum, the Proposed Action would result in a positive investment impact in terms of social cost, as calculations indicated a decrease in cost values. Detailed itemized social cost calculations are presented in Appendix F.

4-6.3.3 Proposed Action – 100% BEV NGDV

Air Emissions

Under the 100 percent BEV NGDV Hypothetical Maximum, the estimated operational emissions on an annual basis for the Proposed Action (calculated using the MOVES model) are presented in Table 4-6.4. Overall, this action would result in a net-emissions decrease for all applicable pollutants. Therefore, this action would have a beneficial effect on current air quality as compared to existing conditions or to the No-Action Alternative.

This Proposed Action would result in a greater reduction in the direct (tailpipe) operational emissions by 9.60 tpy of VOC, 10.65 tpy of NOx, 403 tpy of CO, 2.02 tpy of $PM_{2.5}$, 2.28 tpy of PM_{10} and 1.97 tpy of SO_2 as compared to the Proposed Action's 90 percent ICE NGDV Hypothetical Maximum. The Proposed Action would result in a greater reduction in the direct operational emissions by 10.67 tpy of VOC, 11.83 tpy of NO_x, 447 tpy of CO, 2.24 tpy of $PM_{2.5}$, 2.54 tpy of PM_{10} and 2.19 tpy of SO_2 as compared to Alternative 1.1. The Proposed Action would result in a greater reduction in the direct operational emissions by 935.99 tpy of VOC, 2,264.31 tpy of NO_x, 11,496 tpy of CO, 48.49 tpy of $PM_{2.5}$, 54.34 tpy of PM_{10} and 3.72 tpy of SO_2 as compared to the No-Action Alternative. Detailed calculations of direct air emissions using the MOVES model are presented in Appendix F.

Table 4-6.4
Net Air Emission Changes from Nationwide Action (100% BEV NGDV) Calculated Based on MOVES Model

Air Emissions	VOC (tpy)	NO_x (tpy)	CO (tpy)	$PM_{2.5}$ (tpy)	PM_{10} (tpy)	SO_2 (tpy)	CO_2e (MT)
New NGDV (100% BEV NGDV)	N/A	N/A	N/A	10.65	82.38	N/A	N/A
Replaced Vehicles (LLVs/FFVs/Metris)	-935.99	-2,264.31	-11,496	-59.14	-136.72	-3.72	-537,415
Net (Total)	**-935.99**	**-2,264.31**	**-11,496**	**-48.49**	**-54.34**	**-3.72**	**-537,415**

tpy = Tons per Year N/A = Not applicable
MT = Metric Tons
1.102 English Short Tons (ton) = 1 Metric Ton (MT)

General Conformity

On a national scale, the one-to-one delivery vehicle replacement under this Proposed Action Hypothetical Maximum is anticipated to affect operational emissions in certain nonattainment or maintenance areas. However, because no increase in travel route and/or vehicle travel miles would occur, there would be a net reduction in emissions for all criteria pollutants within all affected nonattainment or maintenance areas nationwide due to the use of new vehicles operating with less air emissions. Instead of assessing area-level net emission changes, this analysis assumed that the area-level net emission changes would follow the same trend on a nationwide scale. Accordingly, as shown in Table 4-6.4, the calculated potential emissions decrease for all pollutants in any nonattainment or maintenance area would be below any de minimis threshold for all applicable criteria pollutants; therefore, the General Conformity rule does not apply to the Proposed Action under this Hypothetical Maximum.

Greenhouse Gas

Direct Tailpipe GHG Emissions

This would result in an emission decrease of 537,415 MT of CO_2e (Table 4-6.4), thus having a beneficial effect on current GHG emissions. This action would result in more reduction in direct tailpipe GHG emissions by 280,565 MT of CO_2e as compared to the 90 Percent ICE NGDV Hypothetical Maximum of the Proposed Action, by 311,739 MT of CO_2e as compared to Alternative 1.1, or 537,415 MT of CO_2e as compared to the No-Action Alternative, and thus be the most beneficial.

Energy Consumption GHG Emissions

As shown in Table 4-6.5, the Proposed Action's total net aggregated emissions under the 100 percent BEV NGDV Hypothetical Maximum result in an 865,213 MT decrease in CO_2e compared to the No-Action alternative, indicating a beneficial effect on current GHG emissions. This Proposed Action would result in a greater reduction in aggregated GHG emissions as compared to the Proposed Action's 90 percent ICE NGDV Hypothetical Maximum or Alternative 1.1. This Proposed Action with 100 percent BEVs would result in a greater benefit (reduction) in the aggregated CO_2e emissions by 574,907 MT as compared to Proposed Action's 90 percent ICE vehicles and 10 percent BEVs. This is a greater reduction in the CO_2e emissions by 638,786 MT as compared to Alternative 1.1, but less reduction of CO_2e emissions by 251,517 MT as compared to Alternative 1.2. Current Postal Service generated-GHG emissions would be reduced by approximately 14 percent under this Proposed Action, as compared to the total Postal Service GHG emissions addressed in Section 4-6.2.3.

Table 4-6.5
Net Aggregated (Direct and Indirect) Air Emission Changes (100% BEV NGDV) Calculated Based on MOVES, eGRID, and GREET Models

Air Emissions	**VOC (tpy)**	**NO_x (tpy)**	**CO (tpy)**	**$PM_{2.5}$ (tpy)**	**PM_{10} (tpy)**	**SO_2 (tpy)**	**CO_2e (MT)**
New 100% BEV NGDV	NA[1]	412.71	NA[1]	55.94	NA[1]	381.01	467,485
Replaced Vehicles (LLVs/FFVs/Metris)	-1,903.42	-3,570.48	-12,081.32	-148.19	-378.47	-915.03	-1,332,698
Net (Total)	**NA[1]**	**-3,158**	NA[1]	**-92**	NA[1]	**-534.01**	**-865,213**

tpy = Tons per Year
MT = Metric Tons
1.102 English Short Tons (ton) = 1 Metric Ton (MT)
Notes:

[1] NA = not available, as eGRID does not provide VOC, CO, and PM_{10} emissions factor data for the upstream sources. Therefore, the aggregated net emissions for VOC, CO and PM_{10} were not calculated.

[2] The emission increase associated with New 100 percent BEV NGDV is a summation of direct tailpipe emissions based on the MOVES model and indirect emissions estimated based on eGRID. The indirect emissions represent air emissions associated with electricity generation from U.S. electric power sector that corresponds to the electricity purchases (e.g., energy consumption) by BEV. Because of the grid gross losses (5.1 percent in continental U.S), it is expected that the calculated upstream emissions associated with BEV could be slightly (e.g., 1.05 times) greater than the emissions estimated in this EIS.

[3] The emission decrease associated with Replaced Vehicles (LLVs/FFVs/Metris) is a summation of direct tailpipe emissions based on the MOVES model and indirect emissions estimated based on the GREET model. The indirect emissions represent air emissions associated with fuel (e.g., gasoline) cycle from well pad to fuel pump that corresponds to the fuel purchases (e.g., energy consumption) by ICE.

Effects of Climate Change

No effects of climate change are expected.

Social Cost of Greenhouse Gas (Carbon)

Table 4.6-6 presents the estimated total social costs of carbon from this Hypothetical Maximum of the Proposed Action, starting from 2030 as the Proposed Action is near its completion. The social costs of carbon are based on operational emissions per year in five-year increments over the estimated 20-year project lifespan.

Table 4-6.6
Calculated Social Cost of Carbon (100% BEV NGDV)

Operational Year	5% Discount Rate ($, US Dollars)	3% Discount Rate ($, US Dollars)	2.5% Discount Rate ($, US Dollars)	3% 95th Percentile Discount Rate ($, US Dollars)
2030	-16,063,638	-49,867,888	-71,065,575	-145,142,810
2035	-18,602,106	-54,006,677	-76,975,339	-160,661,817
2040	-21,107,907	-59,319,603	-82,885,104	-176,042,837
2045	-24,053,019	-64,193,218	-88,932,855	-190,368,167
2050	-27,155,659	-69,506,143	-94,245,781	-205,152,349

Note:
[1] Social Cost of GHG was estimated based on ten-year total emissions in GHG after completion of the project as the basis (from Table 4-6.5) to forecast lifespan Social Cost of GHG in five-year intervals. This approach likely provides higher Social Cost of GHG benefits than an approach using every intermediate year of emissions before completion of the project in year 2032. The Social Cost of GHG would be the same after completion of the project (2033 and beyond) under either approach.
[2] The aggregated emission changes from the Proposed Action are shown to decrease; resulting in negative values for the corresponding social cost, which represents savings of the anticipated social cost in the future.

This would result in a positive investment impact in terms of social cost, as calculations indicated a decrease in cost values, and approximately three times greater social cost benefit as compared to the Proposed Action under its 90 percent ICE NGDV Hypothetical Maximum. Detailed itemized social cost calculations are presented in Appendix F.

4-6.3.4 Alternative 1.1 – 100% RHD COTS ICE Vehicles

Air Emissions

The estimated operational emissions on an annual basis for Alternative 1.1 (calculated using the MOVES model) are presented in Table 4-6.7. Overall, Alternative 1.1 would result in a net emission decrease for all applicable pollutants. Therefore, this action would have a beneficial effect on current air quality as compared to existing conditions or to the No-Action Alternative.

Alternative 1.1 would result in the least reduction in the direct (tailpipe) operational emissions for most criteria pollutants as compared to Alternative 1.2 or either Hypothetical Maximum of the Proposed Action and therefore be the least beneficial for air quality. Alternative 1.1 would result in less reduction in the direct operational emissions by 1.07 tpy of VOC, 1.18 tpy of NO_x, 45 tpy of CO, 0.22 tpy of $PM_{2.5}$, 0.25 tpy of PM_{10} and 0.22 tpy of SO_2 as compared to the Proposed Action's 90 percent ICE NGDV Hypothetical Maximum. Alternative 1.1 would result in a lesser reduction in the direct operational emissions by 10.67 tpy of VOC, 11.83 tpy of NO_x, 447 tpy of CO, 2.24 tpy of $PM_{2.5}$, 2.54 tpy of PM_{10} and 2.19 tpy of SO_2 as compared to the Proposed Action's 100 percent BEV NGDV Hypothetical Maximum and Alternative 1.2. Alternative 1.1 would result in a greater reduction in the direct operational emissions by 925.32 tpy of VOC, 2,252.48 tpy of NO_x, 11,048 tpy of CO, 46.25 tpy of $PM_{2.5}$, 51.80 tpy of PM_{10} and 1.54 tpy of SO_2 as compared to the No-Action Alternative. Detailed calculations of direct air emissions using the MOVES model are presented in Appendix F.

Table 4-6.7
Net Air Emission Changes from Nationwide Action (Alternative 1.1 - 100% RHD COTS ICE Vehicles) Calculated Based on MOVES Model

Air Emissions	VOC (tpy)	NO_x (tpy)	CO (tpy)	$PM_{2.5}$ (tpy)	PM_{10} (tpy)	SO_2 (tpy)	CO_2e (MT)
New 100% COTS ICE	10.67	11.83	447	12.89	84.92	2.19	311,739
Replaced Vehicles (LLVs/FFVs/Metris)	-935.99	-2,264.31	-11,496	-59.14	-136.72	-3.72	-537,415
Net (Total)	**-925.32**	**-2,252.48**	**-11,048**	**-46.25**	**-51.80**	**-1.54**	**-225,676**

tpy = Tons per Year
MT = Metric Tons
1.102 English Short Tons (ton) = 1 Metric Ton (MT)

General Conformity

On a national scale, the one-to-one delivery vehicle replacement under this Alternative is anticipated to affect operational emissions in certain nonattainment or maintenance areas. However, because no increase in travel route and/or vehicle travel miles would occur, this Alternative would result in a net reduction in emissions for all criteria pollutants within all affected nonattainment or maintenance areas nationwide due to the use of new vehicles operating with less air emissions. Instead of assessing area-level net emission changes, this analysis assumed that the area-level net emission changes would follow the same trend on a nationwide scale. Accordingly, as shown in Table 4-6.7, the calculated potential emissions decrease for all pollutants in any nonattainment or maintenance area would be below any de minimis threshold for all applicable criteria pollutants; therefore, the General Conformity rule does not apply to this Alternative 1.1.

Greenhouse Gas

Direct Tailpipe GHG Emissions

Alternative 1.1 would result in an emissions decrease of -225,676 MT of CO_2e (Table 4-6.7) as compared with the No Action Alternative, thus having a beneficial effect on current GHG emissions. Alternative 1.1 would result, however, in the least reduction in direct tailpipe GHG emissions as compared to Alternative 1.2 or the Hypothetical Maximum of the Proposed Action, and thus be the least beneficial of the action alternatives. Alternative 1.1 would result in less reduction in direct tailpipe GHG emissions by 31,174 MT of CO_2e as compared to the 90 percent ICE NGDV Hypothetical Maximum of the Proposed Action, and result in a lesser reduction in direction emissions by 311,739 MT of CO_2e as compared to Proposed Action's 100 percent BEV NGDV Hypothetical Maximum and Alternative 1.2. Alternative 1.1 would result in a greater reduction in direct GHG emissions of 225,676 MT of CO_2e as compared to the No-Action Alternative.

Energy Consumption GHG Emissions

As shown in Table 4-6.8, Alternative 1.1's total net aggregated emissions would result in a 226,427 MT decrease in CO_2e as compared to the No-Action Alternative, indicating a beneficial effect on current GHG emissions. This Alternative 1.1 would result in the least reduction in aggregated GHG emissions as compared to Alternative 1.2 or for either Hypothetical Maximum of the Proposed Action. Alternative 1.1 would result in a lesser reduction of CO_2e emissions by 63,879 MT as compared to the Proposed Action’s 90 percent ICE NGDV and 10 percent BEV NGDV, less reduction by 638,786 MT as compared to Proposed Action’s 100 percent BEV NGDV, and less reduction by 890,303 MT as compared to Alternative 1.2. Current Postal Service-generated GHG emissions would be reduced by approximately 4 percent under this Alternative, as compared to the total Postal Service GHG emissions addressed in Section 4-6.2.3.

Table 4-6.8
Net Aggregated (Direct and Indirect) Air Emission Changes (Alternative 1.1 - 100% RHD COTS ICE Vehicles) Calculated Based on MOVES and GREET Models

Air Emissions	VOC (tpy)	NO_x (tpy)	CO (tpy)	$PM_{2.5}$ (tpy)	PM_{10} (tpy)	SO_2 (tpy)	CO_2e (MT)
New 100% COTS ICE Vehicles	978.10	1,317.99	1,032.88	101.94	326.67	913.49	1,106,270
Replaced Vehicles (LLVs/FFVs/Metris)	-1,903.42	-3,570.48	-12,081.32	-148.19	-378.47	-915.03	-1,332,698
Net (Total)	**-925**	**-2,252**	**-11,048**	**-46**	**-52**	**-1.54**	**-226,427**

tpy = Tons per Year
MT = Metric Tons
1.102 English Short Tons (ton) = 1 Metric Ton (MT)
Notes:
[1] The emissions increase associated with 100 percent COTS ICE vehicles is a summation of direct tailpipe emissions based on the MOVES model and indirect emissions estimated based on the GREET model. The indirect emissions represent air emission associated with fuel (e.g., gasoline) cycle from well pad to fuel pump that corresponds to the fuel purchases (e.g., energy consumption) by ICE.
[2] The emission decrease associated with Replaced Vehicles (LLVs/FFVs/Metris) is a summation of direct tailpipe emissions based on the MOVES model and indirect emission estimated based on the GREET model.

<u>Effects of Climate Change</u>

No effects of climate change are expected on Alternative 1.1.

Social Cost of Greenhouse Gas (Carbon)

Table 4-6.9 presents the estimated total social costs of carbon from Alternative 1.1, starting from 2030 as Alternative 1.1 is near its completion. The social costs of carbon are based on operational emissions per year in five-year increments over the estimated 20-year project lifespan.

Table 4-6.9
Calculated Social Cost of Carbon (Alternative 1.1 - 100% RHD COTS ICE Vehicles)

Operational Year	5% Discount Rate ($, US Dollars)	3% Discount Rate ($, US Dollars)	2.5% Discount Rate ($, US Dollars)	3% 95th Percentile Discount Rate ($, US Dollars)
2030	-4,324,102	-14,035,507	-20,144,176	-42,074,848
2035	-5,006,107	-15,171,618	-21,740,259	-46,376,337
2040	-5,683,092	-16,551,531	-23,336,341	-50,676,981
2045	-6,386,865	-17,904,657	-24,933,268	-54,546,131
2050	-7,280,020	-19,284,570	-26,313,181	-58,630,605

Notes:
[1] Social Cost of GHG was estimated based on ten-year total emissions in GHG after completion of the project as the basis (from Table 4-6.8) to forecast lifespan Social Cost of GHG in five-year intervals. This approach likely provides higher Social Cost of GHG benefits than an approach using every intermediate year of emissions before completion of the project in year 2032. The Social Cost of GHG would be the same after completion of the project (2033 and beyond) under either approach.
[2] The aggregated emission changes from the Alternative 1.1 show a decrease; resulting in negative values for the corresponding social cost, which represents savings of the anticipated social cost in the future.

Alternative 1.1 would result in the least social cost benefit as compared to either Alternative 1.2 or the Hypothetical Maximum of the Proposed Action. Detailed itemized social cost calculations are presented in Appendix F.

4-6.3.5 Alternative 1.2 – 100% LHD COTS BEVs

Air Emissions

The estimated operational emissions on an annual basis for Alternative 1.2 (calculated using the MOVES model) are presented in Table 4-6.10. Overall, Alternative 1.2 would result in a net emission decrease for all applicable pollutants. Therefore, Alternative 1.2 would have a beneficial effect on current air quality as compared to existing conditions or to the No-Action Alternative.

Alternative 1.2 would have the same direct (tailpipe) air emissions as the Proposed Action's 100 percent BEV NGDV Hypothetical Maximum, but would have a greater beneficial air quality impact as compared to the Proposed Action's 90 percent ICE NGDV Hypothetical Maximum and Alternative 1.1. Alternative 1.2 would result in a greater reduction in the direct operational emissions by 9.60 tpy of VOC, 10.65 tpy of NO_x, 403 tpy of CO, 2.02 tpy of $PM_{2.5}$, 2.28 tpy of PM_{10} and 1.97 tpy of SO_2 as compared to the Proposed Action's 90 percent ICE NGDV Hypothetical Maximum. Alternative 1.2 would result in a greater reduction in the direct operational emissions by 10.67 tpy of VOC, 11.83 tpy of NO_x, 447 tpy of CO, 2.24 tpy of $PM_{2.5}$, 2.54 tpy of PM_{10} and 2.19 tpy of SO_2 as compared to Alternative 1.1. Alternative 1.2 would result in a greater reduction in the direct operational emissions by 935.99 tpy of VOC, 2,264.31 tpy of NO_x, 11,496 tpy of CO, 48.49 tpy of $PM_{2.5}$, 54.34 tpy of PM_{10} and 3.72 tpy of SO_2 as compared to the No-Action Alternative. Detailed calculations of direct air emissions using the MOVES model are presented in Appendix F.

Table 4-6.10
Net Air Emission Changes from Nationwide Action (Alternative 1.2 - 100% LHD COTS BEVs) Calculated Based on MOVES Model

Air Emissions	VOC (tpy)	NO_x (tpy)	CO (tpy)	$PM_{2.5}$ (tpy)	PM_{10} (tpy)	SO_2 (tpy)	CO_2e (MT)
New 100% COTS BEV	N/A	N/A	N/A	10.65	82.38	N/A	N/A
Replaced Vehicles (LLVs/FFVs/Metris)	-935.99	-2,264.31	-11,496	-59.14	-136.72	-3.72	-537,415
Net (Total)	**-935.99**	**-2,264.31**	**-11,496**	**-48.49**	**-54.34**	**-3.72**	**-537,415**

tpy = Tons per Year N/A = Not applicable
MT = Metric Tons
1.102 English Short Tons (ton) = 1 Metric Ton (MT)

General Conformity

On a national scale, the one-to-one delivery vehicle replacement under this Alternative is anticipated to affect operational emissions in certain nonattainment or maintenance areas. However, because no increase in travel route and/or vehicle travel miles would occur, this Alternative would result in a net reduction in emissions for all criteria pollutants within all affected nonattainment or maintenance areas nationwide due to the use of new vehicles operating with less air emissions. Instead of assessing area-level net emission changes, this analysis assumed that the area-level net emission changes would follow the same trend on a nationwide scale. Accordingly, as shown in Table 4-6.10, the calculated potential emissions decrease for all pollutants in any nonattainment or maintenance area would be below any de minimis threshold for all applicable criteria pollutants; therefore, the General Conformity rule does not apply to Alternative 1.2.

Greenhouse Gas

Direct Tailpipe GHG Emissions

Alternative 1.2 would result in an emission decrease of -537,415 MT of CO_2e (Table 4-6.10), thus having a beneficial effect on current GHG emissions. This Alternative would result in the greatest reduction in direct tailpipe GHG emissions as compared to the Proposed Action (both Hypothetical Maxima), Alternative 1.1, or the No-Action Alternative, and thus be the most beneficial.

Energy Consumption GHG Emissions

As shown in Table 4-6.11, total net aggregated emissions from Alternative 1.2 would result in decreases of 1,116,730 MT in CO_2e compared to the No-Action alternative, indicating a beneficial effect on current GHG emissions and, the greatest reduction in aggregated GHG emissions as compared to the Proposed Action (both Hypothetical Maxima), Alternative 1.1, and the No-Action Alternative. Alternative 1.2 would result in a greater benefit (reduction) of CO_2e emissions by 826,424 MT as compared to the Proposed Action's 90 percent ICE NGDV and 10 percent BEV NGDV, more reduction by 251,517 MT as compared to the Proposed Action's 100 percent BEV NGDV, and more reduction by 890,303 MT as compared to Alternative 1.1. The reduction as compared to Alternative 1.1 would be almost five times greater. Current Postal Service generated-GHG emissions would be reduced by approximately 18 percent under Alternative 1.2, as compared to the total Postal Service GHG emissions addressed in Section 4-6.2.3.

Table 4-6.11
Net Aggregated (Direct and Indirect) Air Emission Changes (Alternative 1.2 – 100% LHD COTS BEVs) Calculated Based on MOVES, eGRID, and GREET Models

Air Emissions	VOC (tpy)	NO_x (tpy)	CO (tpy)	$PM_{2.5}$ (tpy)	PM_{10} (tpy)	SO_2 (tpy)	CO_2e (MT)
100% COTS BEV	NA[1]	190.66	NA[1]	31.57	NA[1]	176.02	215,968
Replaced LLVs/FFVs/ Metris	-1,903.42	-3,570.48	-12,081.32	-148.19	-378.47	-915.03	-1,332,698
Net (Total)	**NA[1]**	**-3,380**	NA[1]	**-117**	NA[1]	**-739.01**	**-1,116,730**

tpy = Tons per Year
MT = Metric Tons
1.102 English Short Tons (ton) = 1 Metric Ton (MT)
Notes:
[1] NA = not available, as eGRID does not provide VOC, CO, and PM_{10} emissions factor data for the upstream sources. Therefore, the aggregated net emissions for VOC, CO and PM_{10} were not calculated.
[2] The emission increase associated with New 100 percent COTS BEVs is a summation of direct tailpipe emissions based on the MOVES model and indirect emissions estimated based on eGRID. The indirect emissions represent air emissions associated with electricity generation from U.S. electric power sector that corresponds to the electricity purchases (e.g., energy consumption) by BEVs. Because of the grid gross losses (5.1 percent in continental U.S), it is expected that the calculated upstream emissions associated with BEVs could be slightly (e.g., 1.05 times) greater than the emissions estimated in this EIS.

Effects of Climate Change

No effects of climate change are expected on Alternative 1.2.

Social Cost of Greenhouse Gas (Carbon)

Table 4-6.12 presents the estimated total social costs of carbon from Alternative 1.2, starting from 2030 as Alternative 1.2 is near its completion. The social costs of carbon are based on operational emissions per year in five-year increments over the estimated 20-year project lifespan.

Table 4-6.12
Calculated Social Cost of Carbon (Alternative 1.2 - 100% LHD COTS BEVs)

Operational Year	5% Discount Rate ($, US Dollars)	3% Discount Rate ($, US Dollars)	2.5% Discount Rate ($, US Dollars)	3% 95th Percentile Discount Rate ($, US Dollars)
2030	-20,859,908	-65,488,599	-93,480,934	-192,210,077
2035	-24,155,829	-70,888,396	-101,157,155	-212,519,895
2040	-27,419,310	-77,717,670	-108,833,377	-232,689,604
2045	-31,125,212	-84,104,523	-116,649,707	-251,305,528
2050	-35,235,640	-90,933,797	-123,478,982	-270,628,290

Notes:
[1] Social Cost of GHG was estimated based on ten-year total emissions in GHG after completion of the project as the basis (from Table 4-6.11) to forecast lifespan Social Cost of GHG in five-year intervals. This approach likely provides higher Social Cost of GHG benefits than an approach using every intermediate year of emissions before completion of the project in year 2032. The Social Cost of GHG would be the same after completion of the project (2033 and beyond) under either approach.
[2] The aggregated emission changes from the Alternative 1.2 are shown in decrease; resulting negative values for the corresponding social cost, which represents savings of the anticipated social cost in the future.

This Alternative would result in the maximum investment benefit in terms of social cost of carbon amongst all studied Alternatives, with almost five times greater benefit compared to Alternative 1.1 and almost four times greater benefit compared to the Proposed Action under its 90 percent ICE NGDV Hypothetical Maximum.

4-6.3.6 No-Action Alternative

Air Emissions

Under No-Action Alternative, the Postal Service would operate its delivery vehicles as they are currently operated without any changes in vehicle miles and routes. Air emissions associated with the 165,000 vehicles within the existing Postal Service delivery fleet would not change. Table 4-6.13 presents estimated air emissions over a ten-year period from existing delivery vehicles that would not be replaced.

Table 4-6.13
Air Emissions from 165,000 Existing Delivery Vehicles Over a Ten-Year Period Calculated Based on MOVES Model

Air Emissions	No. of Vehicles	VOC (tpy)	NO_x (tpy)	CO (tpy)	$PM_{2.5}$ (tpy)	PM_{10} (tpy)	SO_2 (tpy)	CO_2e (MT)
LLVs	125,988	900.87	2,167.60	10,439	51.69	111.73	2.90	419,583
FFVs	21,070	33.90	94.21	1,004	6.09	15.79	0.54	77,454
Metris	17,942	1.23	2.50	53	1.37	9.20	0.28	40,378
Total	**165,000**	**935.99**	**2,264.31**	**11,496**	**59.14**	**136.72**	**3.72**	**537,415**

tpy = Tons per Year
MT = Metric Tons
1.102 English Short Tons (ton) = 1 Metric Ton (MT)

General Conformity

The No-Action Alternative would not be subject to the General Conformity rule because no emission changes are expected.

Greenhouse Gas

GHG emissions for the No-Action Alternative would be the same as the existing condition. The No-Action Alternative would have the same impacts on GHG and climate change as the current condition as shown in Table 4-6.14.

Table 4-6.14
Direct and Indirect Air Emissions from Existing Delivery Vehicles Over a Ten-Year Period Calculated Based on MOVES and GREET Models

Air Emissions	VOC (tpy)	NO_x (tpy)	CO (tpy)	$PM_{2.5}$ (tpy)	PM_{10} (tpy)	SO_2 (tpy)	CO_2e (MT)
Replaced LLVs/FFVs/Metris	1,903.42	3,570.48	12,081.32	148.19	378.47	915.03	1,332,698

tpy = Tons per Year
MT = Metric Tons
1.102 English Short Tons (ton) = 1 Metric Ton (MT)

Social Cost of Greenhouse Gas (Carbon)

Table 4-6.15 presents the estimated total social costs of carbon from the No-Action Alternative, starting in 2020 and based on operational emissions per year in five-year increments over the estimated next ten-year period, and to 2050 for comparison with the action alternatives.

Table 4-6.15
Social Cost of Carbon (165,000 Existing Delivery Vehicles Over a Ten-Year Period)

Operational Year	5% Discount Rate ($, US Dollars)	3% Discount Rate ($, US Dollars)	2.5% Discount Rate ($, US Dollars)	3% 95th Percentile Discount Rate ($, US Dollars)
2020	18,396,348	64,287,602	95,545,725	188,278,958
2025	22,211,066	71,215,269	104,596,802	209,850,089
2030	24,978,272	78,901,478	112,728,105	232,624,855
2035	28,924,588	85,384,051	121,921,112	257,048,350
2040	32,838,658	93,515,354	131,114,120	281,329,915
2045	37,197,821	101,201,563	140,449,058	303,630,000
2050	42,173,596	109,332,865	148,580,360	326,849,860

Notes:
[1] Social Cost of GHG was estimated based on ten-year total emissions in GHG after completion of the project as the basis (from Table 4-6.14) to forecast lifespan Social Cost of GHG in five-year intervals. This approach likely provides higher Social Cost of GHG benefits than an approach using every intermediate year of emissions before completion of the project in year 2032. The Social Cost of GHG would be the same after completion of the project (2033 and beyond) under either approach.
[2] The aggregated emission changes from the No-Action Alternative are shown as an emissions increase; resulting in positive numbers of the corresponding social cost values, which represents anticipated social cost spending in the future.

4-7 Community Services

4-7.1 Community Services – Background Information and Regulatory Setting

Local municipalities or county governments provide emergency fire and police services to Postal Service processing facilities to treat minor injuries. The Postal Service in turn provides a community service by delivering and collecting mail to and from residential and business addresses. The Postal Service follows certain service standards related to mail delivery and maintains its fleet of delivery vehicles to meet these delivery standards.

4-7.2 Community Services – Affected Environment

Postal Service facilities are located nationwide in every state of the U.S. and in U.S. Territories. Local municipalities or county governments provide public safety and utility services to the delivery facilities. Community service providers are equipped to adequately handle community services required by current Postal Service operations.

4-7.3 Community Services – Environmental Consequences

The type of community services and demand for community services would not change under any scenario for the Proposed Action or Alternatives due to there being no increase in the number of delivery vehicles or routes. Operation of newly acquired vehicles with modern safety features, whether NGDV or COTS, would provide an increase in safety on the road resulting in less demand for emergency services.

VMFs would maintain NGDV or COTS according to Postal Service requirements and maintenance schedules. Demand for utility services for maintenance at VMFs would not be expected to increase (see Utilities and Infrastructure, Section 4-8).

Current Postal Service operations do not result in adverse impacts on emergency and utility services and delivery operations do not result in adverse impacts on community services or emergency preparedness of local municipalities, county governments, or the nation. The Proposed Action and Alternatives 1.1 and 1.2 would have no adverse impact on community services and would be expected to result in a beneficial effect due to modern vehicle safety features. Under the No-Action Alternative, the Postal Service would continue to maintain and operate aged delivery vehicles with outdated safety features and poor performance characteristics. Continuing to operate the aged delivery vehicles could lead to increased vehicle breakdowns, and increase and therefore negatively impact demand for emergency services. There would be negligible impact on community services.

4-8 Utilities and Infrastructure

4-8.1 Utilities and Infrastructure – Background and Regulatory Setting

Postal Service delivery operations are supported by existing utility and infrastructure systems that provide power, communications, water, wastewater, stormwater, and transportation services sufficient for the facilities' needs. Private companies normally provide power and communication services, while municipalities usually own and maintain water, wastewater and transportation systems; privately-owned well systems provide a limited number of facilities with water. Postal Service facilities are generally located within large utility networks and use a relatively small portion of the systems' total capacity.

4-8.2 Utilities and Infrastructure – Affected Environment

Some Postal Service locations have on-site fueling operations, storage tanks, emergency generators, wastewater pretreatment systems, septic systems, and/or vehicle maintenance and washing facilities. The Postal Service monitors these facilities and their functions to manage potential pollution sources and to ensure compliance with spill prevention requirements and stormwater permit regulations. The Postal Service has removed approximately 180 aging underground storage tank (UST) systems, reducing the number of federally-regulated USTs by almost 45 percent. Replacement tank systems are installed only when necessary and centrally monitored to quickly detect and prevent leaks to avoid soil and groundwater contamination (USPS 2020).

4-8.3 Utilities and Infrastructure – Environmental Consequences

Utility service and infrastructure in place at Postal Service facilities presently are meeting service demands. The one exception would be the need for electrical charging stations at locations where BEVs would be deployed. Modifications to electrical infrastructure and construction of new infrastructure at existing facilities would depend on the number of BEVs deployed. As discussed in Section 1-3.1, the Postal Service would conduct appropriate environmental reviews at the local level per Postal Service Handbook RE-6 (2015) as needed. Postal Service environmental checklists, screening analyses, and stand-alone, project-level Environmental Assessments would be employed on a facility-specific basis to assess the extent of impacts from any facility-related actions.

Section 4-9.3 discusses the potential impact on the electrical grid.

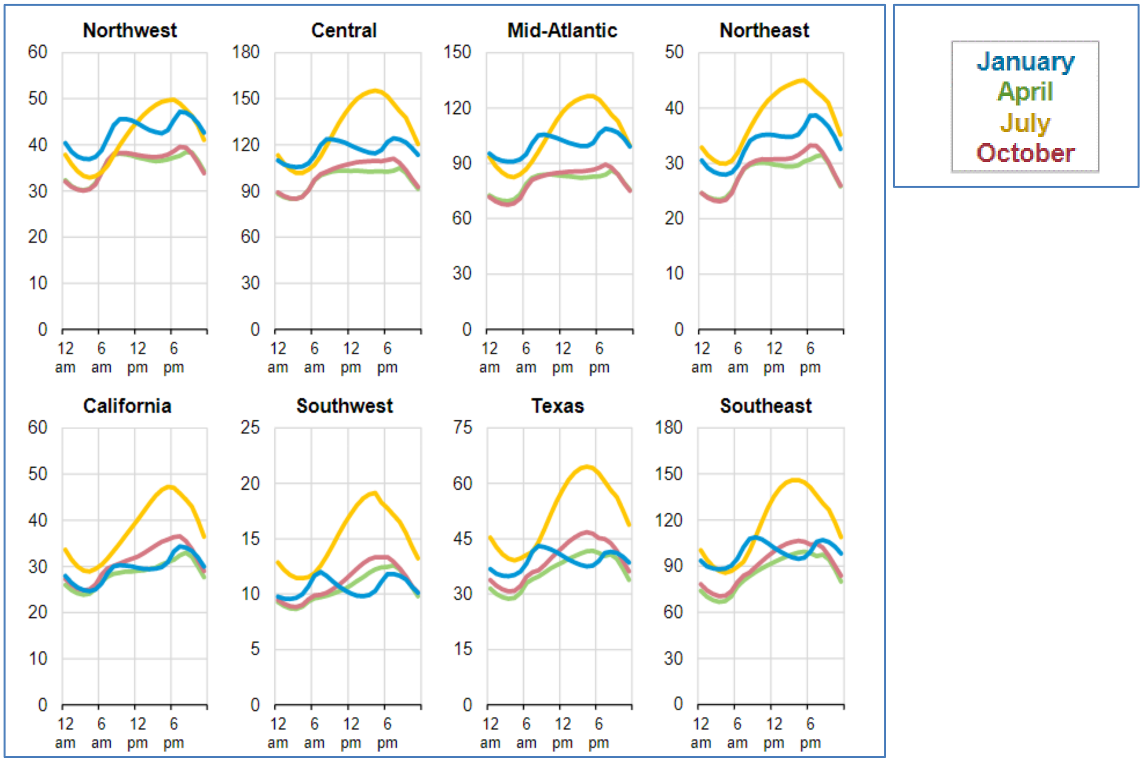
4-8.3.1 Proposed Action ICE Hypothetical Maximum and Alternative 1.1

Under the Proposed Action ICE Hypothetical Maximum and Alternative 1.1, there would be no impact on demand for existing utilities except for electrical infrastructure for charging of the 10 percent NGDV BEVs. Modifications needed to accommodate charging stations for BEV NGDV would be evaluated on a facility-specific basis and environmental reviews would be conducted as appropriate. Sites with BEVs would impact the grid, but the impact would be less than under the 100 percent BEV scenarios. Additional discussion regarding the effect of BEVs on the electrical grid is presented in the subsections below. There would be no increased demands for infrastructure services for ICE vehicles.

4-8.3.2 Proposed Action BEV Hypothetical Maximum and Alternative 1.2

No impact on demand for existing utilities would occur under the Proposed Action BEV Hypothetical Maximum or Alternative 1.2 except for electrical infrastructure for BEV charging. Modifications needed to accommodate charging stations for BEV NGDV or COTS BEVs would be evaluated on a facility-specific basis and environmental reviews would be conducted as appropriate. Additional discussion regarding the effect of BEVs on the electrical grid is presented in the subsections below. Nationally, the electric infrastructure needs of BEVs would be minor in the context of the U.S. electric grid systems and no significant, national investment in generation, transmission, or distribution would be required in order implement either Alternative. This is due to the relatively low total electric demand required to support each BEV NGDV or COTS BEVs and the proposed plan to charge each BEV nightly when national grid loads are at their minimum. Peak times for electric consumption generally occur between 3:00 p.m. and 9:00 p.m. local time, with some variation seasonally and geographically due to climatic patterns or availability of other energy utilities, such as natural gas (Figure 4-8.1). Late evening and early morning hours are consistently times of low load across seasons and geographies.

Figure 4-8.1
Electrical Loads (million kWh) Across U.S. Geographies



Source: USEIA 2020
kWh = kilowatt hours

Charging during off-peak periods, as intended under for all alternatives, when capacity is available nationally, would not require additional infrastructure, as the capacity between afternoon summer peak and nighttime lows is available to serve these charging needs on a national scale. The Postal Service would evaluate each individual Postal Service location for localized need for increased service on the distribution system serving a particular Postal Service charging site.

4-8.3.3 No Action Alternative

New delivery vehicles to replace high-maintenance and end-of-life delivery vehicles would not be purchased or deployed under the No-Action Alternative. Existing delivery vehicles would continue to be maintained until maintenance was no longer feasible. Utility service and infrastructure in place at Postal Service facilities currently are meeting service demands.

4-9 Energy Requirements and Conservation

4-9.1 Energy Requirements and Conservation – Background and Regulatory Setting

Federal agencies are required to meet energy management and conservation goals through EOs and legislative measures. Postal Service facility operations incorporate energy conservation measures that comply with the Energy Independence and Security Act (EISA) of 2007, the National Energy Conservation Policy Act, the Energy Policy Act (EPAct) of 1992 and 2005, National Energy Conservation Policy Act (NECPA) of 1978.

4-9.2 Energy Requirements and Conservation – Affected Environment

The Postal Service currently operates a combined delivery fleet of approximately 212,000 vehicles. The existing fleet is comprised of 21,000 alternative fuel-capable vehicles, most of which are equipped to use ethanol. The fleet also has electric, hybrid, compressed natural gas, liquid propane gas vehicles; and 100 hybrid 2-ton vehicles, of which 50 percent are electric hybrid and hydraulic hybrid, respectively. The Postal Service emphasizes preventive, rather than corrective, management to maximize existing vehicle performance. Aged delivery vehicles are being replaced when necessary with COTS vehicles that have improved fuel mileage, reduced maintenance costs, and lower air emissions. Postal Service career employees are offered a Commuter Benefits Program, which enables them to allocate pretax money for eligible commuter expenses. This incentivizes alternative modes of transportation (i.e., walking, cycling, public transportation) to reduce single employee vehicle commute trips to mail delivery and other facilities.

The Postal Service seeks to optimize its transportation operations, including pursuing fuel-efficiency initiatives. Energy management systems are used to evaluate, track and manage fuel usage. Further, the Postal Service works to make sure that all operating vehicles are performing at maximum possible efficiency.

Table G-1 (Appendix G) shows the current fuel efficiency and fuel consumption of the 165,000 aged and high-maintenance cost delivery vehicles to be replaced, and estimated annual fuel (gasoline) usage of about 135 million gallons, based on FY 2020 consumption for these vehicles.

4-9.3 Energy Requirements and Conservation – Environmental Consequences

Estimated annual fuel usage of the ICE NGDV and COTS ICE vehicles is shown in Table G-2 (Appendix G).

4-9.3.1 Proposed Action – ICE NGDV Hypothetical Maximum

The Proposed Action, under this Hypothetical Maximum, would have a beneficial impact on energy use through reduction in fuel consumption. Table G-2 (Appendix G) shows that the 148,000 ICE NGDV (90 percent of 165,000 total NGDV) would have an estimated annual fuel usage of about 110 million gallons. The ICE NGDV would be more fuel-efficient than the end-of-life delivery vehicles being replaced. The 10 percent BEV NGDV (16,500 vehicles) would further reduce fuel consumption associated with this Proposed Action because the BEVs are powered by batteries and do not require gasoline. This Proposed Action would therefore result in an annual reduction of over 25 million gallons of fuel use (19 percent less) (see Table G-3 in Appendix G). Additionally, the newer vehicles would require less frequent oil changes and other maintenance. The Proposed Action ICE NGDV Hypothetical Maximum would have an overall beneficial effect on energy requirements and conservation.

The impact of BEV charging is discussed in Section 4-8.3. The BEV NGDV specifications used for analysis are provided in Table 3-3 and the analysis is based on anticipated Level 2 charging that uses a higher-output 240-volt power source that reduces charging time as compared to a Level 1, 120-volt power source. The annual electricity required to support 10 percent BEV NGDV purchased over the ten-year period would be approximately 140,855 megawatt hours (MWh) (see Table F-5.a in Appendix F). BEV NGDV would be expected to discharge around 20 percent of battery capacity under average conditions because of the low average delivery route mileage. This would limit battery degradation and may not require charging every day. The BEV NGDV could fully recharge during non-business hours.

Under full electrification of the 16,500 BEV NGDV, annual energy usage and load requirements would be less than one percent of the total annual energy generation for the U.S., which was 4,127 billion kWh in 2020 with a peak load of 1,118 billion kilowatt (kW) (USEIA 2020). Thus, existing bulk power systems are adequate for supplying electricity for 16,500 BEV NGDV. The Proposed Action, under this Hypothetical Maximum, would have an overall beneficial effect on energy requirements and conservation.

4-9.3.2 Proposed Action – NGDV BEV Hypothetical Maximum

The Proposed Action, under the BEV Hypothetical Maximum, would have a beneficial impact on energy use through reduction in fuel consumption as the BEV NGDV would not require gasoline, saving about 135 million gallons of fuel annually (see Table G-1 in Appendix G). The newer vehicles also would require less frequent maintenance.

Deployment of 165,000 BEV NGDV would have a minor impact on the electrical grid. The annual electricity required to support this number of BEV NGDV purchased over the ten-year period would be approximately 1,408,552 MWh (see Table F-5.a in Appendix F). This impact is expected to be negligible on a nationwide scale since approximately 240,000 BEVs were sold in 2020, and about 251 million vehicles (cars and light trucks) were registered nationwide as of April 2021 (USDOE 2021). Further, public charging stations would not be used to recharge BEV NGDV delivery vehicles. This Proposed Action would therefore have no significant adverse impact on energy requirements.

The impact of BEV charging is discussed in Section 4-8.3. The BEV NGDV specifications for analysis are provided in Table 3-3, and the analysis is based on anticipated Level 2 charging that uses a higher-output 240-volt power source that reduces charging time as compared to a Level 1, 120-volt power source. BEV NGDV would be expected to discharge around 20 percent of battery capacity under average conditions because of the low average delivery route mileage. This would limit battery degradation and may not require charging all vehicles every day. The BEV NGDV could fully recharge during non-business hours.

Under full electrification of the 165,000 BEV NGDV, annual energy usage and load requirements would be less than one percent of the total annual energy generation for the U.S., which was 4,127 billion kWh in 2020 with a peak load of 1,118 billion kW (USEIA 2020). Thus, existing bulk power systems are adequate for supplying electricity to 165,000 BEV NGDV. The Proposed Action, under the BEV Hypothetical Maximum, would have no significant adverse impact and an overall beneficial effect on energy requirements and conservation greater than the Proposed Action ICE NGDV Hypothetical Maximum, as well as Alternatives 1.1 and 1.2.

4-9.3.3 Alternative 1.1 – 100% RHD COTS ICE Vehicles

Alternative 1.1 would increase fuel (gasoline) consumption. Postal Service performance data shows the Metris currently in use averages only 6.3 mpg, less than the existing LLVs, which are custom-built and do not have air conditioning. Based on the 6.3 mpg, the 165,000 COTS ICE vehicles would have an estimated annual fuel usage of about 166 million gallons (see Table G-4 in Appendix G), an annual increase of about 31 million gallons of fuel use (23 percent more) as compared to the existing 165,000 delivery vehicles. The newer vehicles also would require less frequent oil changes and other maintenance.

The expected fuel efficiency of the RHD COTS ICE (6.3 mpg) would be less than the ICE NGDV (8.6 mpg with air conditioning), and Alternative 1.1 would result in more annual fuel consumption as compared to the Proposed Action under either Hypothetical Maximum. As shown in Table G-2 (Appendix G), Alternative 1.1 would result in about 56 million gallons more annual fuel usage than the ICE NGDV Hypothetical Maximum Proposed Action because of lower fuel efficiency of the COTS ICE vehicles, and the Proposed Action's 10 percent minimum of BEV NGDV. This Alternative would result in a negligible adverse impact on fuel resources on a nationwide scale.

4-9.3.4 Alternative 1.2 – 100% LHD COTS BEVs

Alternative 1.2 would have a beneficial impact on energy use through reduction in fuel (gasoline) consumption, as the COTS BEVs would not require gasoline, saving about 135 million gallons of fuel (gasoline) annually (see Table G-1 in Appendix G). The newer vehicles also would require less frequent maintenance.

Alternative 1.2 would have a minor impact on the electrical grid. The annual electricity required to support the 165,000 COTS BEVs purchased over the ten-year period would be approximately 650,720 MWh (see Table F-5.a in Appendix F). This impact would be negligible on a nationwide scale since approximately 240,000 BEVs were sold in 2020, and about 251 million vehicles (cars and light trucks) were registered nationwide as of April 2021 (USDOE 2021). Further, public charging stations would not be used to recharge USPS delivery vehicles. The manufacturer currently rates the 2020 Ford E Transit at 108 miles on a single charge. However, the actual mileage is expected to be significantly less because of the frequent and repetitive starts and stops required for business and residential delivery.

The impact of BEV charging is discussed in Section 4-8.3. For the COTS BEV analysis, this EIS uses the manufacturer's currently advertised specifications for the Ford E Transit (see Table 3-6 for specifications). The analysis is based on anticipated Level 2 charging that uses a higher-output 240-volt power source that reduces charging time as compared to a Level 1, 120-volt power source. COTS BEVs would be expected to discharge around 20 percent of battery capacity under average conditions because of the low average delivery route mileage. This would limit battery degradation and may not require charging all vehicles every day. The COTS BEVs could fully recharge during non-business hours.

Under full electrification of the 165,000 COTS BEVs, annual energy usage and load requirements would be less than one percent of the total annual energy generation for the U.S., which was 4,127 billion kWh in 2020 with a peak load of 1,118 billion kW (USEIA 2020). Thus, existing bulk power systems are adequate for supplying electricity for the 165,000 COTS BEVs. Alternative 1.2 would have no significant adverse impact and an overall beneficial effect on energy requirements and conservation.

4-9.3.5 No-Action Alternative

Under the No-Action Alternative, the existing delivery vehicles would continue to be operated, and the benefits of newer vehicles with better fuel usage would not be realized. Continuing to operate these high-maintenance and end-of-life delivery vehicles would negatively impact energy requirements and conservation and Postal Service's sustainability policies and goals for energy consumption and conservation. Based on the current annual delivery vehicle fuel use data (see Table G-1 in Appendix G), almost 1.35 trillion gallons of fuel (gasoline) would be used by the existing vehicles over a ten-year period. This is far more than under the Proposed Action ICE NGDV Hypothetical Maximum but less than under Alternative 1.1.

4-10 Solid and Hazardous Materials and Wastes

4-10.1 Solid and Hazardous Materials and Wastes – Background and Affected Environment

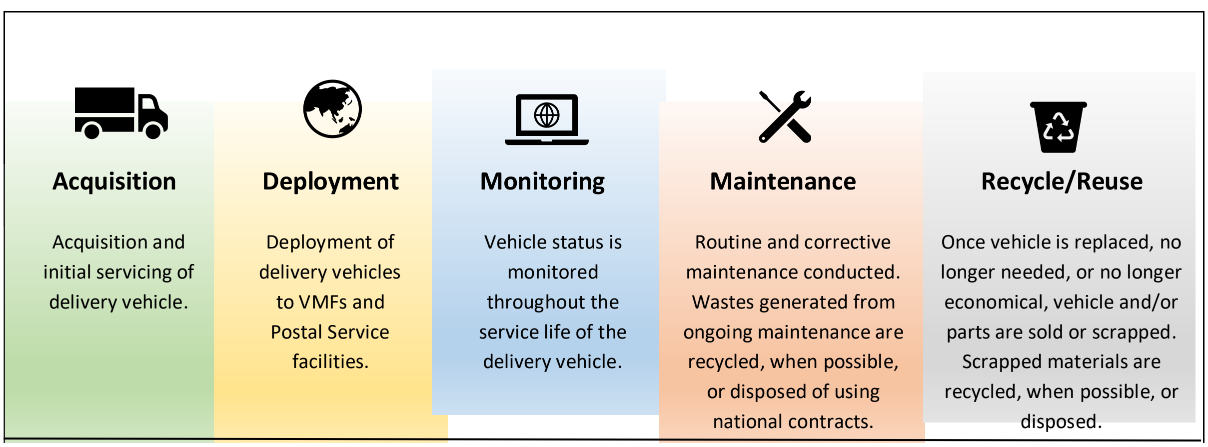
Solid waste includes garbage or refuse, and other discarded material as defined under the Resource Conservation and Recovery Act (RCRA) and 40 CFR 260 - 262. Materials that do not meet the RCRA definition are not solid wastes and are not subject to RCRA regulation.

The RCRA defines hazardous wastes as solid waste, or combination of solid wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may (a) cause, or significantly contribute to an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or (b) pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed. Certain types of hazardous wastes are subject to special management provisions intended to ease the management burden and facilitate the recycling of such materials. These are called universal wastes and their associated regulatory requirements are specified in 40 CFR 273. Hazardous waste batteries are one of the four types of waste currently covered under the universal waste regulations.

Postal Service delivery vehicle maintenance and delivery operations generate solid waste, regulated waste and limited quantities of hazardous wastes. Recycling and disposal are managed in accordance with all applicable environmental and safety regulations. State and local environmental regulations vary from jurisdiction-to-jurisdiction nationwide. The Postal Service has programs and national contracts in place to ensure these wastes are properly recycled or, if necessary, disposed in accordance with regulatory requirements. Many waste streams generated through ongoing vehicle maintenance, including used oil and oil filters, antifreeze, tires, batteries, and scrap metal are recycled. Additionally, employees with hazardous waste management responsibilities are required to take waste management training annually in order to ensure proper procedures are followed.

With regards to vehicle disposal, the Postal Service has standard procedures in place to manage surplus vehicles and vehicle-related parts. The Postal Service's delivery vehicle life cycle is shown in Figure 4-10.1.

Figure 4-10.1
USPS Delivery Vehicle Life Cycle



Currently, almost 100 percent of automobiles get recycled in the U.S. The reusable parts of a vehicle, including wheels, windows, trunk lids, hoods, seats, and doors are removed. At the same time, for environmentally responsible recycling, mercury switches are removed, and cars are drained of fluids (LeBlanc 2019). The remaining hulk of the car enters the shredder to recover non-ferrous metals. Postal Service procedures, including the Postal Service's Vehicle Disposal Strategy, support this national trend. The Postal Service manages its surplus vehicle fleet, vehicle-related parts and equipment through online auctions, live auctions, fixed-price sales and vehicle cannibalization/scrapping processes. The Postal Service does not permit the reselling of LLVs and/or FFVs in the secondary market. When scrapped, vehicle components such as metal, batteries, oil, coolant, and tires are removed and reused or recycled to the extent possible. The remainder of surplus parts are disposed in accordance with environmental laws and regulations.

4-10.2 Solid and Hazardous Materials and Waste – Environmental Consequences

4-10.2.1 Proposed Action and Alternatives 1.1 and 1.2

The Proposed Action and Alternatives 1.1 and 1.2 would have a negligible adverse impact on solid and hazardous waste. Disposal of the existing delivery vehicles would take place over a ten-year period, and the Postal Service vehicle disposal strategy and contracts in place for recycling and disposal would minimize the adverse impacts to the extent possible. Recycling and disposal of the wastes and materials from the replaced vehicles would have no significant adverse impact on commercial treatment capacity and landfill capacity over the ten-year period.

Operation and maintenance of new vehicles would use less hazardous materials and generate less solid and hazardous waste (e.g., used engine oil) than the existing aged delivery vehicles. Since BEVs do not require engine oil, used engine oil would not be generated at all for BEV procurement scenarios. Minor amounts of other lubricant types, including bearing grease, coolants, and windshield wiper fluid would be required for both BEV and ICE vehicles, whether NGDV or COTS, but much of this material would be reclaimed or recycled. Spent lithium-ion BEV batteries would be an additional source of hazardous waste for the BEV procurement scenarios. Recycling methods in the U.S. are currently limited and vary in recovery capabilities. Under normal operating conditions, not including frequent starts and stops, the BEV batteries are expected to last up to ten to twelve years, at which time they would be recycled.

4-10.2.2 No-Action Alternative

Under the No-Action Alternative, aged delivery vehicles with outdated safety features and poor performance characteristics would continue to be maintained until maintenance was no longer feasible. These vehicles would then be disposed according to the Postal Service's Vehicle Disposal Strategy for Fleet Management. The Postal Service would not be able to carry out its mission as end-of-life delivery vehicles are disposed and not replaced. The No-Action Alternative would have no significant adverse impact on solid and hazardous waste management and disposal capacity.

4-11 Summary of Potential Environmental Impacts

Implementation of the Proposed Action, under either Hypothetical Maximum, or Alternatives 1.1 and 1.2 would result in no or negligible environmental impact to the environmental resources that were not evaluated in detailed impact analysis: topography, geology and soils, and prime farmland; historical and archaeological resources; hydrology, water resources, floodplains, and wetlands; vegetation and wildlife; land use and planning; and coastal zone.

The Proposed Action and Alternatives 1.1 and 1.2 could require interior alterations within affected existing Postal Service facilities and exterior alterations within existing delivery vehicle parking areas to accommodate construction of necessary electrical charging infrastructure for BEVs. These alterations are expected to be inside existing facilities or within existing facility footprints that are previously disturbed areas. No expansion requiring real property leasing or acquisition, or real property disposal as part of these action alternatives would occur, and no expansion outside the footprint of existing facilities or vehicle parking areas is anticipated. As discussed in Section 1-3.1, the Postal Service would conduct appropriate environmental reviews at the local level per Postal Service Handbook RE-6 (2015) as needed. Postal Service environmental checklists, screening analyses, and stand-alone, project-level Environmental Assessments would be employed on a facility-specific basis to assess the extent of impacts from any facility-related actions.

The Proposed Action, under either Hypothetical Maximum, and Alternatives 1.1 and 1.2 would have either beneficial or no to negligible adverse impacts on the environmental resources summarized below (Table 4-11.1). This is because the actions are nationwide in scope; involve a one-to-one replacement of existing vehicles with more efficient, technologically advanced, ergonomic and safer vehicles; and purchase and deployment would occur over a ten-year period.

4-11.1 Comparison of Potential Impacts for Alternatives

The potential environmental impacts from the Proposed Action and Alternatives 1.1 and 1.2 are summarized in Table 4-11.1.

The Proposed Action, under either Hypothetical Maximum, and Alternatives 1.1 and 1.2 would result in beneficial impacts on transportation safety, traffic noise, air pollutant and GHG emissions, community emergency services, and fuel (gasoline) consumption. The Proposed Action's BEV Hypothetical Maximum and COTS BEV Alternative (1.2) would provide greater benefit on traffic noise reduction than would the ICE NGDV Hypothetical Maximum or COTS ICE Alternative (1.1), since BEVs are quieter than ICE vehicles at low speeds. Additionally, alternatives using BEVs would generate less lubricants, oils, and greases as compared to existing ICE vehicles. BEVs do not use engine oil for operation, but spent BEV batteries would be an additional source of hazardous waste for the BEV procurement alternatives. Recycling methods in the U.S. are currently limited and vary in recovery capabilities. Under normal operating conditions, not including frequent starts and stops, the BEV batteries are expected to last up to ten to twelve years, at which time they would be recycled.

The Proposed Action, under either Hypothetical Maximum, and Alternatives 1.1 and 1.2 would result in no to negligible impact on economics, employment, environmental justice, traffic, accessibility, parking, public transportation, engine noise from ICE vehicle operation, community utility services, utility availability and demand capacity, energy consumption, and solid and hazardous waste treatment and disposal.

The No-Action Alternative would not satisfy the Purpose and Need for the purchase of new delivery vehicles to replace aged delivery vehicles with outdated safety features and poor performance characteristics. Impacts would remain unchanged, and the benefits from replacing end-of-life delivery vehicles with modern vehicles would not be realized.

4-11.2 Selection of Preferred Alternative

At this time, the Postal Service selects as its preferred alternative the Proposed Action, which is the purchase and deployment of up to 90 percent ICE NGDV with at least 10 percent BEV NGDV. This Preferred Alternative provides a purpose-built RHD vehicle that would meet the Postal Service's Purpose and Need by providing the performance, safety, and ergonomic requirements for efficient Postal Service carrier deliveries to businesses and curb-line residential mailboxes over the entire nationwide system. This Preferred Alternative is also the most achievable given the Postal Service's financial condition, as the ICE NGDV is significantly less expensive than the BEV NGDV (see Table 3-1.1).

Although the BEV NGDV Alternative would result in about 200 percent fewer direct and indirect GHG (CO_2e) emissions than under the 90 percent ICE NGDV Preferred Alternative (see Sections 4-6.3.3 and 4-6.3.2, respectively), committing to purchase more than 10 percent BEV NGDV as part of the Preferred Alternative is not achievable, absent additional funding, as the 100 percent BEV NGDV Preferred Alternative is $2.3 billion more expensive than the 90 percent ICE NGDV Preferred Alternative (assuming an order of 75,000 NGDVs, see Table 3-1.1). Furthermore, acquiring 100 percent BEV NGDV for the full 165,000 amount of the Proposed Action would require more than $1 billion in additional investment due to BEV infrastructure costs.

The most favorable SCC calculations for the BEV NGDV (20 years, at 2.5 percent discount rate) result in an approximately $61 million SCC benefit (operational year 2050) and approximately $46 million SCC (operational year 2030) of the BEV NGDV Alternative as compared to the ICE NGDV Preferred Alternative (see Tables 4-6.3, 4-6.6, F-8.b & F-8.c; see also response to Comment 27 in Appendix B for SCC calculations incorporating even more favorable BEV assumptions).

Alternative 1.1, to purchase and deploy 100 percent RHD COTS ICE vehicles, would also not meet the Postal Service's Purpose and Need. While RHD COTS ICE vehicles would have some, but not all, of the enhanced safety and customized operational features available in the NGDV that are optimal for postal operations and be capable of delivering to curb-line mailboxes, they would not provide the same operational or ergonomic benefits as the purpose-built NGDV (see Section 3-2). For example, they do not have body components designed for frequent and repetitive use, leading to expected higher maintenance and repair costs, and body components that need to be replaced more frequently than those purpose-built for the NGDV.

Alternative 1.2, to purchase and deploy 100 percent LHD COTS BEVs, also would not meet the Postal Service's Purpose and Need. In addition to the body component issues of the RHD COTS the COTS BEVs would have route length and other operational constraints that would not allow deployment of BEVs for some routes. Also, being LHD, the COTS BEVs would not support curb-line deliveries (see Section 4-4.3.3). Although the COTS BEV market and technology is rapidly evolving, LHD BEVs are still in development and currently available only in small quantities. RHD COTS BEVs are not currently available or otherwise marketed by commercial manufacturers for future development.

The No-Action Alternative, or status quo, would not meet the Postal Service's Purpose and Need. It would not involve the purchase and deployment of any replacement vehicles for accident-damaged, high-maintenance, and end-of-life vehicles. It would not meet the Purpose and Need to provide more energy-efficient vehicles, and updated technology, increased cargo capacity and improved loading characteristics, improved ergonomics and carrier safety, and reduced maintenance costs. Further, it would result in higher fuel (gasoline) usage than both Proposed Action Hypothetical Maxima and Alternative 1.2, and greater direct and indirect GHG emissions than both Hypothetical Maxima of the Proposed Action and Alternatives 1.1 and 1.2.

Table 4-11.1
Potential Environmental Impacts Summary Matrix

Key:
Impact symbols: B = beneficial effect; N = no effect or negligible effect; M = moderately adverse effect; and S = significant effect
Duration symbols: P = permanent effect; T = temporary effect; and N/A = not applicable
Mitigation symbols: Y = can be mitigated; N = cannot be mitigated; NR = not required; and N/A = not applicable

Environmental Resource Area	NGDV Proposed Action (90% ICE/10% BEV) Impact - Duration - Mitigation	NGDV Proposed Action (100% BEV) Impact - Duration - Mitigation	COTS Alternative 1.1 (100% ICE) Impact - Duration - Mitigation	COTS Alternative 1.2 (100% BEV) Impact - Duration - Mitigation	No-Action Alternative Impact - Duration - Mitigation
Socioeconomics					
Economics	N - P - NR	N - P - NR	N - P - NR	N - P - NR	N - P - NR
Employment	N - P - NR	N - P - NR	N - P - NR	N - P - NR	N - P - NR
Environmental Justice	N - P - NR	N - P - NR	N - P - NR	N - P - NR	N - P - NR
Transportation					
Traffic	N - P - NR	N - P - NR	N - P - NR	N - P - NR	N - P - NR
Safety	B - P - NR	B - P - NR	B - P - NR	B - P - NR	M - P - N
Accessibility	N - T - NR	N - T - NR	N - T - NR	N - T - NR	N - P - NR
Parking	N - T - NR	N - T - NR	N - T - NR	N - T - NR	N - P - NR
Public Transportation	N - P - NR	N - P - NR	N - P - NR	N - P - NR	N - P - NR
Noise					
Traffic	N - P - NR	B - P - NR	N - P - NR	B - P - NR	N - P - NR
VMF Operations & BEV Charging	N - P - NR	N - P - NR	N - P - NR	N - P - NR	N - P - NR
Air Quality					
Air Emissions	B - P - NR	B - P - NR	B - P - NR	B - P - NR	N - P - N
General Conformity	N/A - N/A - N/A	N/A - N/A - N/A	N/A - N/A - N/A	N/A - N/A - N/A	N/A - N/A - N/A
Greenhouse Gas	B - P - NR	B - P - NR	B - P - NR	B - P - NR	N - P - NR
Community Services					
Utilities	N - P - NR	N - P - NR	N - P - NR	N - P - NR	N - P - N
Emergency Services	B - P - NR	B - P - NR	B - P - NR	B - P - NR	N - P - N
Utilities and Infrastructure					
Availability	N - P - NR	N - P - Y	N - P - NR	N - P - Y	N - P - NR
Capacity	N - P - NR	N - P - Y	N - P - NR	N - P - Y	N - P - NR
Energy Requirements and Conservation					
Fuel Consumption	B - P - NR	B - P - Y	N - P - NR	B - P - Y	N - P - N
Electrical Grid	N - P - NR	N - P - Y	N - P - NR	N - P - Y	N - P - N/A
Solid/Hazardous Materials/Waste Generation					
Solid Waste	N - P - NR	N - P - NR	N - P - NR	N - P - NR	N - P - NR
Hazardous Waste	N - P - NR	B - P - NR	N - P - NR	B - P - NR	N - P - NR
Recycling	N - P - NR	N - P - NR	N - P - NR	N - P - NR	N - P - NR

5 OTHER IMPACTS

5-1 Unavoidable Adverse Impacts

The Proposed Action and Alternatives 1.1 and 1.2 would involve the purchase and deployment of up to 165,000 NGDV or COTS vehicles in total production orders over a ten-year period. High-maintenance and end-of-life delivery vehicles would be replaced at various Postal Service facility locations throughout the U.S. on a one-for-one basis, resulting in no additional delivery vehicles (Appendix D). This number of new delivery vehicles represents a negligible percentage of the over 122 million cars and almost 160 million trucks registered in the U.S. in 2018 (USDOE 2021).

5-1.1 Proposed Action – ICE NGDV Hypothetical Maximum

Under the ICE NGDV Hypothetical Maximum, the Proposed Action would generate solid and hazardous wastes from continued maintenance of delivery vehicles, but to a lesser degree than the No-Action Alternative. Less fuel would be purchased from retailers and bulk suppliers because of better gas mileage by the ICE NDGV, and up to 16,500 BEV NGDV not requiring fuel for operation. New NGDV would require less maintenance than the high-maintenance and end-of-life delivery vehicles. The need for commercial garage maintenance due to unscheduled repairs of vehicles is anticipated to decrease. This would result in adverse impacts to commercial fuel retailers from lower overall fuel sales and less maintenance needed by commercial garages for unscheduled repairs because the new vehicles would be more fuel efficient and would not need as much maintenance as the high-maintenance and end-of-life delivery vehicles being replaced.

Although there would be an increase in the number of vehicles and/or parts that would need to be sold, recycled to the extent possible, or disposed in accordance with the Postal Service's protocols, there is adequate nationwide treatment and disposal capacity, with the exception of lithium-ion BEV batteries. Spent BEV batteries would be an additional source of hazardous waste. Spent batteries could be collected under streamlined universal waste collection standards to make it easier to send them for recycling or proper treatment and disposal. Recycling methods in the U.S. are limited at this time and vary in recovery capabilities for spent BEV batteries; however, it is expected that recycling capacity over the effective life of the BEV NGDV would increase with the increasing nationwide adoption of BEVs.

This Proposed Action would not impact short-term uses of environmental resources that would affect the maintenance of long-term productivity.

Delivery vehicle operation contributes to ambient noise around Postal Service facilities and along delivery routes. Vehicle noise sources include air passing over vehicles, engine, exhaust and drivetrain, and tires rolling on roadway surfaces. ICE vehicles are expected to generate less noise than the high-maintenance and end-of-life delivery vehicles being replaced, and BEVs are expected to generate even less noise than ICE vehicles at low speeds where tire noise does not predominate. There would be negligible to minimal impact on the overall ambient noise environment since each delivery event occurs over a short duration at generally low speeds and during daytime hours.

The ICE NGDV would continue to produce air emissions during operations, but to a lesser extent than vehicles being replaced, due to advances in new technologies in engine and transmission designs and in emission controls. Replacing the high-maintenance and end-of-life delivery vehicles with ICE NGDV would result in a beneficial net reduction in air pollutant and GHG emissions. There would be a positive (beneficial) impact on social cost of carbon emissions.

5-1.2 Proposed Action – BEV NGDV Hypothetical Maximum

The Proposed Action, under this Hypothetical Maximum, would generate solid and hazardous wastes from continued maintenance of delivery vehicles, but to a lesser degree than under the No-Action Alternative. Less fuel would be purchased from retailers and bulk suppliers because the BEV NDGV would not require fuel for operation. New NGDV would require less maintenance than the high-maintenance and end-of-life delivery vehicles. The need for commercial garage maintenance due to unscheduled repairs of vehicles is anticipated to decrease. This would result in adverse impacts to commercial fuel retailers from lower overall fuel sales and less maintenance needed by commercial garages for unscheduled repairs because the new vehicles would be more fuel-efficient and would not need as much maintenance as the delivery vehicles being replaced.

Although there would be an increased demand for disposal of vehicles or parts that would need to be sold, recycled to the extent possible, or disposed in accordance with the Postal Service's fleet disposal strategy, there is adequate nationwide treatment and disposal capacity with the exception of spent lithium-ion BEV batteries. Spent BEV batteries would be an additional source of hazardous waste, but the Proposed Action would generate more battery waste under this Hypothetical Maximum than the 90 percent ICE NGDV and 10 percent BEV NGDV Hypothetical Maximum. However, spent batteries could be collected under streamlined universal waste collection standards to make it easier to send them for recycling or proper treatment and disposal. Recycling methods in the U.S. are limited and vary in recovery capabilities for spent BEV batteries; however, it is expected that recycling capacity over the effective life of the BEV NGDV would increase with the increasing nationwide adoption of BEVs.

This Proposed Action therefore would not impact short-term uses of environmental resources that would affect the maintenance of long-term productivity.

Delivery vehicle operation would contribute to ambient noise around Postal Service facilities and along delivery routes. Vehicle noise sources include air passing over vehicles, engine, exhaust and drivetrain, and tires rolling on roadway surfaces. BEVs are expected to be quieter than ICE vehicles at low speeds where tire noise does not predominate. There would be negligible to minimal impact on the overall ambient noise environment since each delivery event occurs over a short duration at generally low speeds and during daytime hours.

The BEV NGDV would produce fewer air emissions than the ICE NGDV during operations. Replacing the high-maintenance and end-of-life delivery vehicles with BEV NGDV would result in a greater beneficial net reduction in air pollutant and GHG emissions, and there would be approximately 1.5 times greater social cost benefit as compared to the 90 percent ICE NGDV and 10 percent BEV NGDV Hypothetical Maximum.

5-1.3 Alternative 1.1 – 100% RHD COTS ICE Vehicles

Alternative 1.1 would generate solid and hazardous wastes from continued maintenance of delivery vehicles, but to a lesser degree than under the No-Action Alternative. More fuel for the 165,000 COTS ICE vehicles would be purchased from retailers and bulk suppliers because of their lower average fuel efficiency (mpg) than the mix of current delivery vehicles. The need for commercial garage maintenance due to unscheduled repairs of vehicles is anticipated to decrease. New COTS vehicles would result in adverse impacts to commercial garages due to less maintenance needed for unscheduled repairs because the new vehicles would not need as much maintenance as the high-maintenance and end-of-life delivery vehicles being replaced. This would result in less business for commercial garages performing unscheduled repairs because the new vehicles would not need as much maintenance as the delivery vehicles being replaced. Although there would be an increased demand for disposal of vehicles or parts that would need to be sold, recycled to the extent possible, or disposed in accordance with the Postal Service's fleet disposal strategy, there is adequate nationwide treatment and disposal capacity. Alternative 1.1 therefore would not impact short-term uses of environmental resources that would affect the maintenance of long-term productivity.

Delivery vehicle operation would contribute to ambient noise around Postal Service facilities and along delivery routes. Vehicle noise sources include air passing over vehicles, engine, exhaust and drivetrain, and tires rolling on roadway surfaces. COTS ICE vehicles are expected to be quieter than the aged delivery vehicles being replaced. There would be negligible to minimal impact on the overall ambient noise environment since each delivery event occurs over a short duration at generally low speeds and during daytime hours.

The COTS ICE vehicles would continue to produce air emissions during operations. Replacing the high-maintenance and end-of-life delivery vehicles with COTS ICE vehicles would result in a beneficial net reduction in air pollutant and GHG emissions. However, there would be less beneficial impact, including the least social cost benefit from carbon emissions, than under any other Alternative.

5-1.4 Alternative 1.2 – 100% LHD COTS BEVs

Alternative 1.2 would generate solid and hazardous wastes from continued maintenance of delivery vehicles, but to a lesser degree than under the No-Action Alternative. Less fuel would be purchased from retailers and bulk suppliers because the COTS BEVs would not require fuel for operation. New COTS vehicles would require less maintenance than the high-maintenance and end-of-life delivery vehicles. The need for commercial garage maintenance due to unscheduled repairs of vehicles is anticipated to decrease, this would result in adverse impacts to commercial fuel retailers from lower overall fuel sales, and less maintenance needed for unscheduled repairs by commercial garages because the new vehicles would not need as much maintenance as the high-maintenance and end-of-life delivery vehicles being replaced.

Although there would be an increased demand for disposal of vehicles or parts that would need to be sold, recycled to the extent possible, or disposed in accordance with the Postal Service's fleet disposal strategy, there is adequate nationwide treatment and disposal capacity with the exception of spent lithium-ion BEV batteries. Spent BEV batteries would be an additional source of hazardous waste. However, spent batteries could be collected under streamlined universal waste collection standards to make it easier to send them for recycling or proper treatment and disposal. Recycling methods in the U.S. are limited and vary in recovery capabilities for spent BEV batteries; however, it is expected that recycling capacity over the effective life of the COTS BEV would increase with the increasing nationwide adoption of BEVs.

Alternative 1.2 therefore would not impact short-term uses of environmental resources that would affect the maintenance of long-term productivity.

Delivery vehicle operation would contribute to ambient noise around Postal Service facilities and along delivery routes. Vehicle noise sources include air passing over vehicles, engine, exhaust and drivetrain, and tires rolling on roadway surfaces. BEVs are expected to be quieter than ICE vehicles at low speeds where tire noise does not predominate. There would be negligible to minimal impact on the overall ambient noise environment since each delivery event occurs over a short duration at generally low speeds and during daytime hours.

The COTS BEVs would produce fewer direct and indirect air emissions than the COTS ICE vehicles during operations. Replacing the high-maintenance and end-of-life delivery vehicles with COTS BEVs would have the same beneficial net reduction in air pollutant and GHG emissions as the 100 percent BEV NGDV Hypothetical Maximum. Alternative 1.2 would represent greater benefit in terms of social cost of carbon emissions and there would be approximately two times greater social cost benefit as compared to the ICE NGDV Hypothetical Maximum.

5-2 Irreversible and Irretrievable Commitments of Resources

Irreversible and irretrievable commitments of resources refer to the impacts on or losses of resources that cannot be recovered or reversed such as the use of fuel or mined minerals. The Proposed Action and Alternatives 1.1 and 1.2 would involve the purchase and deployment of up to 165,000 NGDV or COTS vehicles in total production orders over a ten-year period. High-maintenance and end-of-life delivery vehicles would be replaced at various Postal Service facility locations throughout the U.S. on a one-for-one basis, resulting in no additional delivery vehicles (see Appendix D).

5-2.1 Proposed Action

Under the Proposed Action ICE NGDV Hypothetical Maximum, fuel would continue to be used for ICE NGDV. There would be a one-to-one replacement of high-maintenance and end-of-life delivery vehicles, and the NGDV would be more fuel-efficient than the delivery vehicles being replaced, so less fuel would be consumed than is currently or under the No Action Alternative. BEV NGDV would not require fuel and even considering fuel for the grid (as evaluated through eGRID), there would be a net reduction in fuel usage.

In 2020, non-renewable energy sources accounted for about 80 percent of electricity generation (USEIA 2021a), and the BEV NGDV would result in irreversible commitment of the non-renewable fuel resources. Also, the BEV NGDV would use lithium-ion batteries that would result in irreversible commitment of the mined mineral ores needed for battery production. The minerals of primary concern for BEV battery production are cobalt, lithium, graphite and manganese, all of which are listed as critical materials by the United States Geological Survey due to the heavy reliance for economic development and high vulnerability in the supply chain (FR 2018).

5-2.2 Alternative 1.1 – 100% RHD COTS ICE Vehicles

Alternative 1.1 would continue to use fuel for COTS ICE vehicles. There would be a one-to-one replacement of high-maintenance and end-of-life delivery vehicles. However, the COTS ICE vehicles would be less fuel efficient than the delivery vehicles being replaced. Thus, there would be a net increase in fuel usage.

5-2.3 Alternative 1.2 - 100% LHD COTS BEVs

Alternative 1.2 would not require fuel usage, and even considering fuel for the grid (as evaluated through eGRID), there would be a net reduction in fuel usage

In 2020, non-renewable energy sources accounted for about 80 percent of electricity generation (USEIA 2021a), and the COTS BEVs would result in irreversible commitment of the non-renewable fuel resources. Also, the COTS BEV lithium-ion batteries would result in more irreversible commitment of the mined mineral ores needed for battery production than for the ICE or No-Action Alternatives. The minerals of primary concern for BEV battery production are cobalt, lithium, graphite and manganese, all of which are listed as critical materials by the United States Geological Survey due to the heavy reliance on for economic development and high vulnerability in the supply chain (FR 2018).

6 CUMULATIVE IMPACTS

6-1 Introduction

Cumulative impacts are the impacts on the environment that result from the incremental impact of a proposed action when added to other past, present, and reasonably foreseeable future actions. Cumulative impacts result when the effects of an action are added to or interact with other effects in a particular place and within a particular time frame. The cumulative impacts of an action can be viewed as the collective environmental effects (magnitude, extent, or duration) on an environmental resource, ecosystem, or human community from a proposed action when added to impacts from other actions affecting that resource. If an action does not have impacts on a particular resource, there would be no cumulative effects attributable to the action.

The analysis of cumulative impacts requires specific knowledge of other actions occurring or proposed to occur within or near the geographic study area. This analysis focuses on the nationwide deployment of new Postal Service delivery vehicles with one-to-one replacement of high-maintenance and end-of-life delivery vehicles over a ten-year period. The quantity of new vehicles and the site-specific locations of where they would be deployed are not known at this time. Given the nature and nationwide scope of the Proposed Action and Alternatives 1.1 and 1.2, identifying the actions of others would be very difficult if not impossible to quantify. Therefore, cumulative effects from the incremental impacts of the Proposed Action and Alternative 1.1 and 1.2 scenarios are evaluated broadly on a nationwide scale.

6-2 Geographic Extent and Time Frame

The deployment of up to 165,000 replacement delivery vehicles over a ten-year period is nationwide in scope, with vehicles to be placed at various Postal Service facilities across the U.S. depending on the locations of the high-maintenance and/or end-of-life of existing delivery vehicles to be replaced. Therefore, the geographic extent of this cumulative impact analysis is also national in scope. The temporal scope of this analysis considers nationwide trends related to past and future action impacts when the incremental impacts related to upgrading the Postal Service's delivery fleet are added. The Proposed Action and Alternatives 1.1 and 1.2 deployments would span a time-period of ten years beginning in 2023, and the vehicles' operational time-period would continue for the life span of the vehicles.

6-3 Past, Present, and Reasonably Foreseeable Projects and Actions Considered

The temporal scope of this analysis spans past and planned future actions related to upgrading the Postal Service's delivery fleet vehicles. The Postal Service continually replaces high-maintenance and end-of-life delivery vehicles. The current delivery fleet of approximately 212,000 active vehicles consists of approximately 135,000 RHD LLVs, 20,000 RHD FFVs, 50,000 COTS delivery vehicles and 7,000 COTS mixed delivery vehicles (step vans). The mixed delivery and step vans transport large volumes of mail and are utilized for a combination of delivery and collection routes where larger capacity is required. Step vans travel on highways throughout the U.S. New COTS ICE vehicles, evaluated in a 2017 PEA (USPS), and an REC in 2020, continue to be purchased as needed to replace high-maintenance and end-of-life delivery vehicles and to support delivery route growth.

6-4 Discussion of Potential Cumulative Impacts

6-4.1 Resources Not Studied in Detail

The Proposed Action and Alternatives 1.1 and 1.2 scenarios would potentially affect the environmental resources discussed in this section. There would be no potential for cumulative impact on the environmental resources not studied in detail in this EIS, as described in Section 4-2 (water, geology, soils, prime farmland, vegetation, wildlife, threatened and endangered species, wetlands and floodplains, cultural resources, land use, wild and scenic rivers and coastal zone). As discussed in Sections 1-3.1 and 4-2, site-specific facility alterations and a potential new training facility are not included in the detailed evaluation of the Proposed Action and Alternatives 1.1 and 1.2, as these specifically address the purchase and operation of new Postal Service delivery vehicles. Appropriate NEPA reviews at the local level would be conducted in the future, as needed.

6-4.2 Socioeconomics

The purchase and deployment of up to 165,000 new delivery vehicles over a ten-year period to replace the same number of high-maintenance and end-of-life delivery vehicles would result in negligible impacts on community economics, employment, and minority and low-income populations. There would be a negligible beneficial effect on the nationwide economy from the purchase and deployment of 165,000 delivery vehicles and on the local communities where the vehicles are manufactured and sold. The sale, scrapping, and/or recycling of the aged delivery vehicles being replaced would likewise have a negligible positive economic effect on income for the used auto, parts, scrapping, and recycling industries. Adding more fuel-efficient ICE vehicle drivetrains and BEVs would reduce the demand for fuel (gasoline) purchases. These impacts would be insignificant when compared to the nationwide economy.

Adding BEVs would increase the demand for electricity available to commercial and residential users. There would be no to negligible impact on electricity availability. There would be beneficial impacts on ambient air quality in cities and suburbs where new ICE vehicles and BEVs are deployed because of the higher emission controls of the newer vehicles. There would be improvements in safety for delivery personnel and the general public that would decrease the potential risk of accidents due to vehicle mechanical failures and certain modern safety features. Postal Service deliveries are made regardless of socioeconomic status, so there would be no impact to minority or low-income populations in terms of mail service or disproportionately high or adverse economic effect resulting from the vehicle replacements at a facility. There would be no perceptible adverse impact to socioeconomic resources such as community economics, employees or minority and low-income populations employment from implementation of the Proposed Action and Alternatives 1.1 and 1.2 on a nationwide scale.

6-4.3 Transportation

The purchase and deployment of up to 165,000 new delivery vehicles over a ten-year period to replace the same number of high-maintenance and end-of-life delivery vehicles would result in no impact on local community or nationwide traffic, accessibility and parking at Postal Service facilities, or public transportation. There would be no increase in delivery routes or personnel. The new delivery vehicles would not impact nationwide traffic volume. Modern safety features on the new delivery vehicles would improve operational safety and coupled with past purchases of modern COTS ICE vehicles, would have a positive cumulative impact on operational safety. There would be no cumulative effect on traffic, accessibility, or public transportation, and no potential for adverse cumulative effects on local or nationwide transportation on a nationwide scale.

6-4.4 Noise Environment

The purchase and deployment of up to 165,000 new delivery vehicles over a ten-year period would replace the same number of high-maintenance and end-of-life delivery vehicles. New ICE vehicles are expected to generate less noise than the delivery vehicles being replaced, and BEVs would generate even less noise than the ICE vehicles at low speeds where tire noise does not predominate. There would be negligible to minimal impact on the overall ambient noise environment since each delivery event occurs over a short duration at generally low speeds and during daytime hours. There would be no significant adverse cumulative impact on noise from any of the Proposed Action or Alternatives 1.1 and 1.2 on a nationwide scale.

6-4.5 Air Quality

The purchase and deployment of up to 165,000 new delivery vehicles over a ten-year period would replace the same number of high-maintenance and end-of-life delivery vehicles. The new ICE vehicles would continue to produce air emissions during operations. However, replacing the high-maintenance and end-of-life delivery vehicles with new ICE vehicles would result in a beneficial net reduction in air pollutant and GHG emissions, and there would be a positive (beneficial) impact on the social cost of carbon emissions. Past actions in which the Postal Service replaced high-maintenance and end-of-life delivery vehicles with new ICE vehicles also produced a beneficial net reduction in air pollutant emissions. The BEV alternatives would produce even fewer air emissions than ICE vehicles during operations, and would result in an even greater beneficial net reduction in air pollutant and GHG emissions and SCC emissions. The reduction in direct and indirect GHG emissions under the ICE NGDV Proposed Action Hypothetical Maximum would be 290,306 MT CO_2e, under the BEV NGDV Proposed Action Hypothetical Maximum would be 865,213 MT CO_2e (almost three times greater reduction in GHG emissions than under the ICE NGDV), under Alternative 1.1 (COTS ICE vehicles) would be 226,427 MT CO_2e, and under Alternative 1.2 (COTS BEVs) would be 1,116,730 MT CO_2e (the greatest reduction of both the Proposed Action and Alternative 1.1). There would be no significant adverse cumulative impact on air quality from any of the Proposed Action or Alternatives 1.1 and 1.2 on a nationwide scale.

6-4.6 Community Services

The purchase and deployment of up to 165,000 delivery vehicles over a ten-year period to replace the same number of high-maintenance and end-of-life delivery vehicles would not result in a significant adverse cumulative impact on community services. Adding BEV drivetrains to the Postal Service delivery fleet would reduce the demand for fuel, as would more fuel-efficient ICE vehicle drivetrains resulting in a negligible reduction in nationwide fuel demand. Adding BEVs would increase the demand for electricity from the electrical grid resulting in a negligible, incremental adverse effect on nationwide electricity demand (see Section 6-4.9). The Postal Service would install charging stations at various nationwide Postal Service facilities and not rely on public charging stations for charging delivery vehicles. There would be a potential beneficial impact on emergency services due to the improved, modern safety features of the new vehicles. There would be no significant adverse cumulative impact on community services on a nationwide scale.

6-4.7 Utilities and Infrastructure

The purchase and deployment of up to 165,000 delivery vehicles over a ten-year period to replace the same number of high-maintenance and end-of-life delivery vehicles would not result in a significant adverse cumulative impact on utilities or infrastructure. Adding BEVs would increase the demand for electricity from the electrical grid resulting in a negligible, incremental adverse effect on nationwide electricity demand (see Section 6-4.9), though this charging will occur in off-peak hours when overall grid demand is much lower. Charging stations would be needed at some Postal Service facilities to accommodate BEVs, and public charging stations would not be used. The impact on utilities and infrastructure services as a result of the Proposed Action and Alternative 1.2 would result in no or negligible changes from the present impacts on utility and infrastructure services. There would be no significant adverse cumulative impact on utilities and infrastructure on a nationwide scale.

6-4.8 Energy Requirements and Conservation

The purchase and deployment of up to 165,000 delivery vehicles over a ten-year period would replace the same number of high-maintenance and end-of-life delivery vehicles. The new NGDV and BEV delivery vehicles would be more fuel-efficient than the delivery vehicles being replaced. ICE NGDV would require less fuel (gasoline) than the replaced delivery vehicles and it is expected that oil changes would be less frequent for newer vehicles resulting in a reduction of oil needed for servicing the new vehicles. Past replacements of high-maintenance and end-of-life ICE delivery vehicles with new more fuel-efficient and lower maintenance ICE delivery vehicles also resulted in lower fuel consumption and less maintenance. Under Alternative 1.1, the COTS ICE vehicles would require more fuel (gasoline) than the replaced delivery vehicles, resulting in about 56 million gallons more annual fuel usage than the ICE NGDV hypothetical maximum Proposed Action. This Alternative would result in a negligible adverse impact on fuel resources on a nationwide scale. The cumulative impacts on fuel (gasoline) resources would be negligible, as the new delivery vehicles would make up a negligible percentage of the approximately 251 million cars and light trucks registered nationwide in 2021 (USDOE 2020).

BEVs would not require fuel, but electricity would be needed to recharge the BEVs. The Postal Service would install charging stations at various nationwide Postal Service facilities where new BEVs are deployed and would not rely on public charging stations. The increasing adoption of BEVs nationwide will place increasing demands on electrical usage for BEV operation. However, the annual energy usage and load requirements for the Proposed Action and Alternative 1.2 are less than one percent of the total annual energy generation for the U.S. in 2020. Nationally, the electric infrastructure needs of BEV NGDV or COTS BEVs would be minor in the context of the U.S. electric grid systems and no significant, national investment in generation, transmission, or distribution would be needed. Cumulative effects on the electrical energy demand would be negligible. The cumulative impacts on energy requirements would be negligible, as the new delivery vehicles would make up a negligible percentage of the approximately 251 million cars and light trucks registered nationwide in 2021 (USDOE 2020). There would be no significant adverse cumulative impact on energy requirements or conservation on a nationwide scale.

6-4.9 Solid and Hazardous Materials and Waste

The purchase and deployment of up to 165,000 delivery vehicles over a ten-year period to replace the same number of high-maintenance and end-of-life delivery vehicles would not result in a significant adverse cumulative impact on solid and hazardous waste treatment and disposal. Approximately the same quantities of wastes as currently generated by high-maintenance and end-of-life vehicle replacements would be generated, except for the initial generation and disposal of scrapped vehicle wastes. The Postal Service's vehicles would be scrapped or sold for parts, the materials recycled to the extent possible, and the remaining waste disposed at licensed facilities with adequate capacity. There would be a significant reduction in the use of lubricants, oils, and greases used in BEVs compared to ICE vehicles. Nationally, there is adequate commercial treatment and landfill disposal capacity for hazardous waste through December 31, 2044 (EPA 2017). Spent BEV batteries would be an additional source of hazardous waste. Recycling capacity for BEV batteries is expected to increase over the next ten years before the end of the effective life of the NGDV or COTS batteries. No significant adverse cumulative impacts on solid and hazardous waste treatment and disposal on a nationwide scale are expected to result from implementation of either the Proposed Action or Alternatives 1.1 and 1.2.

6-4.10 Conclusion

Impacts from the Proposed Action and Alternatives 1.1 and 1.2 would not have the potential for significant adverse cumulative impacts on nationwide environmental resources when considered in combination with other actions nationwide. Because of adding newer delivery vehicles to the fleet, impacts on environmental resources generally are expected to be less than current impacts, including the No-Action Alternative. Therefore, the Proposed Action and Alternatives 1.1 and 1.2, would not result in a significant adverse cumulative impact on nationwide environmental resources.

7 MITIGATION MEASURES

7-1 Introduction

The EIS has been developed in accordance with NEPA regulations. As specified in NEPA, mitigation was considered throughout the environmental analysis process. Mitigation measures include avoiding the impact; minimizing or reducing the severity of impact over time; rectifying the impact by repairing, rehabilitating, or restoring the adverse effect; or compensating for the impact such that the impact is no longer significant.

The Proposed Action and Alternatives 1.1 and 1.2 would involve the purchase and deployment of up to 165,000 NGDV or COTS vehicles in total production orders over a ten-year period. High-maintenance and end-of-life delivery vehicles would be replaced at various Postal Service facility locations throughout the U.S. on a one-for-one basis, resulting in no additional delivery vehicles (Appendix D). This number of new delivery vehicles represents a negligible percentage of the over 122 million cars and almost 160 million trucks registered in the U.S. in 2018 (USDOE 2021).

7-2 Overview of Impacts

The Proposed Action and Alternatives 1.1 and 1.2 would not result in significant direct, indirect, or cumulative adverse impacts. There would be no or negligible adverse impacts on noise, economics, environmental justice, transportation, community services , utilities and infrastructure, energy requirements, or solid and hazardous waste (see Table 4-11.1). The Proposed Action and Alternatives 1.1 and 1.2 would result in minor positive (beneficial) impacts on traffic and vehicle safety from modern safety features, and air quality from a net reduction in delivery vehicle air emissions. The new vehicles would also result in reduced vehicle breakdowns. Alternative 1.1 would result in a negligible adverse impact on fuel resources on a nationwide scale. The Proposed Action and Alternative 1.2 would result in positive impacts on fuel consumption from increased fuel efficiency of the new delivery vehicles.

7-3 Mitigation Measures

Because of the small degree and low severity of adverse impacts of each of the Proposed Action and Alternatives 1.1 and 1.2 on environmental resources, mitigation measures are not necessary to avoid adverse impact, reduce the severity of adverse impact, rehabilitate and restore adverse effects, or compensate for adverse impact. Implementation of the Proposed Action or Alternatives 1.1 and 1.2 would provide various degrees of beneficial effects on some environmental resources.

7-4 Conclusion

Implementation of the Proposed Action or Alternatives 1.1 and 1.2 would serve to mitigate the existing impacts on environmental resources from the No-Action Alternative (continued operation of the high-maintenance and end-of-life delivery vehicles). Additionally, the Proposed Action would provide the flexibility to reduce environmental impacts even further through the acquisition of more BEV NGDV should additional funding become available. The Postal Service has determined that no further mitigation measures are necessary or financially feasible.

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9 LIST OF PREPARERS

U.S. Postal Service

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Fang Yang - M.S., Atmospheric Science, B.S., Physics. Over 31 years' experience in air quality, noise and vibration, and energy and GHG studies primarily by using regulatory modeling tools. Led studies for projects in the industrial, commercial, transportation, aviation, government, and military areas including NEPA air quality impact analyses for airport, highway, rail and bus transit, intermodal facility, power generation, oil and gas, wastewater treatment, zoning and land development.

APPENDIX A

ACRONYMS AND ABBREVIATIONS

and

INDEX

Table A-1
List of Acronyms and Abbreviations

Table A-2
Index

Table A-1
List of Acronyms

Acronym	Expansion
BEV	battery electric vehicle
CAA	Clean Air Act
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CH_4	Methane
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	CO_2 equivalents
COTS	commercial-off-the-shelf
Cyl	Cylinder
dB	Decibel
dBA	decibel (A-weighted scale)
DEIS	Draft Environmental Impact Statement
DOT	Department of Transportation
eGRID	Emissions & Generation Resource Integrated Database
EIS	Environmental Impact Statement
EISA	Energy Independence and Security Act
EJ	Environmental Justice
EO	Executive Order
EPA	Environmental Protection Agency
EPAct	Energy Policy Act
FEIS	Final Environmental Impact Statement
FFV	Flexible Fuel Vehicle
FHWA	Federal Highway Administration
FR	Federal Register
FTP	Federal Test Procedure
FY	fiscal year
GHG	Greenhouse Gas
GREET	Greenhouse Gases, Emissions, and Energy use in Technologies
GSA	General Services Administration
GVWR	Gross Vehicle Weight Rating
GWP	Global Warming Potential
HAPs	hazardous air pollutants
Hz	Hertz
ICE	internal combustion engine
IEA	International Energy Agency
ITE	Institute of Transportation Engineers
IWG	Interagency Working Group
kg/mi	Kilogram(s) per mile
km/h	Kilometer(s)/hour
kW	Kilowatt
kWh	kilowatt hour
lbs	Pounds
lb/MWh	pounds per megawatt-hour
LHD	Left Hand Drive
LLV	Long-Life Vehicle
$\mu g/m^3$	micrograms per cubic meter
MOVES	MOtor Vehicle Emission Simulator
mpg	miles per gallon
mph	miles per hour

Acronym	Expansion
MSAT	Mobile Source Air Toxics
MT	Metric Ton
MWh	Megawatt hours
N_2O	nitrous oxide
N/A	not applicable
NAAQS	National Ambient Air Quality Standards
NECPA	National Energy Conservation Policy Act
NEPA	National Environmental Policy Act
NGDV	Next Generation Delivery Vehicles
NO_x	nitrogen oxide
NO_2	nitrogen dioxide
NOA	Notice of Availability
NOAA	National Oceanic and Atmospheric Administration
NOI	Notice of Intent
NR	not required
NRHP	National Register of Historic Places
O_3	ozone
OIG	Office of Inspector General
Pb	lead
PEA	Programmatic Environmental Assessment
$PM_{2.5}$	particulate matter (measured as less than 2.5 microns in diameter)
PM_{10}	particulate matter (measured as less than 10 microns in diameter)
ppm	parts per million
RCRA	Resource Conservation and Recovery Act
REC	Record of Environmental Consideration
RFI	Request for Information
RFP	Request for Proposal
RHD	Right Hand Drive
SCC	Social Cost of Carbon
SIP	State Implementation Plan
SO_2	sulfur dioxide
SOW	Statement of Work
TCO	Total Cost of Ownership
tpy	ton per year
UAW	International Union, United Automobile, Aerospace & Agricultural Implement Workers of America
UDDS	Urban Dynamometer Driving Schedule
U.S.	United States
USC	United States Code
USCB	United States Census Bureau
USDOE	United States Department of Energy
USEIA	U.S. Energy Information Administration
USPS	United States Postal Service
UST	underground storage tank
VMF	Vehicle Maintenance Facility
VMT	Vehicle miles traveled
VOC	volatile organic compound
WTP	Well-to-Pump
WTW	Well-to-Wheels

Table A-2
Index

APPENDIX B

CONSULTATION AND COORDINATION

B1 Notice of Availability of DEIS

Federal Register Publication of NOA of DEIS (86 FR 47622; Aug. 26, 2021)

EPA EIS Database Publication (Sept. 3, 2021)

Table B1-1
Notice of Availability of DEIS Stakeholder Distribution List

NOA of DEIS Stakeholder Letter (example) (with Enclosure: August 26, 2021 Federal Register Publication, Postal Service Notice of Availability of Draft Environmental Impact Statement for Purchase of Next Generation Delivery Vehicles)

Agency and Public Comments on the NOA of the DEIS

Table B1-2
Summary of EPA, Other Agency, and Public Comments and Responses

B2 Notice of Availability of FEIS

Federal Register Publication

Table B2-1
Notice of Availability of FEIS Stakeholder Distribution List

NOA of FEIS Stakeholder Letter (example) (with Enclosure: Federal Register Publication, Postal Service Notice of Availability of Final Environmental Impact Statement for Purchase of Next Generation Delivery Vehicles)

Federal Register Publication of NOA of DEIS (86 FR 47622; Aug. 26, 2021)

47662 **Federal Register** / Vol. 86, No. 163 / Thursday, August 26, 2021 / Notices

information collection requirement or request: 153.6.

10. *Abstract:* Persons in the U.S. wishing to export or import nuclear material or equipment, or byproduct material requiring a specific authorization, amend or renew a license, or wishing to request consent to export Category 1 quantities of byproduct material must file an NRC Form 7 application. The NRC Form 7 application will be reviewed by the NRC and by the Executive Branch, and if applicable statutory, regulatory, and policy considerations are satisfied, the NRC will issue an export, import, amendment or renewal license or notice of consent.

Specific Requests for Comments

The NRC is seeking comments that address the following questions:

1. Is the proposed collection of information necessary for the NRC to properly perform its functions? Does the information have practical utility?
2. Is the estimate of the burden of the information collection accurate?
3. Is there a way to enhance the quality, utility, and clarity of the information to be collected?
4. How can the burden of the information collection on respondents be minimized, including the use of automated collection techniques or other forms of information technology?

Dated: August 23, 2021.

For the Nuclear Regulatory Commission.

David C. Cullison,

NRC Clearance Officer, Office of the Chief Information Officer.

[FR Doc. 2021–18363 Filed 8–25–21; 8:45 am]

BILLING CODE 7590–01–P

POSTAL SERVICE

Notice of Availability of Draft Environmental Impact Statement for Purchase of Next Generation Delivery Vehicles

AGENCY: Postal Service.

ACTION: Notice of availability of draft environmental impact statement.

SUMMARY: Pursuant to the requirements of the National Environmental Policy Act of 1969 (NEPA), its implementing procedures at 39 CFR 775, and the President's Council on Environmental Quality Regulations (40 CFR parts 1500–1508), the U.S. Postal Service announces availability of the Draft Environmental Impact Statement (DEIS) to purchase over 10 years 50,000 to 165,000 purpose-built, right-hand-drive vehicles—the Next Generation Delivery Vehicle (NGDV)—to replace existing delivery vehicles nationwide that are approaching the end of their service life. While the Postal Service has not yet determined the precise mix of the powertrains in the new vehicles to be purchased, under the Proposed Action, at least ten percent of the NGDVs would have battery electric (BEV) powertrains, with the remainder being internal combustion (ICE). The DEIS evaluates the environmental impacts of the Proposed Action, as well as two BEV and ICE commercial off-the-shelf (COTS) vehicle alternatives and the "no action" alternative. The Postal Service is soliciting comments on the DEIS during a 45-day public comment period.

DATES: Comments should be received no later than October 12, 2021. The Postal Service will also publish a Notice of Availability to announce the availability of the Final EIS.

ADDRESSES: Interested parties may view the DEIS at *http://uspsngdveis.com/*. Interested parties may mail or deliver written comments, containing the name and address of the commenter, to: Mr. Davon Collins, Environmental Counsel, United States Postal Service, 475 L'Enfant Plaza SW, Office 6606, Washington, DC 20260–6201, or at *NEPA@usps.gov*. Note that comments sent by mail may be subject to delay due to federal security screening. Faxed comments are not accepted. All submitted comments and attachments are part of the public record and subject to disclosure. Do not enclose any material in your comments that you consider to be confidential or inappropriate for public disclosure.

You may inspect and photocopy all written comments, by appointment only, at USPS Headquarters Library, 475 L'Enfant Plaza SW, 11th Floor North, Washington, DC 20260 by calling 202–268–2906.

Joshua J. Hofer,

Attorney, Ethics and Legal Compliance.

[FR Doc. 2021–18302 Filed 8–25–21; 8:45 am]

BILLING CODE 7710–12–P

SECURITIES AND EXCHANGE COMMISSION

[Release No. 34–92714; File No. SR–NYSEArca–2021–37]

Self-Regulatory Organizations; NYSE Arca, Inc.; Order Instituting Proceedings To Determine Whether To Approve or Disapprove a Proposed Rule Change To List and Trade Shares of the First Trust SkyBridge Bitcoin ETF Trust Under NYSE Arca Rule 8.201–E

August 20, 2021.

On May 6, 2021, NYSE Arca, Inc. ("NYSE Arca" or "Exchange") filed with the Securities and Exchange Commission ("Commission"), pursuant to Section 19(b)(1) of the Securities Exchange Act of 1934 ("Act")[1] and Rule 19b–4 thereunder,[2] a proposed rule change to list and trade shares ("Shares") of the First Trust SkyBridge Bitcoin ETF Trust ("Trust") under NYSE Arca Rule 8.201–E (Commodity-Based Trust Shares). The proposed rule change was published for comment in the **Federal Register** on May 27, 2021.[3]

On July 7, 2021, pursuant to Section 19(b)(2) of the Act,[4] the Commission designated a longer period within which to approve the proposed rule change, disapprove the proposed rule change, or institute proceedings to determine whether to disapprove the proposed rule change.[5] This order institutes proceedings under Section 19(b)(2)(B) of the Act[6] to determine whether to approve or disapprove the proposed rule change.

I. Summary of the Proposal

As described in more detail in the Notice,[7] the Exchange proposes to list and trade the Shares of the Trust under NYSE Arca Rule 8.201–E, which governs the listing and trading of Commodity-Based Trust Shares on the Exchange.

The investment objective of the Trust would be for the Shares to reflect the performance of the value of bitcoin, less

[1] 15 U.S.C. 78s(b)(1).

[2] 17 CFR 240.19b–4.

[3] *See* Securities Exchange Act Release No. 91962 (May 21, 2021), 86 FR 28646 (May 27, 2021) ("Notice"). Comments on the proposed rule change can be found at: *https://www.sec.gov/comments/sr-nysearca-2021-37/srnysearca202137.htm*.

[4] 15 U.S.C. 78s(b)(2).

[5] *See* Securities Exchange Act Release No. 92333 (July 7, 2021), 86 FR 36826 (July 13, 2021). The Commission designated August 25, 2021, as the date by which it should approve, disapprove, or institute proceedings to determine whether to disapprove the proposed rule change.

[6] 15 U.S.C. 78s(b)(2)(B).

[7] *See* Notice, *supra* note 3.

EPA EIS Database Publication (Sept. 3, 2021)

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Environmental Impact Statement (EIS) Database

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EIS Details

EIS Title

Next Generation Delivery Vehicle Acquisitions

EIS Number

20210129

Document Type

Draft

Federal Register Date

09/03/2021

EIS Comment Due/ Review Period Date

10/18/2021

Amended Notice Date

Amended Notice

Supplemental Information

Issuance of Notice of Intent to Prepare an EIS:

2021-03-04 00:00:00.0

EPA Comment Letter Date

10/21/2021

State or Territory

DC

Lead Agency

United States Postal Service

Contact Name

Davon M. Collins

Contact Phone

202-268-4570

Rating (if Draft EIS)

As of October 2018, EPA discontinued the use of ratings for Draft EISs.

You will need Adobe Reader to view some of the files on this page. See EPA's PDF page to learn more. If you need help accessing these PDF documents, please contact NEPAdatabasesupport (NEPAdatabasesupport@epa.gov) for assistance.

EIS Document(s):
USPS NGDV Draft EIS_08_26_21.pdf (168 pp, 5,871 K)

Comment Letter(s):
USPS NGDV Draft EIS detailed comments only_21Oct2021 Final.pdf (10 pp, 349 K)

USPS EPA Cover Letter October 2021.pdf (3 pp, 184 K)

Return to List

Table B1-1
Notice of Availability of DEIS Stakeholder Distribution List

Contact Name **Position**	**Mailing Address**
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Ronnie W. Stutts President	National Rural Letter Carriers' Association 1630 Duke Street Alexandria, VA 22314-3467
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Tammy L. Whitcomb Inspector General	Office of Inspector General, United States Postal Service 1735 North Lynn Street Arlington, VA 22209-2020
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Iliana Paul, Senior Policy Analyst, Max Sarinsky, Senior Attorney, Jason A. Schwartz, Legal Director	Institute for Policy Integrity at New York University School of Law 139 MacDougal Street, Third Floor New York, NY 10012-1076

NOA of DEIS Stakeholder Letter (example)

JENNIFER G. BEIRO-RÉVEILLÉ
SENIOR DIRECTOR, ENVIRONMENTAL AFFAIRS AND CORPORATE SUSTAINABILITY

UNITED STATES POSTAL SERVICE

EE 463 532 823 US

August 26, 2021

Robert Tomiak
Director, Office of Federal Activities
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, NW
WJC Building North, Mail Code 2251A
Washington, DC 20460-0003

SUBJECT: Notice of Availability of Draft Environmental Impact Statement for Purchase of Next Generation Delivery Vehicles

Dear Mr. Tomiak:

The Postal Service has prepared a Draft Environmental Impact Statement (DEIS) for the purchase of Next Generation Delivery Vehicles (NGDV) for delivery operations nationwide. The new vehicles would replace existing delivery vehicles that are approaching the end of their service life. Pursuant to the requirements of the National Environmental Policy Act (NEPA) of 1969, its implementing procedures at 39 CFR 775, and the President's Council on Environmental Quality Regulations (40 CFR parts 1500-1508), the Postal Service prepared this DEIS to evaluate the environmental impacts of the proposed action and alternatives. A copy of the Notice of Availability of the DEIS is enclosed.

Interested parties may view the DEIS at http://uspsngdveis.com/

Interested parties may mail or deliver written comments, containing the name and address of the commenter, to Mr. Davon Collins, Environmental Counsel, United States Postal Service, 475 L'Enfant Plaza SW, Office 6606, Washington, DC 20260-6201, or at NEPA@usps.gov. Note that comments sent by mail may be subject to delay due to federal security screening. Faxed comments are not accepted. All submitted comments and attachments are part of the public record and subject to disclosure. Do not enclose any material in your comments that you consider to be confidential or inappropriate for public disclosure.

Sincerely,

Asif Ansari for

Jennifer Beiro-Réveillé

Enclosure

475 L'ENFANT PLAZA SW ROOM 2717
WASHINGTON, DC 20260-4233

VISIT US @ USPS.COM

Agency and Public Comments on the NOA of the DEIS

Summary

- 37,571 sets of comments were timely received in response to the NOA of the DEIS.
- The vast majority were form letter.

Agency and Representative Public Comments Timely Received on the NOA of the DEIS

- U.S. Environmental Protection Agency (email & letter, October 21, 2021)
- Bay Area Air Quality Management District (letter, October 15, 2021)
- Eubanks & Associates, PLLC [on behalf of the International Union, United Automobile, Aerospace and Agricultural Implement Workers of America (UAW)] (letter, October 18, 2021)
- Institute for Policy Integrity, New York University School of Law (letter, October 15, 2021)
- EarthJustice (letter, October 18, 2021), with Attachment A
- Air Products and Chemicals, Inc. (letter, October 12, 2021)
- The Center for Transportation and the Environment (letter, October 12, 2021)
- Elders Climate Action
- EOP Foundation, Inc.
- Sierra Club (letter, October 12, 2021)
- Natural Resources Defense Council (email, October 18, 2021)
- Fuel Cell & Hydrogen Energy Association (letter, October 12, 2021)
- Rutgers, The State University of New Jersey (letter, October 6, 2021)
- Various Others

Copies of all agency comments received are presented following this page. Given the volume of common public comments received, a selection of representative public comments is presented.

A summary of the comments timely received from agencies and the public in response to the NOA of the DEIS, and the Postal Service's response to the comments, are presented in Table B1-2 that follows copies of the representative letters and emails received.

Agency and Representative Public Comments Timely Received on the NOA of the DEIS

From: Tomiak, Robert <tomiak.robert@epa.gov>
Sent: Thursday, October 21, 2021 1:45 PM
To: Beiro-Reveille, Jennifer G - Washington, DC <Jennifer.G.Beiro-Reveille@usps.gov>
Cc: Barger, Cindy <Barger.Cindy@epa.gov>; Abrams, Nancy <Abrams.Nancy@epa.gov>; Collins, Davon M - Washington, DC <Davon.M.Collins@usps.gov>; Meyers, Sheila T - Washington, DC <sheila.t.meyers@usps.gov>; Arroyo, Victoria <Arroyo.Victoria@epa.gov>; Lewis, Josh <Lewis.Josh@epa.gov>; Macedonia, Jennifer <Macedonia.Jennifer@epa.gov>
Subject: [EXTERNAL] USEPA NEPA/309 Comment Letter on USPS NGVD DEIS

CAUTION: This email originated from outside USPS. **STOP and CONSIDER** before responding, clicking on links, or opening attachments.

Dear Ms. Beiro-Reveille,

Please see the attached EPA comment letter for the U.S. Postal Service's Draft Environmental Impact Statement (EIS) for the Next Generation Delivery Vehicle (CEQ 20210129). We appreciate the additional time granted to us to submit this letter.

As discussed today with Peter Pastre and Sheila Meyers, and pursuant to 40 CFR 1502.9(b), EPA finds that the draft EIS is inadequate and precludes meaningful consideration of the proposed action and alternatives. The draft EIS should be revised and made available for public comment in a supplemental draft EIS. We have identified the areas of inadequacy and several other areas of the analysis that are lacking or unclear in the enclosed letter and detailed comments and recommendations. We are available to provide technical assistance in supplementing or revising your EIS on this matter of national importance.

If you have any questions, please contact myself or Cindy Barger, Director of our NEPA Compliance Division and our lead reviewer for this action. Ms. Barger may be reached at 202-564-3169 or by email at barger.cindy@epa.gov.

Thanks,

Rob Tomiak
Director, Office of Federal Activities
Office of Policy
U.S. Environmental Protection Agency

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
POLICY

October 21, 2021

Ms. Jennifer Beiro-Réveillé, AIA
Senior Director, Environmental
Affairs and Corporate Sustainability
United States Postal Service
475 L'Enfant Plaza SW
Washington, D.C. 20260-6201

Dear Ms. Beiro-Réveillé:

U.S. Environmental Protection Agency (EPA) has reviewed the United States Postal Services (Postal Service) Draft Environmental Impact Statement (EIS) for Next Generation Delivery Vehicle (NGDV) Acquisitions (CEQ Number 20210129). Our review was conducted in accordance with our responsibilities under the National Environmental Policy Act (NEPA) and Section 309 of the Clean Air Act. EPA previously provided scoping comments to the Postal Service on April 2, 2021, in response to the March 4, 2021, Notice of Intent to prepare an EIS. We appreciate that you granted us an informal extension of our review and comment period until October 25, 2021.

The draft EIS analyzed the potential environmental impacts of alternatives to replace the current outdated Postal Service vehicles near the end of their service life, replacing 50,000 to 165,000 vehicles nationwide over the next 10 years. The purpose of the proposed action is to purchase and deploy purpose-built NGDVs to replace the end-of-life and high-maintenance delivery long-life vehicles (LLVs) and flexible fuel vehicles (FFVs) with new vehicles that have more energy-efficient powertrains, updated technology, reduced emissions, increased cargo capacity and improved loading characteristics, improved ergonomics and carrier safety, and reduced maintenance costs. The proposed action includes a mix of internal combustion engine (ICE) and battery electric (BEV) powertrains with features capable of meeting performance, safety, and ergonomic requirements for efficient carrier deliveries to businesses and curb-line residential mailboxes. The proposed action sets two "maximum scenarios" for the potential mix of ICE and BEV vehicles—90 percent ICE / 10 percent BEV (preferred alternative) and 100 percent BEV. The draft EIS also analyzed two commercial-off-the-shelf (COTS) vehicle alternatives and a "No Action" alternative.

While the Postal Service identified a clear need to update the existing Postal Fleet with more energy-efficient vehicles, we do not believe a proper analysis was conducted that would support the Postal Service's preferred alternative. The economic analysis was inadequate and as a result, there was never

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an evidence-based careful consideration of the merits of each alternative that would be consistent with both the purpose and need and national policies and goals. This includes those set forth in Executive Order (EO) 14008, *Tackling the Climate Crisis at Home and Abroad* and EO 14037, *Strengthening American Leadership in Clean Cars and Trucks*. It is critical for all federal agencies to maximize opportunities to transition the federal fleet to clean cars and trucks to reduce national greenhouse gas emissions and the resulting impacts to our communities and the world.

EO 14037 sets the goal of 50 percent of all new passenger cars and light trucks sold in 2030 to be zero-emissions vehicles, including BEV, plug-in hybrid electric, and fuel cell electric vehicles and prioritizes spurring critical innovation. In addition, EO 14008 establishes a policy for the federal government to lead by example and align, among other things, the management of Federal procurement to support robust climate action, with a view toward providing an "immediate, clear, and stable source" of demand, to help catalyze private sector investment. EO 14008 also directs the development of a comprehensive plan to stimulate clean energy industries by revitalizing the Federal Government's sustainability efforts, including aiming to use all available procurement authorities to achieve or facilitate "clean and zero-emission vehicles for Federal, State, local, and Tribal government fleets, including vehicles of the United States Postal Service." (Sec. 205). The Postal Service's recently released 10-year plan includes a commitment that with Congressional support, the majority of the USPS delivery fleet will be electric within ten years and fully electric by 2035. The minimal inclusion of 10 percent BEVs evaluated in the preferred alternative and current economic analysis are not consistent with the Postal Service's stated objective for electrifying the fleet.

EPA finds that the draft EIS does not provide adequate analysis of the proposed actions' lower range of potential BEV deployment (10 percent) to show consistency with national policies. Further, we are concerned that the economic analysis and the disclosure of greenhouse gas emissions impacts of the alternatives do not meet the requirements for methodology and scientific accuracy set forth in 40 CFR 1502.23. The methodology and assumptions suggest a bias favoring ICE technology. For example, the analysis failed to account for anticipated changes in acquisition costs of future BEVs in the intermediate run (see detailed comments). We are also troubled by the failure to disclose the wide range of cost data and assumptions necessary to compute the "Total Cost of Ownership." Furthermore, the draft EIS findings are inconsistent with the announced investments from others in the delivery industry—e.g., FedEx, Amazon, UPS—which suggest BEVs can lower overall lifecycle costs. Additionally, the analysis lacks adequate explicit references to data or other sources to explain these inconsistencies. With a key principle of NEPA being to provide transparent, evidence-based, informed decision making, additional analysis would assist in the identification and evaluation of more meaningful alternatives. This would provide important information to the public and provide Postal Service decision makers the ability to make a more informed decision on how quickly the Postal Service can electrify its fleet. We anticipate this additional analysis would change the conclusions of the entire NEPA analysis, consistent with more progressive electrification efforts underway by similar commercial entities.

Pursuant to 40 CFR 1502.9(b), EPA finds that the draft EIS is inadequate and precludes meaningful consideration of the proposed action and alternatives. The draft EIS should be revised and made available for public comment in a supplemental draft EIS. At this time, EPA is unable to confirm whether the proposed action is satisfactory from the standpoint of public health or welfare or environmental quality. We have identified several other areas of the analysis that are lacking or unclear in the enclosed detailed comments and recommendations. We are available to provide technical assistance in supplementing or revising your EIS on this matter of national importance. If you have any questions, please contact Cindy Barger, our lead reviewer, at 202-564-3169 or by email at barger.cindy@epa.gov.

Sincerely,

Arroyo, Victoria

Digitally signed by Arroyo, Victoria
Date: 2021.10.21 07:24:46 -04'00'

Victoria Arroyo
Associate Administrator

Enclosure

cc: Mr. Davon Collins, Esq.
Environmental Counsel
United States Postal Service

3

EPA Detailed Comments
Draft EIS for Next Generation Delivery Vehicle Acquisitions

Pursuant to 40 CFR 1502.9(b), EPA finds that the draft EIS is inadequate and precludes meaningful consideration of the proposed action and alternatives. The draft EIS should be revised and made available for public comment in a supplemental draft EIS. We have identified several other areas of the analysis that are lacking or unclear. EPA is providing the following detailed recommendations.

Alternatives

EPA recognizes the reason the Postal Service defined the proposed action as two "hypothetical maximum scenarios" is to allow the decision maker to evaluate environmental impacts of the proposed action within a broad range, with the lowest bound for Battery Electric Vehicle (BEV) deployment as 10 percent and the highest bound for BEV deployment as 100 percent. The preferred alternative is the purchase and deployment of up to 90 percent internal combustion engine (ICE) Next Generation Delivery Vehicle (NGDV) and at least 10 percent BEV NGDV (page 4-36). This statement and the analysis as presented treats the bounds of the proposed action as two different alternatives, rather than as a range.

In addition, EPA found substantial inadequacies in the economic analysis of alternatives (see comments below). It is also unclear how the preferred alternative of the lower range of 10 percent BEV NGDV would be consistent with both announced market trends and recent federal policies for federal procurement of clean cars and trucks in accordance with Executive Orders (EO) 14008 and 14037.

The draft EIS assumes conditions today will continue decades into the future. For example, the analysis assumes that the carbon intensity of the power sector does not change from today when environmental trends and forecasts show otherwise. This leads to over-estimating greenhouse gas emissions associated with BEVs. Further, by locking in the costs of BEV technologies based on data from previous years, the analysis overestimates the costs of BEV NGDVs, since reasonably foreseeable reductions in these costs are excluded. The draft EIS, therefore, presents biased cost and emission estimates to the public and to decision makers.

- EPA recommends that Postal Service update the economic analysis to correct these biases and provide a clear discussion of how the preferred alternative aligns with national policies, and reconsider whether reasonable alternatives may be available to decision makers to support meeting the national goals to completely electrify its fleet by 2035. Specifically, EPA recommends that the Postal Service evaluate a mid-range alternative, such as 75 percent ICE NGDV and 25 percent BEV NGDV, and as high a percentage of BEV NGDV as is economically feasible.

- EPA recommends as the preferred alternative the greatest percentage of deployment of BEV NGDVs as is economically feasible. In addition, consideration of an alternative outside the current appropriations and funding stream for the Postal Service in the supplemental EIS may serve as a basis for the decision maker to seek or modify Congressional approval or funding in light of national policy and NEPA's goals and policies.[1]

[1] Council on Environmental Quality Memorandum to Agencies: Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations, Question 2b, March 23, 1981 (as amended 1986).

1

The draft EIS states several assumptions in the assessment of Alternative 1.2 Purchase and Deployment of 100% left-hand-drive (LHD) commercial-off-the-shelf (COTS) BEV, including:

> *[there are] "no commercially available right-hand-drive (RHD) COTS BEV. The COTS BEV market and technology is rapidly evolving. These vehicles are still in development and currently available only in small quantities. There is no RHD COTS BEV currently available or otherwise marketed by commercial manufacturers for future development."*

This assumption does not reflect the state of the COTS delivery BEV vehicles and therefore may not present full consideration of this alternative to the decision maker. For example, it is widely reported that Rivian is making RHD BEV delivery vans for Amazon and other manufacturers are developing product for this commercial sector.

The draft EIS sets several parameters for BEV vehicles that needlessly raise costs or overly constrain the potential deployment of BEV. The draft EIS states:

> "*Operational limitations and certain Postal Service delivery environments would limit the use of electric-only vehicles. These limitations include a lack of available infrastructure, and at least 12,500 delivery routes where route length, environmental conditions, or facility constraints make electric vehicles unfeasible or impractical*."

As this is a 10-year plan, it should not be based on current availability of charging infrastructure. Charging infrastructure will be built out substantially and quickly in the next few years. The draft EIS also states:

> "*The BEV NGDV would be expected to discharge around 20 percent of battery capacity under average conditions because of the low average delivery route mileage. This would limit battery degradation and may not require charging every day. The BEV NGDV could fully recharge during non-business hours.*" and "*The Postal Service's COTS BEV charging and range requirements will be assumed to be the same as the BEV NGDV requirements (i.e., the ability to charge to a minimum driving range of 70 miles within eight hours on a single charge with all vehicle accessories operating)*." (p. 3-2)

The claim that "BEV NGDV on routes that exceed 70 miles might not have sufficient power to complete the route" disregards advances in battery technology. COTS BEV vehicles today have a much larger range than assumed. For example, it is reported that the Mustang Mach-e is estimated to have a range of 211 to 300 miles for the Sport Utility Vehicle (SUV) (not counting the weight of packages in a delivery van version) and the Ford Transit Passenger Van electric vehicle is estimated for a range of 140 to 170 miles. This higher range is likely to be more compatible for the delivery routes that have been ruled out due to route length. Consideration of ranges more accurate with the current trends in BEV technology would both allow the decision maker a fair comparison among alternatives and consider deployment in areas currently ruled out based on the BEV NGDV range constraints. In addition, industry standards have batteries that would be sized more appropriately for the "low average delivery route mileage" that would reduce the overall cost of procurement and allow for an increase in the percentage of BEVs. For example, the inclusion of two or more options of battery range in the specifications (one less than 70 miles) could allow for meeting the majority of routes with a shorter range and less expensive battery option and for meeting the range needs of areas with longer routes with an extended range battery option. EPA recommends that the assumptions on the COTS BEV alternatives be updated to reflect a more accurate depiction of the current available technology[2] that meets the Postal Service's vehicle replacement needs.

- EPA recommends that the Postal Service consider a diversified procurement and deployment strategy to accommodate both BEVs that may have a shorter range and be more cost-effective and BEVs that may have longer battery range(s) to address longer routes.

[2] One potential resource for exploring options is https://autochoice.fas.gsa.gov/AutoChoice/VehicleAvailability

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Economic Analysis

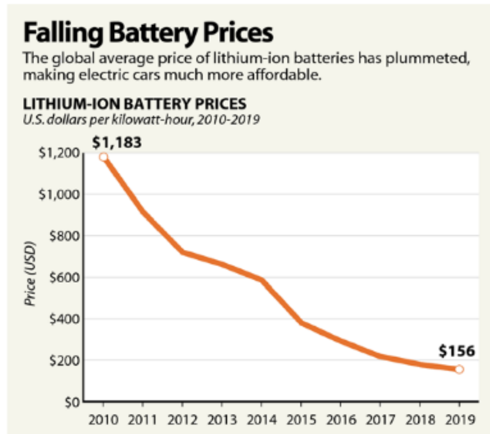
The economic analysis presented in the draft EIS for the proposed action and alternatives (Appendix C) does not adequately meet the requirements of 40 CFR 1502.23 Methodology and Scientific Accuracy or reflect sound estimates for total cost of ownership (TCO) including life-cycle costs and benefits of BEVs. Further, it does not provide key data necessary to evaluate and replicate the results. The Postal Service should provide all the data and the methodology for developing the TCO estimates within the draft EIS or as an appendix. The draft EIS provides the present value of the TCO but not the parameters (fuel costs, discount rates, cost of capital, cost of acquisition, cost of plug-in chargers, etc.). Consistent with 40 CFR 1502.23, draft EIS analysis should identify any methodologies used and shall make explicit reference to the scientific and other sources relied upon for conclusions in the EIS. We identified specific concerns that need to be addressed:

- The uncertainties associated with the cost calculations for the alternatives are too great to draw informed conclusions. Appendix C of the draft EIS acknowledges that the data on vehicle acquisition costs are only *"rough order of magnitude costs"* (p. C-3.). This is not an acceptable level of accuracy to draw such firm conclusions about the relative TCO. In identifying the methodology, the quality and accuracy of the data should be discussed and explicit reference to the scientific or other sources relied upon for conclusions should be disclosed.
    - EPA recommends Postal Service review the following TCO calculators and analysis and supplement the analysis accordingly.
        - North American Council for Freight Efficiency, Medium-Duty Electric Trucks: Cost of Ownership (https://nacfe.org/emerging-technology/medium-duty-electric-trucks-cost-of-ownership/)
        - Global Commercial Vehicle Drive to Zero Total Cost of Ownership Estimator (https://globaldrivetozero.org/tools/calculator/)
        - National Renewable Energy Laboratory, Spatial and Temporal Analysis of Total Cost of Ownership for Class 8 Tractors and Class 4 Parcel Delivery Trucks (https://www.nrel.gov/docs/fy21osti/71796.pdf)

- The costs as represented do not account for the rapidly reducing costs of batteries – the most expensive component in a BEV. Appendix C states that rough order of magnitude costs are based in part on the offerors estimated NGDV Production proposals and pricing from July 2020. There are a number of available studies highlighting progress being made in this area. For example, work done by a Carnegie Mellon University team developed a model where costs for each component of EV batteries are calculated and an estimated change over time is predicted based on the trends in component costs and other factors. One of the authors was quoted by BloombergNEF as stating by around the 2025-time frame "There will definitely be cars, passenger vehicles, in multiple segments where the EV option is the cheaper option."[3] Additionally, according to BloombergNEF, analysts and researchers over the years have stated that a battery price of $100 per kilowatt-hour is the point at which EVs become cost-competitive with gasoline vehicles. Last year, the global average price was down to $156 per kilowatt-hour. BloombergNEF estimates that electric vehicles "will be cheaper to produce than fossil fuel vehicles by 2027."

[3] https://www.bloomberg.com/news/articles/2021-08-09/battery-pioneer-viswanathan-describes-the-breakthroughs-he-sees-coming?sref=NJt2Su4A

3



SOURCE: BloombergNEF PAUL HORN / InsideClimate News[4]

- EPA recommends that the Postal Service update the economic analysis and draft EIS to incorporate the assumptions of falling costs of battery technology as recommended by academics and industry experts. A range of forecasts of battery prices should be used, based on forecasts from government and private sector institutions. All forecasts should be clearly presented and cost implications for the TOC disclosed.[5]

- Important data on the costs of components of ICE and BEV NGDVs are not provided. The cost of gasoline, the cost of electricity, and the cost of maintenance are not provided in the economic analysis. It is well-documented that the costs of ownership, including maintenance and fuel costs, are considerably lower for BEVs. The lower costs include not only repair cost savings but also spending less time in the shop and more on the road.

- It appears that the draft EIS has assumed that fuel costs for gasoline will remain at today's prices as part of the TCO. Similarly, the analyses seem to ignore that the cost of low-carbon electricity is decreasing. As stated above, a shifting baseline that incorporates the reasonably foreseeable trends and annualized costs over time is more appropriate for this analysis and consistent with scientific standards, given well-documented projected changes related to the proposed action. Without consideration of rising oil prices and future costs of electric power, the analysis results in a

[4] https://www.kqed.org/science/1967914/electric-cars-will-cost-same-as-gas-models-as-soon-as-2023-researchers-say

[5] Potential studies that could be used include: (1) Shabbir Ahmed, Paul Nelson, Naresh Susarla, and Dennis Dees, "Automotive Battery Cost Using BatPac" (2018), https://www.iea.org/media/ Workshops/2018/Session2ShabbirAhmedANL.pdf (2)Menahem Anderman, "The Tesla battery report: Tesla Motors: Battery technology, analysis of the Gigafactory and Model 3, and the automakers' perspectives" (2017), http://www.totalbatteryconsulting.com/industry-reports/Tesla-report/Extract-from-the-Tesla-Battery-Report.pdf (3) Menahem Anderman, "The xEV Industry Insider Report" (2018), https://totalbatteryconsulting.com/industry-reports/xEV-report/Extract-from-the-2018- xEV-Industry-Report.pdf (4) Gert Berckmans, Maarten Messagie, Jelle Smekens, Noshin Omar, Lieselot Vanhaverbeke, and Joeri Van Mierlo, "Cost Projection of State of the Art Lithium-Ion Batteries for Electric Vehicles Up to 2030," Energies 10, no. 9 (September 2017): 1314, https://doi.org/10.3390/en10091314 (5) UBS, "UBS evidence lab electric car teardown: Disruption ahead?" (2017), https://neo.ubs.com/shared/d1ZTxnvF2k/ f Chris Davies, "VW I.D. EV boast: We'll hugely undercut Tesla's Model 3 says exec," SlashGear, July 17, 2017, https://www.slashgear.com/vw-i-d-ev-boastwell-hugely-undercut-teslas-model-3-says-exec-17491688/ (6) Paul Lienert and Joseph White, "GM races to build a formula for profitable electric cars" (January 8, 2018), https://www.reuters.com/article/us-gmelectric-insight/gm-races-to-build-a-formula-for-profitable-electric-cars-idUSKBN1EY0GG

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tremendous bias in the draft EIS estimation of the TCO. Forecasts from U.S. Energy Information Administration and other energy forecasts should be incorporated in the analysis.[6]

- Conclusions based on TCO analysis in Appendix C conflict with the results offered by other delivery companies (FedEx, UPS, Amazon). Delivery companies have concluded that BEVs will lower costs in the future and have aggressively pursued acquisition of BEVs.[7] For example, UPS has placed an order for 10,000 BEV delivery vehicles. Amazon is buying 100,000 BEV delivery vans from Rivian. DHL says zero-emission vehicles make up a fifth of its fleet, with more to come. FedEx just pledged to replace 100 percent of its pickup and delivery fleet with battery-powered vehicles by 2040.
    - The Postal Service should revise or provide an explanation for its determination that ICE NGDVs are more cost effective than the BEV NGDV or BEV COTS.

As currently described in the draft EIS, the proposed action creates a "technology lock-in" that is not discussed and is inconsistent with the future direction of the industry along with the national goals in EO 14008 and 14037. New NGDVs are anticipated to have a life cycle of a decade or more. While the draft EIS discusses how there is the potential to adjust for changing conditions, once purchased, the USPS loses the ability to change the acquisition decision. Given the crudeness of the cost estimation and the academic and industry expectations that BEV costs are lower (and falling further soon), the analysis should examine multiple scenarios and disclose financial risks where the Postal Service is "stuck" with an ICE fleet that is more expensive and far more polluting if the preferred alternative (10 percent BEV and 90 percent ICE) is selected.

- EPA recommends the incorporation of forecasts of future variables into the TCO analysis consistent with economic standards of practice to understand the potential future changes more clearly in operations costs between BEV and ICE (incorporating the recent academic and industry analyses projecting lower BEV costs), risks of the acquisition strategy, and the potential effects of those future variables. This more meaningful and transparent analysis will better inform the public and provide for better-informed decision making.

Because of the low mileage in an average USPS vehicle delivery route, the draft EIS indicates, on average, BEVs would discharge only 20 percent of the stored battery power per day. The extra stored battery power for a typical vehicle/route would offer the potential for additional benefits associated with vehicle to grid technology, demand response services, peak shaving, and providing emergency power during an outage. These opportunities for cost savings and resilience benefits should be considered in the analysis as well.

- EPA recommends incorporating the potential value added of "vehicle to grid" systems into the economic analysis when considering the costs and benefits of the BEV deployment.

GHG Emissions

We appreciate the Postal Service's inclusion of Greenhouse Gas (GHG) emission estimates for alternatives under consideration. However, the analysis uses several assumptions that make it difficult to reconcile the results of estimating the GHG emissions and ensure adequate estimates for meaningful analysis. The following are recommendations to incorporate into the supplemental EIS and, where appropriate, into any subsequent tiered NEPA documents related to this action.

[6] For example, the Annual Energy Outlook presents an assessment of the outlook for energy market: https://www.eia.gov/outlooks/aeo/
[7] https://www.npr.org/2021/03/17/976152350/from-amazon-to-fedex-the-delivery-truck-is-going-electric

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- In Appendix F, Table F-3.a provides emission estimates for ICE NGDV or alternative 1.1 COTS ICE vehicles. The table documents that the total mileage for these cars will be 1,048,921,500 per year. And carbon dioxide equivalent (CO_2e) emissions are 311,739 metric tons (MT) per year. At 11 miles per gallon (the average between mileage of using air conditioning and not using air conditioning) the gasoline used will be (miles driven/11) = gallons of gasoline or 95,356,500 gallons.[8] Carbon dioxide per gallon of gasoline is about 19 pounds. Multiplying by 19 and then dividing by 2204.62 pounds per metric ton yields 821,807.6 MT. This is over 2.5 times the estimate in the draft EIS.

  Use of the eGRID data to calculate emissions decades into the future is misleading. The U.S. Energy Information Administration and every energy modeling/forecasting operation estimate much lower carbon intensity in the power sector. Coal retirements are accelerating, and many states are placing strict limits on new power sources. At the same time, the cost of renewable energy is falling dramatically. The analysis needs to be redone with more realistic assumptions about future carbon (and other emissions) from the power sector.

- As part of disclosing the methodology and assumptions for the GHG emissions analysis, the conversion factors used in the calculations should be identified.

- In Table F-3.i, the source of estimates is unclear. Consistent with 40 CFR 1506.23, agencies shall make explicit reference to the scientific and other sources relied upon. If the numbers are based on the numbers calculated later in the section, this should be referenced, or the Table moved to make the source more explicit.

- A footnote or description should be added to explain how the GREET Emissions Factors for WTP (Table F-6.f) were identified (e.g., specify which factors are from which GREET tab).

- It appears that CO_2e is measured in metric tons (MT) and other pollutants are reported in tons per year. We recommend the units be consistent or that clarifying language be added to explain why this is the case.

- The simplified methodology for the lifecycle analysis is a concern if scale of reductions is a factor. We recommend a more detailed screening approach to calculate emissions of BEVs to include the following steps and noting in the text that emissions would vary by region.
  - Estimate the emissions associated with the production and transport of feedstock used to generate electricity. The GREET model used in the draft EIS is a good source of emission factors associated with different feedstocks. However, since the mix of feedstocks used to generate electricity varies by region, it is important to consider and appropriately weight these 'upstream factors' by the resource mix (e.g., percentage of coal, natural gas, or other feedstocks used to generate power in that region).
  - Estimate the power plant emissions rate for each region (e.g., using a tool such as eGRID). This rate should be adjusted by the upstream factor discussed above as well as grid losses due to transmission and distribution of power from the power plant to the end use (in this case, the charging unit), which typically have ranged from 5-6 percent.
  - Finally, calculate vehicle-specific emissions using the fuel consumption rate for a specific vehicle. Multiply the total regional emissions factor by the chosen vehicle's fuel

[8] Given the stop and go routines of postal delivery vehicles, we would expect fuel economy to be on the low side of the stated range for ICE drive trains. The regenerative braking on BEVs would fare much better from an energy efficiency perspective.

consumption rate for the lifecycle emissions impact by region.

- The current method appears to combine MOVES (tailpipe or direct) estimates with those from eGRID or GREET (upstream or indirect). However, it is unclear to what extent important factors are aligned between these models. The analysis needs to articulate whether inputs to MOVES and/or GREET have been modified to better reflect the specific Postal Service vehicle(s) under consideration. Vehicle emissions are sensitive to vehicle efficiency, so the practice of using a representative "light commercial truck" in MOVES or "vocational vehicle" in GREET may over- or under-estimate emissions.

- The draft EIS does not consider current regulations for GHG emissions or other regulations being developed at the state level.

Monetizing the Effects of GHG Emissions

We appreciate the Postal Service's inclusion of the social costs of GHG Emissions within the draft EIS. We identified potential errors in the analysis in Appendix F. The following are recommendations to be incorporated into the supplemental EIS.

- Based on the information presented in the draft EIS, it is unclear exactly how the calculations were performed to monetize the GHG emissions changes. For instance, based on the tables provided in Appendix F, it is unclear if the Postal Service applied the year-specific and gas-specific SC-GHG estimate to GHG emissions occurring in the same year (as recommended in the 2021 TSD), or instead took some 5-year averaging approach.
    - EPA recommends that in the supplemental EIS, the Postal Service provide clarity on how the SC-GHG estimates were applied to the estimated annual stream of emissions changes. We also recommend that the Appendix F provide the annual GHG emissions changes in a column alongside the monetized value of those GHG emissions in each year within the same table, for each alternative.

- The analysis should include the 95th Percentile estimates associated with the 3 percent discount rate case.

- The following specific corrections are requested to Section 4-6.1.4:
    - E.O. 13990 refers to interim global values. We recommend adding the following text after the "Interagency Working Group 2021" reference: "*These SC-GHG estimates are interim values developed under Executive Order (E.O.) 13990 for use in benefit-cost analyses until updated estimates of the impacts of climate change can be developed based on the best available science and economics. The E.O. instructs the IWG to undertake a fuller update of the SC-GHG estimates by January 2022 that takes into consideration the advice of the National Academies and other recent scientific literature.*"
    - Revise the following sentence "The SCC is an assigned marginal cost used to facilitate a policy and decision-making assessment of the costs and benefits of ***a change in*** GHG emissions." to "*The SCC is an assigned marginal cost used to facilitate a policy and decision-making assessment of the costs and benefits of* ***increased*** *GHG emissions.*"
    - Replace the sentence "The SCC represents a monetization of the damages associated with the incremental changes in GHG (e.g., increased flood risk, disruption of energy systems, environmental damage) on society." with "*The SCC is the monetary value of the net harm to society associated with a marginal increase in emissions in a given*

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year, or the benefit of avoiding that increase. In principle, SC-GHG includes the value of all climate change impacts, including (but not limited to) changes in net agricultural productivity, human health effects, property damage from increased flood risk and natural disasters, disruption of energy systems, risk of conflict, environmental migration, and the value of ecosystem services."

- The following specific corrections are requested to Section 4-6.3.1:
  - In addition to considering discount rates of 2.5 to 5 percent, please include the 3 percent 95th percentile SC-GHG estimates by using this suggested text: "The estimates consider discount rates of 2.5 percent, 3 percent, and 5 percent plus a fourth value, selected as the 95th percentile of estimates based on a 3 percent discount rate. The fourth value was included to provide information on potentially higher-than-expected economic impacts from climate change, conditional on the 3 percent estimate of the discount rate."
  - Tables 4-6.3, 4-6.6, 4-6.9, and 4-6.12 should also include calculations using the 3% 95th Percentile estimates. We suggest adding the following footnote: "We emphasize the importance and value of considering the benefits calculated using all four SC-CO_2 estimates. As discussed in the Technical Support Document: Social Cost of Carbon, Methane, and Nitrous Oxide Interim Estimates under Executive Order 13990 (IWG 2021), a consideration of climate benefits calculated using discount rates below 3 percent, including 2 percent and lower, are also warranted when discounting intergenerational impacts."
  - Table F-8a should include the 3 percent 95th percentile estimates.

- Replace "social cost ***on*** the GHG emissions" with "*social cost **of** GHG emissions*" throughout.

Climate Adaptation

The draft EIS states that for the preferred alternative, "No effects of climate change are expected." (p. 4-20). The draft EIS makes the same conclusion for the other alternatives considered (p. 4-24 and p. 4-26). However, sections 4.6.1.3 and 4.6.2.3 provide analysis to show that climate change is a reasonably foreseeable environmental trend that is influencing the affected environment. The finding, or rather assumption that "no effects of climate change are expected" is not consistent with the analysis on GHG emissions and climate change overall. EPA recommends that the Postal Service more specifically discuss the need for considering climate adaptation as part of the proposed action and alternatives in the supplemental EIS. For example, depending on the location of the deployment of future vehicles and updates needed to the Vehicle Maintenance Facilities, the tiered NEPA documents may need to evaluate specific actions that may be incorporated to adapt to changing climate conditions—e.g., increasing frequency of extreme weather events such as storms and floods.. Such events will affect the USPS ability to deliver mail. Finally, increased temperatures will increase the demand for air conditioning in the vehicles, and based on the specifications in the EIS, fuel economy drops over 41 percent when the air conditioning is operating.

- EPA recommends that the conclusion be updated to better reflect the discussion in the draft EIS to articulate where there are beneficial or negative changes to the proposed action and alternatives related to impacts associated with GHG emissions.

- EPA recommends that the Postal Service specifically disclose how climate adaptation considerations are being addressed as part of this proposal in a supplemental EIS. Where

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climate adaptation considerations are more appropriately scaled to the local level – i.e., updates to the Vehicle Maintenance Facilities as needed – the supplemental draft EIS should include, at a minimum, identification of the key aspects of climate adaptation that may need to be addressed in tiered local NEPA documents (e.g., consideration of updated designs to allow for resilience and consistency of service with an increase in extreme storm events) and preferably articulate a strategy for climate adaptation for the purchase and deployment of any of the alternatives analyzed.

Indirect Effects

While the draft EIS measures GHG emissions as indirect effects, it does not identify the other indirect fossil fuel related effects of the preferred alternative (10 percent BEV and 90 percent ICE). EPA recommends that the Postal Service consider the potential indirect effects associated with supporting 90 percent ICE and the necessary infrastructure, including, but not limited to, potential for pipeline leaks, leaking underground storage tanks and associated liability effects from trucking liquid fuel. Depending on the setting and the degree of effect, these impacts of operating ICE NGDVs could result in impacts to communities with environmental justice concerns.

Environmental Justice

The draft EIS states that because there is no change to the overall number of vehicles and delivery points, there would be no impact on communities with environmental justice concerns (p. 4-8). The draft EIS concludes that the proposed action with the ICE NGDV hypothetical maximum (90 percent ICE NGDV) is more fuel efficient than the no action and, thus, would be an improvement to communities with environmental justice concerns (p. 4-7). The draft EIS also states that no substantial updates to Vehicle Maintenance Facilities are anticipated and the Postal Service would conduct appropriate environmental review at the local level (p. 1-5). EPA believes this statement oversimplifies the potential for procurement and deployment decisions to affect communities with environmental justice concerns. There is a high probability that minority and low-income populations live near well-traveled and congested highways and mail distribution facilities. Hence, they would be exposed to disproportionate emissions from mail delivery vehicles. Socially vulnerable populations are also disproportionately affected by climate change.[9] The draft EIS acknowledges that minority populations are rising (p. 4-7), and there is a rise in communities with environmental justice concerns. However, the analysis in the draft EIS does not clearly articulate as part of the environmental justice concerns, the reasonably foreseeable impacts to underserved communities already exposed to disproportionate risks from pollution, traffic, noise, and other stressors. As part of the discussion of the potential deployment of the proposed action, the draft EIS does state "Route characteristics for placement of BEV NGDV would include routes located in mild temperature ranges, routes with frequent and numerous curb-line stops as they better recapture the vehicle's motion (kinetic) energy via regenerative braking to recharge the battery, and ***routes in locations with compromised air quality*** and/or states with proactive BEV policies and regulations." (p. 3-2, emphasis added). There is a need for improved programmatic consideration of ways to address disproportionate impacts and equity considerations in the proposal and alternatives beyond the general statements provided in the description of the proposed action.

- EPA recommends that the Postal Service include a more detailed discussion of how the Postal Service may consider the timing and prioritization of deployment of vehicles to address disproportionate risks from pollution in communities with environmental justice concerns, including prioritization of the deployment of BEV NGDVs or COTS BEVs to these communities.

[9] See, e.g., USEPA Climate Change and Social Vulnerability in the United States: A Focus on Six Impacts (September 2021). https://www.epa.gov/system/files/documents/2021-09/climate-vulnerability_september-2021_508.pdf

- EPA recommends that the criteria for deployment of BEVs should include routes in neighborhoods that are suffering from accumulated environmental harms, noise, and heavy vehicle traffic, in addition to poor air quality. The clean vehicles should be going to the communities that would get the most benefit from them. These locations are likely to be more densely populated, thus likely to have frequent and more numerous curb stops as well.
- EPA recommends the Postal Service identify more specific mitigation options within this EIS that would be considered as part of any tiered NEPA document for the deployment of vehicles and updates, as required, to vehicle maintenance facilities to reduce disproportionate accumulated risks faced by communities with environmental justice concerns. The Postal Service should incorporate measures to ensure that BEVs are be deployed in an equitable manner that will allow over-burdened communities to be recipients of the local benefits (e.g., reduced noise, reduced emissions) of BEVs. This represents an opportunity to include vehicle placement in the agency-wide environmental justice strategy.
- In addition to the resources provided in our scoping letter, we recommend the Postal Service use air quality non-attainment data found in EJSCREEN at: https://ejscreen.epa.gov/mapper/ to determine which locations would benefit the most from having new electric vehicles placed in service.

Demonstrating Climate Leadership

The Postal Service has a unique chance to exhibit large-scale deployment of a proven low-carbon technology and support the Administration's January 27, 2021, Executive Order 14008 on *Tackling the Climate Crisis at Home and Abroad*, which directs federal agencies to develop a plan to achieve or facilitate clean and zero-emissions vehicles for federal, state, local, and Tribal fleets.

- EPA encourages the Postal Service to explore opportunities and innovative ways to help support electric vehicle use by other federal agency fleets and state, local, and Tribal fleets. For example, making charging station infrastructure accessible to these agencies and possibly to the public as well.

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

October 15, 2021

Mr. Davon Collins, Environmental Counsel
United States Postal Service
475 L'Enfant Plaza SW, Office 6606
Washington, DC 20260-6201

RE: USPS Draft Environmental Impact Statement for Purchase of Next Generation Delivery Vehicles

Dear Mr. Collins,

In August 2021, the United States Postal Service (USPS) issued a Draft Environmental Impact Statement proposing the replacement of 50,000 to 165,000 delivery vehicles, with at least 10% being battery electric vehicles (EVs) with up to 90% internal combustion engine (ICE)vehicles. Based on our review of the draft document, Bay Area Air Quality Management District (Air District) believes that the 10% EV requirement in the USPS Preferred Alternative 1.1 is insufficient, and:

- Will negatively impact our progress improving local air quality and reducing greenhouse gas emissions (GHG), especially in our most vulnerable communities;
- Is not reflective of the electric vehicle technology available now and the rapidly expanding EV industry;
- Is a long-term decision that will unnecessarily delay the transition of the delivery vehicle fleet to clean technologies; and
- Will likely cost USPS and taxpayers more money in the long term based on the fact that internal combustion engine (ICE) vehicles are more expensive to operate and maintain than electric vehicles.

The California Legislature created the Air District in 1955 as the first regional air pollution control agency in the country and made the Air District responsible for reducing air pollution in the nine-county San Francisco Bay Area (Bay Area). Today, we work to protect and improve public health, air quality, and the global climate by creating a healthy breathing environment for its seven million Bay Area residents. Tailpipe emissions from the 5.3 million light duty vehicles in the Bay Area account for approximately 28% of the region's GHG emissions (CO2e) and a significant portion of other pollutants (31% of carbon monoxide and 12% of nitrogen oxides).

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Mr. Davon Collins October 15, 2021
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The transition from fossil fuel to zero-emission technologies is critical to reaching our air quality and GHG reduction targets. As of the end of 2020 the Bay Area is home to more than 214,000 zero-emission vehicles and more than 29,000 public or shared EV charging stations. California has set a goal of five million electric vehicles sold by 2030, with the sale of new conventional light-duty vehicles phased out by 2035. The Air District has set as a target that 90 percent of vehicles in the Bay Area should be zero emissions by 2050 with an interim target of 1.5 million zero-emission vehicles by 2030. The Bay Area and California also share a goal of cutting greenhouse gas emissions to 80 percent below 1990 levels by 2050.

Since 2010, the Air District has awarded more than $100 million to support research, demonstrations, and deployment of zero- and near-zero- emission vehicles and supporting infrastructure. Based on our experience administering these programs and projects, we are confident that rapid deployment of zero-emission vehicles is essential to achieving state and Federal climate goals.

Battery electric vehicle technology is proven and available now, vehicle options are rapidly expanding, and (in addition to reducing emissions) can provide major savings in operation and maintenance costs. Private fleets are embracing this technology and making commitments to turnover up to 100% of their fleets to zero-emission vehicles during the same 10-year timeframe as the USPS purchase proposal. The USPS, one of the world's largest civilian government fleets, has an opportunity to clean and modernize their fleet and become a leader in public fleet electrification; however, the proposed 10% requirement is weak and inconsistent with the President's 2030 GHG reduction targets and emphasis on equity. The vehicles being replaced are as much as 30+ years old, and the proposed purchase window will go beyond 2030, so the impact of this purchasing decision will be felt for decades. To that end, we believe that USPS must adopt aggressive electrification plans, closer to the 100% EV target considered in Alternative 1.2, that are in line with state and Federal executive orders to reduce climate pollution.

Additionally, the choice to continue deployment of ICE vehicles has real and lasting health impacts on local communities – many of whom are communities of color and that are already overburdened by air pollution. In the San Francisco Bay Area, USPS operates many facilities in our communities that are most impacted by air pollution. A good example of this is the major distribution facility at 675 7th Street in Oakland, a site which contributes to the diesel and petroleum particulate matter burden experienced by the surrounding West Oakland community. West Oakland residents are subject to some of the highest pollution burden in California due to particulate matter from the adjacent port, highways and distribution centers like the one mentioned above. This is a fact highlighted in a joint plan – *Owning Our Air – The West Oakland Community Action Plan* – prepared by the Wet Oakland Community and Air District. To protect that community's heath, our plan targets emissions reductions from ICE vehicles as one of its cornerstones, including reductions from your facility. **Therefore, it is incumbent upon USPS to take steps to reduce its particulate matter emissions - specifically to protect communities like west Oakland.** The Air District believes that choosing to deploy significantly more electric vehicles as part of this current effort would help to secure these much-needed emissions reductions.

Finally, the deployment of the USPS zero-emission vehicles should be done in a way that prioritizes placement of these vehicles in communities most impacted by air pollution and environmental injustices. This should be done in consultation with EPA and state/ local environmental agencies. We are happy to discuss this target and the state of the EV market in greater detail as well as the possible deployment of USPS EVs within highly impacted Bay Area communities. If you have any questions regarding this letter of commitment, please contact Damian Breen, Senior Deputy Executive Officer, at (415) 749-5041 or dbreen@baaqmd.gov.

Sincerely,

Jack P. Broadbent
Executive Officer/APCO

Eubanks & Associates, PLLC
LAW FOR THE PUBLIC INTEREST

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VIA EMAIL

October 18, 2021

Mr. Davon Collins
Environmental Counsel
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Washington, D.C. 20260-6201
NEPA@usps.gov

Re: Comments on Draft Environmental Impact Statement for Purchase of Next Generation Delivery Vehicles

On behalf of our client the International Union, United Automobile, Aerospace and Agricultural Implement Workers of America, ("UAW"), we submit the following comments on the United States Postal Service's ("USPS") Draft Environmental Impact Statement ("DEIS") for Next Generation Delivery Vehicle Acquisitions. Because USPS's notice of availability for the DEIS stated that the agency "will consider any comments received through" October 18 2021, we trust that these comments will receive all due consideration and be included in the administrative record in any litigation concerning the USPS's final decision in this matter.[1]

As detailed below, USPS's DEIS fails to comply with the National Environmental Policy Act ("NEPA"), 42 U.S.C. §§ 4321–4347, and its implementing regulations, 40 C.F.R. §§ 1500–1508; *see also* 39 C.F.R. § 775. In particular, the DEIS fails to examine any impacts or reasonable alternatives associated with the location and methods of production of the massive fleet of up to 165,000 new vehicles that USPS intends to buy. This analytical deficiency is especially glaring in light of the fact that USPS's action has in fact already caused an indisputably significant impact that remains undisclosed and unanalyzed in the DEIS—namely, the decision by USPS's chosen contractor to create an entirely new production facility to satisfy USPS's demand for new vehicles. By failing to examine critical questions regarding where and how the vehicles that USPS intends to buy will be produced, USPS's DEIS falls far short of the hard look at all environmental and economic impacts that NEPA requires.

To remedy these defects, USPS must issue a new or supplemental DEIS that considers impacts related to the production of Next Generation Delivery Vehicles ("NGDVs") and reasonable alternatives for such production and provide the public with a reasonable opportunity for comment on these issues. At a minimum, such impacts and alternatives must be addressed in the agency's final EIS.

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[1] *See* USPS, *Notice of Availability of Draft Environmental Impact Statement for Purchase of Next Generation Delivery Vehicles*, https://uspsngdveis.com/

BACKGROUND

I. The National Environmental Policy Act

"NEPA is our basic national charter for protection of the environment." *Churchill Cty. v. Norton*, 276 F.3d 1060, 1072 (9th Cir. 2001). The statute "declares a broad national commitment to protecting and promoting environmental quality," and "[t]o ensure that this commitment is infused into the ongoing programs and actions of the Federal Government, the act also establishes some important 'action-forcing' procedures." *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 348 (1989). In particular, for any "major Federal actions significantly affecting the quality of the human environment," an agency must prepare "a detailed statement" that addresses "the environmental impact of the proposed action," and "alternatives to the proposed action." 42 U.S.C. 4332(C).

The detailed statement required by NEPA is known as an Environmental Impact Statement ("EIS"), and its "primary purpose" is "to ensure agencies consider the environmental impacts of their actions in decision making." 40 C.F.R. § 1502.1. An EIS "shall provide full and fair discussion of significant environmental impacts and shall inform decision makers and the public of reasonable alternatives that would avoid or minimize adverse impacts or enhance the quality of the human environment." *Id.* "The sweeping policy goals announced in § 101 of NEPA are thus realized through a set of 'action-forcing' procedures that require that agencies take a hard look at environmental consequences and that provide for broad dissemination of relevant environmental information." *Robertson*, 490 U.S. at 350.

USPS's own regulations recognize its obligations under NEPA, and stress that the agency's policy is to "[e]mphasize environmental issues and alternatives in the consideration of proposed actions," to "[u]se the NEPA process to identify and assess reasonable alternatives to proposed actions in order to avoid or minimize adverse impacts on the environment," and to "[u]se all practicable means to protect, restore, and enhance the quality of the human environment." 39 C.F.R. § 775.2.

An EIS must consider all "[i]mpacts, which may be direct, indirect, or cumulative." 39 C.F.R. § 775.11(2)(iii). The terms "effects" and "impacts" mean "changes to the human environment from the proposed action or alternatives that are reasonably foreseeable and have a reasonably close causal connection to the proposed action or alternatives, including those effects that occur at the same time and place as the proposed action or alternatives and may include effects that are later in time or farther removed in distance from the proposed action or alternatives." 40 C.F.R. § 1508.1(g). "Effects include ecological . . . aesthetic, historic, cultural, economic (such as the effects on employment), social, or health effects." *Id.* § 1508.1(g)(1).

Direct effects are effects caused by the action and occur at the same time and place. 40 C.F.R. § 1508.8(a) (2019). Indirect effects are effects caused by the action that are later in time or farther removed in distance but are still reasonably foreseeable. *Id.* at § 1508.8(b). Cumulative impacts are effects resulting from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of who undertakes the other actions. *Id.* § 1508.7. Notably, "[i]ndirect effects may include *growth inducing effects* and other effects

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related to induced changes in the patterns of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems." *Id.* § 1508.8(b) (emphasis added).[2]

The consideration of alternatives in an EIS "is vitally important." 39 C.F.R. § 775.11(c)(5). The EIS must present the environmental impacts and alternatives "in comparative form, thus sharply defining the issues and providing a clear basis for choosing alternatives." *Id.* The EIS must also "[e]xplore and evaluate all reasonable alternatives, including the 'no action' alternative, and briefly discuss the reasons for eliminating any alternatives" and must "[d]evote substantial treatment to each alternative considered in detail, including the proposed action, so that reviewers may evaluate their comparative merits." *Id.*; *see also New Mexico ex rel. Richardson v. U.S. Bureau of Land Mgmt.*, 565 F.3d 683, 708 (10th Cir. 2009) (describing the consideration of alternatives as "[t]he heart of an EIS" because "[w]ithout substantive, comparative environmental impact information regarding other possible courses of action, the ability of an EIS to inform agency deliberation and facilitate public involvement would be greatly degraded.").

II. USPS's Plan to Procure a Fleet of New Delivery Vehicles

USPS's DEIS concerns the replacement of the majority of "one of the world's largest civilian government fleets." DEIS at 2-1. Because many of the agency's vehicles are at or near the end of their useful life and require increasingly costly maintenance, USPS has proposed to replace these aging vehicles with new, purpose-built vehicles that USPS refers to as "Next Generation Delivery Vehicles" or "NGDV." *Id.* at 2-1–2-3. In particular, USPS has proposed to purchase between 50,000 and 165,000 new vehicles over the next ten years, planning to spend between $9.3 billion and $11.6 billion. *Id.* at 3-1. USPS proposes to purchase a mixture of internal-combustion vehicles and battery-powered electric vehicles. *Id.*

Despite the fact that the agency has not yet concluded its NEPA process—which is supposed to be conducted sufficiently early in the agency's decision-making process to serve as a meaningful contribution to decisions rather than justifying decisions already made, *see* 39 C.F.R. § 775.11(b)(2)(vi)—USPS chose its supplier for NGDVs, Oshkosh Defense, LLC, and entered into a contract with that supplier in February of 2021, roughly six months before the agency even issued its *Draft* EIS. DEIS at 1-4. As prior comments at the scoping phase noted, USPS's award of a contract prior to analysis of such a decision violates NEPA. *See* DEIS at B-27. Although USPS maintains that its contracting decision is consistent with the statute because it "contains an express NEPA clause stating that the Postal Service may modify or terminate the award as a

[2] These definitions are drawn from the 2019 version of NEPA's implementing regulations. Although the Trump Administration issued new regulations in 2020 that included different formulations of these definitions, those regulations should not be construed in any way to reduce USPS's analytical obligations, both because the Trump Administration regulations still require consideration of all such impacts and because the Biden Administration has indicated that it will soon issue another rule restoring the prior, well established, and less confusing definition of the term "effects." *See* Council on Environmental Quality, *National Environmental Policy Act Implementing Regulations Revisions*, 86 Fed. Reg. 55,757 (Oct. 7, 2021).

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result of the NEPA process," *id.*, the DEIS also appears to indicate that the contract award has already expended funds or committed to expending funds to allow the contractor to begin preparing to produce NGDVs. *See* DEIS at 1-4 ("*At the time of awarding the contract*, the Postal Service placed an order *that funds the production design, assembly tooling, and factory start-up costs* to support the production of both vehicle types in parallel . . . ." (emphases added)). Such a pre-analysis contracting decision constitutes a NEPA violation.

As USPS is undoubtedly aware, its decision to award a contract to Oshkosh Defense, LLC, already caused a significant environmental and economic impact before the agency even published its DEIS. On June 22, 2021, Oshkosh Defense announced that it would open a new facility in Spartanburg, South Carolina specifically in order to construct NGDVs for USPS. Although the company will also establish a "Next Generation Delivery Vehicle Technical Center" featuring engineering and technical support staff in Oshkosh, Wisconsin, the actual production of new vehicles—and the construction of a new industrial facility for that purpose and the hiring of over 1,000 employees—will take place in South Carolina.[3]

The development of a new industrial facility in South Carolina and the subsequent production of 50,000 to 165,000 purpose-built vehicles at that new facility for USPS are indisputably direct consequences of USPS's decision to purchase NGDVs under a contract awarded to Oshkosh Defense. Moreover, because Oshkosh Defense announced its intention to proceed in South Carolina well before USPS published its DEIS, it is beyond any legitimate dispute that this information was available to USPS when it was preparing the DEIS. Indeed, the development of a new facility was likely addressed in Oshkosh Defense's bid materials submitted to USPS, in the contract between the company and the agency, or in other communications between Oshkosh Defense and USPS. Nonetheless, USPS's DEIS is entirely silent about this issue. The DEIS does not disclose that USPS's actions have already led to the decision to construct an entirely new industrial vehicle-manufacturing facility and makes no attempt to disclose or analyze any related environmental impacts. Likewise, the DEIS does not discuss any reasonable alternatives to the production of NGDVs at a new facility in South Carolina, such as an alternative that would reduce environmental impacts from the production of NGDVs by requiring the vehicles to be produced at an already extant facility with a strong track record of environmental responsibility.

Likewise, USPS's DEIS fails to disclose or analyze any of the economic or social impacts associated with the fact that the NGDVs will be produced at a new facility in South Carolina, rather than an existing facility such as the existing facilities that Oshkosh Defense already operates in Wisconsin. However, the location of the production facilities will, in fact, have a significant effect on workers, employment, and local economies. Whereas Oshkosh's existing production facilities in Wisconsin feature collective bargaining, which has enabled workers to negotiate a contract ensuring fair treatment, living wages, and safe working conditions, the historical evidence makes it extremely unlikely that a facility in South Carolina

[3] *See* Nusaiba Mizan, Oshkosh Northwester, *Oshkosh Defense Chooses South Carolina for USPS Delivery Vehicle Manufacturing, 100-person Technical Center in Oshkosh* (June 22, 2021), https://www.thenorthwestern.com/story/money/companies/2021/06/22/oshkosh-corp-picks-south-carolina-build-usps-delivery-vehicles-2023/5304017001/.

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will have any comparable guarantees of equitable treatment of employees. South Carolina has the lowest rate of unionized labor of any U.S. state, in part because of state laws that are hostile to labor unions. In South Carolina, less than 3 percent of workers are members of a labor union; as a likely result, South Carolina also has the lowest average annual wage of any U.S. state.[4] Likewise, South Carolina is ranked by Oxfam as the sixth worst state to work and scores poorly on wage standards and basic worker protections.[5] Without a clear and bold commitment to neutrality and a fair majority sign-up process, employment conditions at a South Carolina facility will very likely follow these patterns. Accordingly, the fact that USPS's procurement of NGDVs will cause (and in fact is already causing) these vehicles to be produced in a new facility in South Carolina rather than an existing facility in Wisconsin will likely have significant economic and social impacts on the workforce. However, just as the DEIS failed to disclose or analyze environmental impacts associated with the production of NGDVs at a new facility in South Carolina, the DEIS is similarly silent with regard to related economic or social impacts.

DISCUSSION

I. USPS Failed To Take a Hard Look At Environmental Impacts

USPS's proposed action of procuring 50,000 to 165,000 custom-made new vehicles will indisputably cause the production of these new vehicles, and will thus cause the full suite of environmental impacts associated with the manufacturing of automobiles. For example, impacts associated with the production of automobiles may include emissions of greenhouse gases associated with industrial activities, emissions of other pollutants into the air and water, or the release of hazardous waste.[6] Nevertheless, the DEIS is entirely silent as to any environmental impacts associated with the production of its NGDVs. Because USPS's action of procuring these vehicles causes the vehicles to be built, the production of these vehicles is "reasonably foreseeable and ha[s] a reasonably close causal relationship to the proposed action," meaning that the production of the vehicles constitutes an impact that USPS is obligated to consider. 40 C.F.R. § 1508.1(g). USPS's failure to consider this obvious issue violates NEPA.

Likewise, the DEIS fails to consider how the impacts of its proposed action may differ from the alternatives discussed in the DEIS or ignored by the agency (as addressed below). For

[4] *See* Samuel Stebbins, The Center Square, *This is How Strong Labor Unions Are in South Carolina* (Apr. 1, 2021), thecentersquare.com/south_carolina/this-is-how-strong-labor-unions-are-in-south-carolina/article_0fa4b771-cfd1-5144-a81d-65b559be002b.html

[5] *See The Best and Worst States to Work in America*, OXFAM, https://www.oxfamamerica.org/explore/countries/united-states/poverty-in-the-us/best-states-to-work/ (last visited Oct. 15, 2021).

[6] *See, e.g.*, Martin V. Melosi, *The Automobile and the Environment in American History: Environmental Cost of the Automobile Production Process*, http://www.autolife.umd.umich.edu/Environment/E_Overview/E_Overview2.htm (last visited Oct. 15, 2021) (estimating that roughly a third of "the total environmental damage caused by automobiles occurred before they were sold or driven").

example, environmental impacts associated with the production of a custom-designed vehicle may differ from the impacts associated with the production of vehicles that are already commercially available, because the production of custom vehicles may require development of specialized machinery or production methods, which may in turn have environmental impacts. These types of environmental impacts—caused directly by the expenditure of money by a federal agency—are precisely the types of impacts for which NEPA requires rigorous analysis. *See* 39 C.F.R. § 775.11(c)(5) (noting that it is "vitally important" to present "environmental impacts and alternatives . . . in comparative form, thus sharply defining the issues and providing a clear basis for choosing alternatives").

Furthermore, the DEIS fails to consider any environmental impacts associated with the fact that USPS's new vehicles will be produced at a new manufacturing facility. The fact that USPS's contract with Oshkosh Defense has led the company to undertake the construction of a new manufacturing facility in South Carolina was widely reported in news sources months before USPS issued its DEIS, meaning that this information was plainly available to the agency and that the construction of this new facility is a "reasonably foreseeable" consequence of USPS's actions. 40 C.F.R. § 1508.1(g). Likewise, because Oshkosh Defense's construction of a new manufacturing facility was in fact caused by USPS's contract to spend billions of dollars on new vehicles, it has "a reasonably close causal relationship to the proposed action." *Id.* Accordingly, the construction of a new manufacturing facility to supply USPS's demand for NGDVs is another impact that USPS must consider in order to comply with NEPA.

Similarly, the DEIS fails to consider any economic or social impacts related to the production of USPS's new vehicles. However, as discussed above, the fact that Oshkosh Defense has already decided to produce USPS's new vehicles at a new manufacturing facility in South Carolina entails social and economic impacts that USPS must consider. For example, employees at a non-unionized new facility in South Carolina are far less likely to earn living wages or experience safe working conditions than employees at an existing facility with a labor union contract such as Oshkosh Defense's existing facilities in Wisconsin. Because USPS's actions are already driving the decision to manufacture new NGDVs in South Carolina—and given the long history of unionized manufacturing jobs being replaced by non-union jobs in southern states, a pattern that may be perpetuated by the decision to establish a new manufacturing facility in a state hostile to collective bargaining—the economic and social impacts of this course of action constitute impacts that NEPA obligates USPS to disclose and analyze.

The failure to consider environmental impacts is a clear violation of NEPA that courts routinely find arbitrary and capricious. For example, the failure to consider how expansion of an airport would lead to increased demand and increased aircraft operations was an "obvious" NEPA violation. *See Barnes v. U.S. Dep't of Transp.*, 655 F.3d 1124, 1134 (9th Cir. 2011) (faulting an agency that "chose to gloss over" this impact). Likewise, the failure to consider impacts on employment, housing, and local economies in the federal approval of a casino development was unlawful. *See TOMAC v. Norton*, 240 F. Supp. 2d 45, 51–52 (D.D.C. 2003). As these cases illustrate, agencies are obligated to consider the full array of impacts caused by their actions. Here, these same principles require USPS to consider impacts from the manufacturing of its new vehicles, including the fact that the vehicles will be produced at an entirely new manufacturing facility that is unlikely to provide strong protections for workers and

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that will cause additional environmental impacts associated with the construction of the manufacturing facility itself. Accordingly, to come into compliance with NEPA, USPS must issue a new or supplemental DEIS to address these issues, or must at least include a detailed consideration of these issues in its Final EIS.

II. USPS Failed To Consider Reasonable Alternatives With Fewer Adverse Impacts

USPS's DEIS wrongly ignores any alternatives regarding the production of its NGDVs. Although the DEIS includes some alternatives, such as purchasing a greater proportion of electric vehicles or purchasing commercially available vehicles rather than custom-designed vehicles, all of the alternatives considered in the DEIS concern *what types* of vehicles USPS will purchase rather than *how or where the vehicles are built*. However, reasonable alternatives regarding the actual production of USPS's new vehicles clearly exist and require analysis as part of this NEPA process. *See, e.g.*, *Simmons v. U.S. Army Corps of Eng'rs*, 120 F.3d 664, 666 (7th Cir. 1997) ("If NEPA mandates anything, it mandates this: a federal agency cannot ram through a project before first weighing the pros and cons of reasonable alternatives.").

Because "[t]he existence of a viable but unexamined alternative renders" a NEPA analysis "inadequate," *Simmons*, 120 F.3d at 670, "[n]o decision is more important than delimiting what these 'reasonable alternatives' are," *id.* at 666. An alternative is reasonable if it meets the purpose and need for an agency's action. *Id.*

Here, USPS's stated purpose and need is "to purchase and deploy purpose-built NGDV to replace the end-of-life and high-maintenance" existing vehicles in the agency's fleet. DEIS at 2-1–2-3. Plainly, the purpose and need to replace aging vehicles with new, purpose-built vehicles accommodates alternatives regarding how and where those vehicles are produced. For example, reasonable alternatives could include a requirement that new vehicles must be produced at an existing manufacturing facility, which would have fewer adverse environmental impacts because it would avoid the need for the creation of an entirely new manufacturing facility. Likewise, an alternative approach could require a manufacturer to produce these vehicles at a facility with a strong track record of compliance with federal and state environmental laws and regulations. Further, an alternative approach that requires manufacturing of NGDVs to occur in a facility that has an agreement in place with a labor union such as UAW could result in fewer adverse impacts to the workforce and the economy by ensuring that any jobs created as a result of USPS's actions pay a living wage and guarantee safe working conditions. Under any of these alternative approaches, USPS would still be able to achieve its purpose and need of procuring new, purpose-built NGDVs. Accordingly, all of these are reasonable alternatives that must be considered during the NEPA process. *See Simmons*, 120 F.3d at 670 (noting that "the existence of a viable but unexamined alternative" renders a NEPA analysis "inadequate").

To come into compliance with NEPA, USPS must issue a new or supplemental DEIS to consider a broader range of alternatives that includes alternatives regarding how and where NGDVs will be produced, rather than merely the types of vehicles USPS will buy. At a minimum, a broader range of alternatives must be considered in the Final EIS.

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III. USPS Must Avoid Any Irreversible Commitment of Resources Until it Completes the NEPA Process

NEPA obligates agencies to "integrate the NEPA process with other planning and authorization processes *at the earliest reasonable time* to ensure that agencies consider environmental impacts in their planning and decisions, to avoid delays later in the process, and to head off potential conflicts." 40 C.F.R. § 1501.2(a) (emphasis added). Moreover, until an agency has completed the NEPA process, "no action concerning the proposal may be taken that would: (1) [h]ave an adverse environmental impact; or (2) [l]imit the choice of reasonable alternatives." *Id.* § 1506.1(a). Courts have construed such regulatory language "as requiring agencies to prepare NEPA documents, such as an . . . EIS, before any irreversible and irretrievable commitment of resources." *Metcalf v. Daley*, 214 F.3d 1135, 1143 (9th Cir. 2000). "The point of commitment" constituting an irreversible and irretrievable commitment of resources occurs when an agency "sign[s] the contract" with a project proponent "and then work[s] to effectuate the agreement." *Id.*[7]

Here, USPS concedes that it entered into a contract with Oshkosh Defense, LLC, in February of 2021—nearly six months before the agency even issued its *Draft* EIS. DEIS at 1-4. Moreover, although the agency maintains that the contract is "contingent on the satisfactory completion of the NEPA process," USPS simultaneously recognizes that "*[a]t the time of awarding the contract, the Postal Service placed an order that funds the production design, assembly tooling, and factory start-up costs*" for the production of NDGVs. *Id.* (emphasis added). Accordingly, USPS has conceded that it has not only already entered into a contract with Oshkosh Defense, but has in fact also spent funds to allow the company to work on the development of its new manufacturing facility in South Carolina—an action with indisputable adverse environmental impacts.

USPS's decision to enter into a contract and fund an activity with indisputable environmental impacts before completing its EIS violates NEPA. Because funding a new manufacturing facility in South Carolina both has adverse environmental impacts and limits the choice of reasonable alternative locations for production of NDGVs, such funding is impermissible until the NEPA process is complete. *See* 40 C.F.R. § 1506.1(a). Indeed, in similar circumstances where federal agencies "signed a contract which obligated them" to take steps with environmental impacts "and then worked to effectuate the agreement"—as USPS has done by signing a contract with Oskhosh Defense, LLC, and in fact funding the company's factory startup—the Ninth Circuit "h[e]ld that by making such a firm commitment before preparing a[NEPA analysis], the Federal Defendants failed to take a 'hard look' at the environmental consequences of their actions and, therefore, violated NEPA." *Metcalf*, 214 F.3d at 1145.

USPS must immediately correct this NEPA violation by withholding funds for any activity related to the production of NGDVs until the agency completes a lawful and comprehensive NEPA analysis.

[7] Although the Ninth Circuit decided *Metcalf* based on the prior version of NEPA's implementing regulations, nothing in the new regulations calls the holding in this case into question.

CONCLUSION

USPS's DEIS for the procurement of a new fleet of custom-built vehicles violates NEPA because it fails to take a hard look at the environmental and socioeconomic impacts associated with the manufacturing of the vehicles that USPS is causing to be produced. Likewise, USPS's DEIS violates NEPA because it fails to consider any alternatives regarding the production of USPS's new vehicles.

To come into compliance with its obligations under NEPA, USPS must issue a new or supplemental DEIS that corrects these defects and provide the public with a reasonable opportunity for comment on its new analysis of these issues and alternatives. At a minimum, these issues and alternatives must be rigorously addressed in any Final EIS. Until the completion of a lawful and comprehensive NEPA process, USPS must refrain from undertaking any irreversible or irretrievable commitment of resources, such as the expenditure of funds for the development of a new manufacturing facility for NGDVs.

Sincerely,

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Institute *for* Policy Integrity
NEW YORK UNIVERSITY SCHOOL OF LAW

October 15, 2021

To: U.S. Postal Service

Subject: Valuation of Emissions in Draft Environmental Impact Statement for Purchase of Next Generation Delivery Vehicles (Document No. 2021-18302)

The Institute for Policy Integrity at New York University School of Law (Policy Integrity)[1] respectfully submits the following comments on the U.S. Postal Service's above-referenced draft Environmental Impact Statement (EIS). Policy Integrity is a non-partisan think tank dedicated to improving the quality of government decisionmaking through advocacy and scholarship in the fields of administrative law, economics, and public policy. Policy Integrity previously commented in this docket during the scoping stage.[2]

In the draft EIS, the Postal Service proposes to purchase at least 10% battery electric vehicles (BEVs) as part of its fleet of new postal delivery vehicles over the next 10 years. The Postal Service further commits to "accelerat[ing] its electric vehicle strategy . . . if its financial condition changes."[3] While it reasonably defers a final decision on the precise energy portfolio of its fleet to await additional information, **the Postal Service should carefully assess evolving information on the environmental benefits of additional electrification, as well as changes in cost and cost savings—as it considers its commitment to BEV powertrains over the coming years.** This draft EIS takes several key steps in the right direction, but the Postal Service can improve upon its analysis in the following ways:

- **The Postal Service acted appropriately by considering monetized climate impacts**. However, the valuations that the Postal Service adopted are currently being reviewed by the Interagency Working Group on the Social Cost of Greenhouse Gases (Working Group) and are expected to increase in the coming months to reflect the latest science and economics. The Postal Service should **conduct additional sensitivity analyses around lower discount rates**, as the Working Group suggests; **coordinate with the Working Group** to assess how forthcoming updates might impact the Postal Service's analysis; and institute a process to **ensure that future evaluations of the fleet composition during the decade-long procurement process incorporate the latest social cost of greenhouse gases values**.

[1] This document does not purport to represent the views, if any, of New York University School of Law.

[2] Inst. for Pol'y Integrity, Comment Letter on Consideration of Greenhouse Gas Emissions and Omission of All Zero-Emission Alternative in Upcoming Environmental Impact Statement (Apr. 5, 2021), https://policyintegrity.org/documents/Comments_on_Purchase_of_Next_Generation_Delivery_Vehicles_04.05.21.pdf.

[3] U.S. Postal Serv., *Draft Environmental Impact Statement: Next Generation Delivery Vehicle Acquisitions* 3-1 (2021).

- **The Postal Service should give due consideration to the public-health benefits of BEVs from reduced local pollution in any monetized weighing of costs and benefits.** The Postal Service can monetize local air-pollution emissions using per-ton estimates from EPA. In rolling out electric vehicles, moreover, the Postal Service should **give priority to overburdened and underserved dense communities that stand to benefit the most from reductions in ambient air pollution**. Such populations can be identified using EPA's EJSCREEN tool.
- **The Postal Service should consider the benefits of option value and leading by example.** There is value in waiting for more information about how the net costs of BEVs may decrease over time while more environmental benefits of emissions reductions become quantifiable. The Postal Service should position itself to preserve the option of increasing its fleet mix toward 100% BEVs. **Prioritizing the purchase of BEVs, consistent with the minimum goal of at least 10% BEVs, will help preserve the option to ramp up purchasing in the future. Prioritizing the purchase of BEVs will also use the government's purchasing power to lead by example**, which can help correct market failures that have caused an underinvestment in research in BEV technologies.
- **The Postal Service should adjust how it presents costs and benefits such that they are easily comparable**, to facilitate sound and transparent decisionmaking. In particular, the Postal Service should disclose its discount rate for future cost savings and ensure that rate is consistent with current guidance.

In finalizing its analysis and considering its vehicle fleet over the coming decade, the Postal Service should also be mindful of the Biden administration's emphatic support for promoting electric vehicles. In one Executive Order, for instance, the President expressed a goal of "lead[ing] the world on clean and efficient cars and trucks," including by pushing for 50% of new light-duty passenger cars and trucks emitting no pollution by 2030.[4] The President similarly proposed raising standards for medium- and heavy-duty vehicles within the next several years.[5] Moreover, as part of his government-wide approach to climate policy, the President specifically singled out "vehicles of the United States Postal Service" as a priority as the government seeks to procure more "clean and zero-emission vehicles."[6] Such investments in vehicle electrification will likely spur the recent trend of technological innovations that further reduce the cost of zero-emission vehicles.[7]

Given this administration's commitment to electric-vehicle procurement—and because the Postal Service's 10% floor on BEV procurement may be below analogous requirements that are promulgated for the private sector—the Postal Service should ensure that the affected public understands the source of any such inconsistencies, and it should **regularly update its analysis and reevaluate its BEV procurement in future years. The agency should focus particularly on how it plans to amend its stances if zero-emission vehicles become cheaper over time or if their environmental benefits are recognized to be greater than current monetized values**

[4] Exec. Order No. 14,037 § 1, 86 Fed. Reg. 43,583, 43,583 (Aug. 10, 2021).

[5] *See id.* §§ 2–4, 86 Fed. Reg. at 43,583–84.

[6] Exec. Order No. 14,008 § 205(b)(2), 86 Fed. Reg. 7624, 7624 (Jan. 27, 2021).

[7] *See* Colin McKerracher et al., BloombergNEF, *Electric Vehicle Outlook 2021*, https://perma.cc/6946-MTJE (reporting that lithium-ion battery packs' prices fell 89% between 2010 and 2020, and an additional 13% in 2020).

indicate. While the Postal Service's analysis is already commendable in key respects, the steps outlined in this letter would further solidify the rigor of the Postal Service's analysis and position the agency to rationally assess the mix of BEV and internal combustion engine (ICE) vehicles as it learns additional information over time.

I. The Postal Service Appropriately Applied Social Cost of Greenhouse Gas Metrics to Help Contextualize Each Alternative's Climate Impacts.

In an earlier comment letter, submitted in response to the Notice of Intent relating to this EIS, Policy Integrity urged the Postal Service to monetize the social cost of greenhouse gases in order to contextualize this procurement's potential climate impacts.[8] As noted in that prior comment letter, NEPA's "hard look" requirement not only allows for, but frequently demands, that agencies apply the social cost of greenhouse gases. This is because the environmental effects of greenhouse gas emissions are not well reflected by the mere quantified tonnage those emissions themselves. Rather, the relevant effects that the Post Service must disclose and contextualize are the incremental climate impacts caused by those emissions. As documented more extensively in Policy Integrity's earlier comment, the social cost metrics represent the best tool available for rigorously assessing and contextualizing the significance of those incremental impacts.[9]

That the Postal Service followed this recommendation and monetized the social cost of greenhouse gases—including the costs of methane and nitrous oxide as well as the costs of carbon dioxide—is therefore appropriate and consistent with best practice. In doing so, the Postal Service stands as a model for other federal agencies in recognizing that monetizing climate-related impacts can contribute to a clear understanding of how, and how much, an agency's proposed actions will affect climate change.

The Postal Service's use of the social cost of greenhouse gases in this EIS is part of an emerging trend of agencies rigorously quantifying and monetizing the costs that greenhouse gas emissions impose, including under NEPA. As noted in Policy Integrity's prior comment, that trend reflects the Biden administration's stated priorities. For instance, the Working Group, a coordinated effort among twelve federal agencies and White House offices, has recommended best practices and estimates since 2010 for using the social cost of greenhouse gases,[10] and reaffirmed its commitment to those figures this past February.[11] In its February 2021 technical support document, moreover, the Working Group specifically highlighted the use of the social cost values in NEPA analyses.[12]

Similarly, in Executive Order 13,990, President Biden recognized that the social cost of greenhouse gases could be applied to a wide range of agency processes, including "decision-making, budgeting, and procurement."[13] That Executive Order provided a deadline of September

[8] *See* Inst. for Pol'y Integrity, *supra* note 2, at 1–4.

[9] *See id.* at 3 and sources cited therein.

[10] *See* Interagency Working Grp. on the Soc. Cost of Carbon, *Technical Support Document: Social Cost of Carbon for Regulatory Impact Analysis Under Executive Order 12866* (2010).

[11] *See* Interagency Working Grp. on the Soc. Cost of Greenhouse Gases, *Technical Support Document: Social Cost of Carbon, Methane, and Nitrous Oxide Interim Estimates Under Executive Order 13,990* (2021) [hereinafter *2021 TSD*].

[12] *Id.* at 12.

[13] Exec. Order No. 13,990 § 5(b)(ii)(C), 86 Fed. Reg. 7037, 7040 (Jan. 25, 2021).

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1, 2021 for the Working Group to "provide recommendations . . . regarding . . . where the [social cost of greenhouse gases] should be applied."[14] The Postal Service should heed those updates when the Working Group releases them and cite any relevant portions of the Working Group's guidance as further support for its decision to monetize greenhouse gas emissions.

II. The Postal Service Should Consider Lower Discount Rates in Additional Sensitivity Analyses, and Coordinate with the Working Group as It Updates Its Estimates of the Social Cost of Greenhouse Gases.

While the social cost valuations currently endorsed by the Working Group are appropriate to use as conservative estimates and have been applied in dozens of previous agency actions,[15] they are also widely agreed to underestimate the full social costs of greenhouse gas emissions due to the presence of omitted damages and recent evidence on intergenerational discount rates.[16] With the Working Group in the midst of updating its recommended valuations to incorporate the latest available science and economics, the Postal Service should present additional analysis of climate costs at lower discount rates—as suggested in the Working Group's recent technical support document—and coordinate with the Working Group to ensure that any updates to the social cost valuations are taken into consideration as part of the Postal Service's ongoing consideration of vehicle electrification in the coming years.

In this draft EIS, the Postal Service cites the Working Group's most recent technical support document when providing a range of discount rates between 2.5% and 5%.[17] While that technical support document endorses that range of discount rates on a short-term, interim basis,[18] it goes on to explain that considerable evidence now exists that intergenerational consumption discount rates—the relevant rates to apply for policies with strong intergenerational impacts, like climate change—are actually well below 2.5%, potentially in the range of 1–2%.[19] That conclusion is well in line with extensive recent research.[20] For this reason, the Working Group acknowledges that its current social cost valuations "likely underestimate societal damages from [greenhouse gas] emissions"[21] and recommends that agencies "consider conducting additional sensitivity analysis using discount rates below 2.5%."[22] The Working Group is currently

[14] *Id.* § 5(b)(ii)(C), 86 Fed. Reg. at 7040.

[15] Peter Howard & Jason A. Schwartz, *Think Global: International Reciprocity as Justification for a Global Social Cost of Carbon*, 42 COLUM. J. ENV'T L. 203, 270–84 (2017) (listing all uses through mid-2016).

[16] *2021 TSD*, *supra* note 11, at 4 (acknowledging that current social cost valuations "likely underestimate societal damages from [greenhouse gas] emissions"). Richard L. Revesz et al., *Global Warming: Improve Economic Models of Climate Change*, 508 NATURE 173 (2014) (explaining that the Working Group's values, though methodically rigorous and highly useful, are very likely underestimates) (note that co-author Kenneth Arrow is a Nobel Prize winning economist).

[17] *DEIS*, *supra* note 3, at 4-18.

[18] *See 2021 TSD*, *supra* note 11, at 4.

[19] *Id.* at 16–21 (surveying literature).

[20] *See, e.g.*, Peter Howard & Jason A Schwartz, Inst. for Policy Integrity, *About Time: Recalibrating the Discount Rate for the Social Cost of Greenhouse Gases* 8–10 (2021) (reporting such research and concluding that "the best empirical estimate of the discount rate based on long-term interest rates in the current period is under 1%—and is likely to remain under 2% or less for the foreseeable future") (a version of this report, titled *Valuing the Future: Legal and Economic Considerations for Updating Discount Rates*, is forthcoming in the *Yale Journal on Regulation*).

[21] *Id.* at 4.

[22] *Id.* at 21.

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evaluating the discount rate (among other issues) as it performs a full assessment of its social cost valuations to reflect the latest scientific and economic research—a task that it has been ordered to complete by January 2022.[23] Given these strong signals, it appears likely that, in that update, the Working Group will lower its recommended discount rates, and thereby increase its recommended social cost valuations. In the meantime, the Working Group suggests conducting further sensitivity analyses using lower discount rates. (Note also that, for similar reasons, the Postal Service should disclose and may need to reconsider the discount rate it uses for comparing costs and cost savings; see *infra* Section V.)

The fact that the Working Group's recommended values are likely to change in the coming months—plausibly with lower discount rates that reveal higher valuations of climate impacts—suggests that the interim values applied by the Postal Service in this draft EIS likely underestimate the true climate impacts of the considered alternatives. Moving forward, the Postal Service should take two steps to ensure that it does not undervalue the true climate benefits of BEVs when selecting the energy mix of its delivery fleet.

First, if the Working Group releases its updated values before the Postal Service finalizes this EIS, the Postal Service should use those updated values. If the Postal Service finalizes this EIS before the Working Group updates its social cost valuations, the Postal Service should conduct additional sensitivity analysis using lower discount rates than those that it has already applied—perhaps 2% and 1%[24]—to reflect state-of-the-art literature on the topic and to anticipate the likely updates by the Working Group. To do so, the Postal Service could look to the "value of carbon" estimates from the New York State Department of Environmental Conservation (DEC), which applied a 2% discount rate as its central value but otherwise used the Working Group's modeling inputs.[25]

To illustrate the impact of a more complete assessment of possible discount rates, consider that by moving from a 2.5% discount rate to a 2% rate, the climate benefit of the "100% BEV" alternative over the no-action alternative in operational year 2030 increases from $71 million to over $112 million.[26] Put differently, use of a 2% discount rate reveals the climate benefit in 2030 of pursuing the all-BEV alternative to be about 1.6 times greater than the agency

[23] Exec. Order No. 13,990 § 5(b)(ii)(B), 86 Fed. Reg. 7037, 7040 (Jan. 25, 2021).

[24] *2021 TSD*, *supra* note 11, at 16–21 (surveying literature suggesting ranges this low).

[25] N.Y. Dep't of Env't Conservation, *Establishing a Value of Carbon: Guidelines for Use by State Agencies* 16–18 (2020), https://www.dec.ny.gov/docs/administration_pdf/vocfguid.pdf. Pursuant to DEC's estimates, at a discount rate of 2%, social cost valuations for year 2020 emissions equal $125 per ton of carbon dioxide, $2,782 per ton of methane, and $44,727 per ton of nitrous oxide. *Id.* at 3. *See also* N.Y. Dep't of Env't Conservation & Res. for the Future, *Estimating the Value of Carbon: Two Approaches* (2020) (explaining considerations and methodology).

[26] To derive this figure, because the draft EIS does not report emissions figures for each greenhouse gas it assesses (namely carbon dioxide, methane, and nitrous oxide), Policy Integrity divided the "total social cost" figures for each gas from Table F-8.c by the "social cost per ton" figures for each gas from Table F-8.a, all for operational year 2030. That yielded an estimate that, compared to the status quo, the "100% BEV" alternative would abate 596,839 tons of carbon dioxide, 1,380 tons of methane, and 439 tons of nitrous oxide. (Policy Integrity did not round these "tons abated" figures to whole numbers in its actual calculations.) To generate a total social cost for each gas, it then multiplied those "tons abated" by the estimated social cost per ton of each gas in 2030 at a 2% discount rate, using data from DEC. *See* N.Y. State Dep't of Env't Conservation, *Establishing a Value of Carbon: Guidelines for Use by State Agencies* app. (2021), https://perma.cc/WRC9-ZUL2. Policy Integrity then summed the social cost of each gas to generate the figure presented here. Consistent with the Postal Service's calculations in this draft EIS, Policy Integrity did not discount future costs to their present values, but rather presents the undiscounted figures as of the year of emissions.

currently calculates as its high-end estimate. Moving to a 1% discount rate—which lies within the range that the Working Group deems plausible[27]—reveals a climate benefit relative to the no-action alternative of over $344 million in the year 2030, which is 4.8 times greater than Postal Service's current high-end estimate.[28] The analogous benefit figures compared to the no-action alternative for operational year 2050 are approximately $143 million and $387 million under 2% and 1% discount rates, respectively.[29] These estimates are several times higher than the analogous figures under a 3% discount rate of about $50 million for operational year 2030 and $70 million for operational year 2050, revealing the significance of considering the full range of reasonable discount rates.[30]

Second, even after finalizing this EIS, the Postal Service should adopt the Working Group's updated estimates when those are released in 2022, and it should institute a process to continue to reassess the energy mix of its delivery fleet based on those updated climate-damage estimates. Because this draft EIS does not purport to commit definitively to acquiring a particular mix of powertrains, but rather leaves that decision open to future assessment,[31] it is important that the Postal Service keep abreast of new updates from the Working Group and give due weight to that information in its continued assessments of optimal powertrain mixtures over the coming years. While the Postal Service suggests that future reevaluations will be based on updated cost information only,[32] it is equally important that the agency incorporate incoming evidence on the benefits of additional electrification.

III. The Postal Service Should Monetize the Costs of Other Pollutants Using Established Valuations Used by Other Agencies, and It Should Prioritize the Rollout of BEVs in Dense, Underserved Communities that Will Most Benefit from Reductions in Local Air Pollution.

While the Postal Service properly monetizes the social cost of greenhouse gases, not all emitted pollutants from this action are greenhouse gases. Many non-greenhouse gas pollutants, or "local" pollutants, have measurable and substantial impacts, including to human life and health. For instance, local pollutants like sulfur dioxide, particulate matter, and nitrous oxides impose serious adverse health effects, including asthma and heart disease, on nearby populations.[33] These consequences are especially pronounced for populations already subject to high levels of pollution, which tend to include a disproportionate share of minority, low-income, and otherwise underserved groups. These groups are both more likely to be already exposed to

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[27] *See 2021 TSD*, *supra* note 11, at 16–21 (surveying literature suggesting ranges this low).

[28] To derive this figure, Policy Integrity followed the same steps described *supra* note 26, except that it used figures corresponding to a 1% discount rate rather than a 2% one.

[29] To derive these figures, Policy Integrity followed the same steps described *supra* notes 26 and 28, except that it used figures corresponding to a 2050 rather than 2030.

[30] *See DEIS*, *supra* note 3, at 4-22 tbl.4-6.6. Specifically, compared to a 3% discount rate, a 2% discount rate yields benefits figures that are 2.3 times greater in operation year 2030 and 2.1 times greater in operational year 2050. And a 1% discount rate discount rate yields benefits figures that are 6.9 times greater in operation year 2030 and 5.6 times greater in operational year 2050.

[31] *See id.* at 3-1 to 3-2, 3-4.

[32] *Id.* at 3-1 (stating that the agency will "accelerate its electric vehicle strategy by increasing the percentage of BEV powertrains if its financial condition changes or it receives additional funding for this purpose").

[33] *See* Jeffrey Shrader et al., Inst. for Pol'y Integrity, *Valuing Pollution Reductions: How to Monetize Greenhouse Gas and Local Air Pollutant Reductions from Distributed Energy Resources* 19–21 (2018); RICHARD L. REVESZ & JACK LIENKE, STRUGGLING FOR AIR: POWER PLANTS AND THE "WAR ON COAL" 10–11 (2016).

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pollutants and are likely to suffer worse health consequences from a given amount of exposure.[34] But this draft EIS does not monetize, or even qualitatively discuss, these pollutants' impacts.

The Postal Service should give due consideration to the public-health benefits of BEVs from reduced local pollution in any monetized weighing of costs and benefits. To do so, it should monetize the costs that local pollutants impose. As Policy Integrity explained in its prior comments in the context of greenhouse gas emissions, NEPA's "hard look" standard counsels agencies to do more than merely quantifying emission volumes. Instead, agencies should assess the actual impact of those emissions, including on public health and welfare. In that vein, the U.S. Supreme Court has called disclosing impacts the "key requirement of NEPA" and held that each agency must make those disclosures in a way that "brings those effects to bear on [the agency's] decisions."[35] Indeed, local pollutants' effects are often quite serious; for instance, the World Bank estimates that, in 2016, the health-related costs to the United States owing to fine particulate matter ($PM_{2.5}$) totaled 3.4% of national gross domestic product.[36] And, as especially relevant to this draft EIS, the transportation sector is one of the biggest sources of pollutants, like fine particulate matter and nitrogen oxides, that significantly endanger public health.[37] Nearly half of Americans live in areas with harmful levels of these pollutants, and as many as 50,000 premature deaths occur every year in the United States from motor vehicle emissions of these substances.[38]

Monetizing the impacts of local pollution from this procurement decision is especially important given that the Postal Service has already quantified a number of costs and benefits in this draft EIS. The Postal Service evidently recognizes that quantifying and monetizing environmental impacts can give those values a critical context that would otherwise be difficult to understand and easy to ignore. What is more, as discussed in Part V of these comments, the Postal Service justifies its preferred alternative—acquiring at least 10% BEVs—largely on the grounds that the costs of additional BEVs would, according to the agency's current estimates,

[34] *See* U.S. Env't Prot. Agency, *Technical Guidance for Assessing Environmental Justice in Regulatory Analysis* 15 (2016), https://perma.cc/3HFN-FB3V ("[D]ue to a range of existing physical, chemical, biological, social, and cultural factors, population groups of concern may be more exposed to environmental toxins, or may suffer greater ill effects from exposures of similar magnitude, because they may have a compromised ability to cope with and/or recover from such exposures.").

[35] *Balt. Gas & Elec. Co. v. NRDC*, 462 U.S. 87, 96 (1983).

[36] World Bank Grp., *The Global Health Cost of Ambient $PM_{2.5}$ Air Pollution* 59 tbl.5. (2020), https://perma.cc/2YS5-7C2L.

[37] *See* Env't Def. Fund, *Clean Cars, Clean Air, Consumer Savings: 100% New Zero Emission Vehicle Sales by 2035 Will Deliver Extensive Economic, Health and Environmental Benefits to All Americans* 4 (2021), https://perma.cc/8URR-U67Y.

[38] *See* David Farnsworth et al., *Cleaner by the Mile: Electric Trucks Can Have Outsized Environmental and Health Benefits*, Utility Drive (Apr. 14, 2021), https://perma.cc/FAF4-VM5M (citing Fabio Caiazzo et al., *Air Pollution and Early Deaths in the United States. Part I: Quantifying the Impact of Major Sectors in 2005*, 79 Atmospheric Env't 198 (2013)); *see also* Env't Def. Fund, supra note 37, at 4 (attributing more than 20,000 premature American deaths to the transportation sector every year).

outweigh the monetized climate benefits.[39] Omitting from that calculation large categories of benefits, such as health benefits from local pollutants, risks skewing this balance.

Monetizing local pollution would be fairly straightforward, as reliable valuations already exist and are in use by other agencies.[40] The draft EIS already reports much of the data needed, including the emissions rates and volumes of various local pollutants.[41] To monetize those emission volumes, the Postal Service could use available estimates in the literature, such as valuations supplied in a regulatory impact analysis (RIA) by EPA of the costs per ton of local pollutants from trucks.[42] While EPA's figures do not focus on tailpipe emissions from the Postal Service's delivery vehicles in particular, the costs per ton for other medium- and heavy-duty vehicles should be translatable to delivery vehicles. And while EPA developed its figures for an RIA, not an EIS, using cost figures developed originally for RIAs is appropriate in EISs when doing so is the best method to disclose the impacts of the action in question, as illustrated by the Postal Service's usage here of the social cost of greenhouse gases.[43] With, at most, some simple modifications,[44] the Postal Service could conduct a similar analysis for local pollutants.

While EPA's monetized values represent average costs across the whole country,[45] the impacts of local pollution can vary greatly across geographic regions and populations.[46] For instance, adding more local pollutants to dense urban areas that are already highly polluted would likely cause much greater health impacts than adding local pollutants to sparser and less-polluted areas. These health impacts can be particularly pronounced for overburdened and underserved communities with pre-existing risk factors. Geographic and population-sensitive granularity of this sort could be particularly relevant to the Postal Service, which must decide not only how many BEVs to procure but also where to deploy those vehicles. The Postal Service can use established methodologies and models to conduct this sort of valuation, including, among others, EPA's BenMAP tool.[47]

To minimize the public health impacts from its vehicle fleet, the Postal Service should prioritize the deployment of BEVs in dense, underserved communities that stand to benefit the most from reductions in local pollution. The Postal Service should consider the proximity of

[39] *See DEIS*, *supra* note 3, at 4-37 (justifying the Postal Service's preferred alternative on the basis that buying 100% new BEVs "is significantly more expensive," and noting that the social cost of greenhouse gases that would be averted is comparatively small).

[40] *See, e.g.*, Shrader et al., *supra* note 33, at 22–24.

[41] *DEIS*, *supra* note 3, at 4-18 to 4-28.

[42] *See* U.S. Env't Prot. Agency, EPA-420-R-16-900, *Greenhouse Gas Emissions and Fuel Efficiency Standards for Medium- and Heavy-Duty Engines and Vehicles Phase 2: Regulatory Impact Analysis*, at 8-44 tbl.8-12 (2016), https://perma.cc/Z9EF-C5HT [hereinafter *EPA RIA*].

[43] *See* Jayni Foley Hein & Natalie Jacewicz, *Implementing NEPA in the Age of Climate Change*, 10 MICH. J. ENV'T & ADMIN. L. 1, 59 (2020) (noting that Obama-era agencies "frequently used the social cost of greenhouse gases . . . in regulatory impact analyses . . . and sometimes in NEPA analyses," and arguing for its broader use in NEPA analyses).

[44] For instance, the Postal Service should update figures presented in 2013 dollars to account for inflation.

[45] *See EPA RIA*, *supra* note 42, at 8-43.

[46] *See* Matt Bitner et al., Inst. for Pol'y Integrity, *Making the Most of Distributed Energy Resources: Subregional Estimates of the Environmental Value of Distributed Energy Resources in the United States* 8 (2020), https://policyintegrity.org/files/publications/Making_the_Most_of_Distributed_Energy_Resources.pdf (reporting that the value of distributed energy resources, which mitigate local pollution, "can vary significantly by subregion").

[47] *See* Shrader et al., *supra* note 33, at 22–24.

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different sources of pollution—e.g., tailpipe, refueling, refineries, and electric generating units—to sensitive populations. To identify such populations, the Postal Service can make use of EPA's EJSCREEN tool, an environmental justice mapping and screening tool that identifies environmentally burdened local populations based on environmental and demographic indexes, including ambient pollution levels, traffic volume, and proximity to hazardous sites.[48]

Monetizing the health and environmental effects of local pollutants may be especially helpful to compare the effects from different pollutants: for example, replacing some existing vehicles may reduce nitrogen oxides more, while replacing others may reduce particulate matter more.[49] However, in any such comparisons, the Postal Service should bear in mind that not all significant effects from local pollutants are currently reflected in available monetization metrics.

IV. The Postal Service Should Consider the Benefits of Preserving Option Value and Leading by Example by Frontloading the Purchase of Electric Vehicles.

The Postal Service should put itself in the best position to preserve its flexibility around determining its final fleet mix. Fortunately, as the draft EIS explains, "[t]he production contract is flexible and allows the Postal Service to continue to evaluate opportunities for electrification for any order placed throughout its ten-year period."[50] This flexibility is valuable, and the Postal Service should consider and discuss the benefits of preserving that flexibility.

Specifically, there is a benefit in waiting to make a decision, to gather information and resolve uncertainty over time. Currently, there is uncertainty about the costs, cost savings, and benefits of purchasing more electric vehicles; production costs may decrease over time, cost savings may increase, and more environmental and health benefits may become quantifiable in the future. Because waiting to make a final decision on the fleet mix will allow the Postal Service to acquire new information that reduces uncertainty, there is "option value" in waiting to make a decision.[51] The Postal Service should consider the option value of its available alternatives.

Given its preference to purchase *at least* 10% BEVs, the alternative that will preserve the most flexibility to potentially increase that goal over time would be to start by prioritizing the purchase of BEVs. Specifically, since the Postal Service plans to purchase 50,000 to 165,000 vehicles, at least 10% of which will be BEVs, the Postal Service may want to begin by planning to purchase at least 5,000 to 16,500 BEVs first. That will preserve the option—and all the associated option value—of reconsidering over time what portion of the remaining vehicles might also be BEVs.

Prioritizing the purchase of BEVs also has the benefit of using the government's purchasing power to lead by example and correct market failures. The market for electric vehicles—in the medium- and heavy-duty sectors, as well as in the light-duty sector—faces a variety of market failures that prevents the optimal development and sale of more efficient, cleaner, battery-powered vehicles.[52] Manufacturers face first-mover disadvantages and network

[48] *See Environmental Justice Indexes in EJSCREEN*, U.S. Env't Prot. Agency, https://perma.cc/JC5T-MG92.

[49] *See DEIS*, *supra* note 3, at F-15 tbls.F-4.c to F-4.e.

[50] *Id.* at 3-1.

[51] *See* Off. of Mgmt. & Budget, *Circular A-4*, at 39 (2003), https://perma.cc/X8JM-YZMT.

[52] *See* Rachel Rothschild & Jason A. Schwartz, Inst. for Pol'y Integrity, *Tune Up: Fixing Market Failures to Cut Fuel Costs and Pollution from Cars and Trucks* (2021), https://policyintegrity.org/files/publications/Tune_Up_Fixing_Market_Failures_to_Cut_Fuel_Costs.pdf.

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externalities that cause them to underinvest in the research necessary to develop better, cheaper, more efficient new vehicle technologies. Government, institutional, corporate, and individual consumers in the medium- and heavy-duty sectors also face market failures, including market power, split incentives, first-mover disadvantages, information asymmetries, and network externalities. These market failures mute the demand for more efficient vehicles.[53]

Just as government regulations can help overcome these market failures and deliver benefits to the whole marketplace, so can the government's purchasing power. By prioritizing the purchase of more battery-powered vehicles, the Postal Service can help catalyze research and development in the marketplace, which can help lower the costs and increase the net benefits of future purchase throughout the transportation sector. And by stimulating the development of more efficiency vehicles, the Postal Service will thereby help contribute to emissions reductions throughout the transportation sector as well. The Postal Service should consider the economic and environmental benefits that will stem from helping to overcome these market failures by using the purchasing power of the government to lead by example.

V. The Postal Service Should Present Costs and Benefits in a Standardized, Comparable Way and Should Disclose Key Assumptions Like the Discount Rate.

In the draft EIS, the Postal Service notes that, by its estimates, purchasing all BEVs would be "significantly more expensive, [by] $2.3 billion," than purchasing 90% ICE vehicles and 10% BEVs.[54] In comparison, it notes that the agency's "most favorable [social cost of greenhouse gas] calculations"—that is, the social cost values at a 2.5% discount rate which, as explained above, likely undervalue true climate impacts—purchasing all BEVs "result in an approximately $61 million [social cost of greenhouse gas] benefit" in operational year 2050 " and approximately $46 million" in climate benefits in operational year 2030."[55] Largely for those reasons, the Postal Service notes a preference for the "10% BEV" option.[56]

While agencies are not required to conduct formal cost-benefit analyses under NEPA,[57] they must broadly balance beneficial and adverse impacts.[58] Indeed, courts have historically held that NEPA "mandates at least a broad, informal cost-benefit analysis," which—while not necessarily rising to the level of a *formal* cost-benefit analysis—must nevertheless be "full[]," "accurate[]," and "objective[]."[59] When agencies choose to weigh beneficial and adverse impacts explicitly in EISs—as the Postal Service has done here by comparing costs and benefits to select its preferred alternative—they should ensure to the extent possible that their weighing is rational and balanced, as NEPA requires of any analysis.

In this case, the Postal Service could improve upon its analysis rather simply by reporting costs and benefits in comparable terms. Most notably, the above-mentioned comparison of "$2.3 billion" in marginal costs to "$46 million" or "$61 million" in annual climate benefits, by purchasing 100% BEVs as opposed to only 10%, is misleading and incommensurable in three

[53] *See id.*
[54] *DEIS*, *supra* note 3, at 4-37.
[55] *Id.*
[56] *Id.*
[57] *See, e.g.*, *High Country Conservation Advocs. v. U.S. Forest Serv.*, 52 F. Supp. 3d 1174, 1191 (D. Colo. 2014).
[58] *See, e.g.*, *id.*
[59] *Sierra Club v. Sigler*, 695 F.2d 957, 978–79 (5th Cir. 1983).

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key respects. First, the cost figure assumes that the Postal Service will purchase 75,000 new vehicles,[60] whereas the benefits figures assume 165,000 new vehicles.[61] Second, the cost figure represents the total present value of all costs incurred over the program's lifetime, whereas the benefit figures reflect only the greenhouse gas-related benefits that accrue in single operational years (2050 and 2030, respectively). Third, as mentioned above, the benefits figure omits monetizable benefit categories such as local pollutants. In fact, there are multiple other unquantified benefits, including improved safety, improved service, ergonomics, and operational savings, that should be disclosed in any comparison of costs and benefits.[62]

The Postal Service should also disclose more of its inputs and assumptions, especially regarding the comparison of costs versus cost savings. Its cost figures estimate the net present value of twenty years of the purchase price, training expense, infrastructure, energy, and maintenance costs.[63] However, the Postal Service does not disclose either the individual subtotals for the different factors in this calculation, or the assumptions used in its estimation methodology. Among the most critical inputs that should be disclosed is the discount rate applied to future cost savings. The Postal Service should disclose what discount rate it is using and then check to ensure that the rate is appropriate for this kind of purchasing decision. Internal government investments, procurements, lease-purchase decisions, and similar analyses are typically discounted using Treasury rates based on notes or bonds of comparable maturity length. Notably, in recent years, Treasury rates have declined substantially, pushing the discount rates lower. The current *Circular A-94: Appendix C* indicates a discount rate tied to real interest rates on ten-year Treasury notes of -1.1%.[64] The negative discount rate would suggest that, given current interest rates, it may actually be preferable to invest more capital in new vehicles that will deliver future cost savings, rather than save money upfront to put toward the other kinds of investments available to the government.[65] The Postal Service may want to consult with the Office of Management and Budget about the appropriate discount rate to use in this analysis.

The Postal Service should also confirm whether its twenty-year time frame is sufficiently long to capture all important costs and benefits, especially future fuel savings, given that some of its current fleet has been in operation as long as 32 years.[66]

By comparing costs and benefits in this misleading way, the Postal Service makes it difficult for itself, and the affected public, to understand the rationale for and potential impacts of its determination. Simple arithmetical adjustments to report costs and benefits consistently—

[60] *See DEIS*, *supra* note 3, at 3-1 tbl.3-1.1.

[61] *See id.* at F-28 tbls.F-8.b, F-8.c. Making this change, as by reporting the cost of acquiring more 165,000 rather than 75,000 new vehicles, would presumably yield a higher cost figure for the "100% BEV" alternative. But good reason exists to believe that the "100% BEV" alternative's benefits are also greatly undercounted because, as previous sections discuss, lower discount rates and the impacts of local pollutants should, but do not, factor into the Postal Service's analysis.

[62] *See id.* at 1-2.

[63] *Id.* at 3-1.

[64] *OMB Circular No. A-94, Appendix C*, Off. of Mgmt. & Budget, https://perma.cc/R93F-KW26.

[65] *2021 TSD*, *supra* note 11, at 20.

[66] *See DEIS*, *supra* note 3, at ii.

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such as using consistent assumptions regarding the number of vehicles purchased and the analytical timeframe—would yield a more rigorous and transparent analysis.

Conclusion

In this draft EIS, the Postal Service appropriately uses the social cost of greenhouse gases to monetize climate impacts. To further improve the rigor of its analysis and promote sound decisionmaking, the Postal Service should conduct sensitivity analysis around lower discount rates and should institute a process to reassess the energy mix of its delivery fleet in the coming years as the Working Group updates the social cost values to incorporate the latest evidence.

The Postal Service can further demonstrate the environmental impacts of different alternatives by using monetized values of local pollution developed by EPA. To minimize health impacts from local pollution, the Postal Service should prioritize the rollout of BEVs in dense, underserved communities that are already subject to high pollution levels. The Postal Service should also consider the option value of waiting to make a final decision as well as the benefits to the marketplace of leading by example, and so may want to prioritize the purchase of whatever minimum share of BEVs it plans to buy.

Sincerely,

Iliana Paul, Senior Policy Analyst
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EARTHJUSTICE

October 18, 2021

Mr. Davon Collins
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Re: Draft Environmental Impact Statement for Purchase of Next Generation Delivery Vehicles

Dear Mr. Collins:

The undersigned organizations submit the following comments on the United States Postal Service's ("USPS") Draft Environmental Impact Statement for Purchase of Next Generation Delivery Vehicles ("DEIS"). After careful review of the DEIS, we have determined that the analysis therein does not comply with the National Environmental Policy Act ("NEPA"), the USPS NEPA regulations, and the commendable commitments made by the Biden Administration to cut climate pollution in half by 2030 and advance environmental justice. Accordingly, given the importance of a decision to undertake one of the largest, if not the largest, vehicle purchases in the world, we respectfully request that the USPS undertake a compliant environmental review and produce an EIS that takes into consideration both the public and the planet's health.

In addition, to the comments herein, appended to this comment letter is a technical report commissioned on the DEIS. The report is labeled "Appendix A" and identifies serious flaws in the analysis, and we request that the USPS include that technical report as a comment on the DEIS. This letter will refer to that report as the "Dr. Sahu Report."

As noted in the DEIS, the USPS has the largest civilian fleet in the world, consisting of over 230,000 vehicles, "[t]he majority of [which] are on the road delivering mail at least six days per week in *every community*."[1] The USPS has both an opportunity and a responsibility to lead the way in our transition to a significant percentage of zero-emissions vehicles. This is especially true considering that transportation is the largest source of climate pollution in the U.S. and air pollution from fossil fuel vehicles harms people's health, especially in low-income communities and communities of color. By upgrading to high levels of electric vehicles in its fleet, the USPS can bring cleaner air to almost every community in the country.

I. A Decision of This Importance Requires a More Rigorous Analysis.

A consistent thread throughout this DEIS is a lack of care and analytical rigor to support this critical decision. As we face daunting air pollution challenges throughout the nation, in

[1] DEIS, at 19 (emphasis added).

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addition to the impacts of climate pollution, we cannot afford to have government agencies spend billions of dollars on internal combustion engine ("ICE") vehicles. The Dr. Sahu Report concluded the following:

> In summary, after careful review of the DEIS, it is clear that it cannot be used to make an informed decision on the USPS's NGDV fleet mix for 2023-2032 because it is incomplete, its analyses rely on assumptions that are often arbitrary and unsupported, and, as a result, it fails to provide a coherent analysis as to the proper fraction of [battery electric vehicles ("BEVs")] that should be part of the NGDV procurement. It is skewed to minimize and exclude the substantial environmental benefits of greater proportions of BEVs. As a result, it is already "behind" even before the first year of the 10-year procurement cycle. It should be redone.[2]

NEPA does not allow reliance on incomplete, incoherent, and technically dubious work to justify a decision. We recognize the need to replace many vehicles in the postal fleet, but the current analysis, which could result in up to 165,000 federal internal combustion engines that will be on the roads for decades, requires a more thoughtful analysis. And, most importantly, it requires an analysis that complies with the law. Had the USPS used the care and technical rigor required under NEPA, we suspect the agency would have come to a different conclusion.

II. The Alternatives Analysis is Unlawful.

Under NEPA, agencies must consider "alternatives to the proposed action."[3] The analysis of alternatives is "the heart of the environmental impact statement."[4] In considering alternatives, USPS shall "[r]igorously explore and objectively evaluate *all* reasonable alternatives."[5] An agency must follow the "rule of reason" when preparing an EIS, and "this rule of reason governs 'both *which* alternatives the agency must discuss, and the *extent* to which it must discuss them.'"[6]

A. *The DEIS Includes Alternatives that on Their Face are Not Reasonable but Does Not Include Alternatives That Would Likely Be Reasonable.*

As the USPS NEPA regulations correctly state, "[t]his portion of the environmental impact statement is vitally important."[7] From the beginning, the CEQ regulations explained that an agency's focus must be on identifying and analyzing "reasonable" alternatives – that is, alternatives that meet the agency's purpose and need in whole or in part and are practical or

[2] Dr. Sahu Report, at p. 12.
[3] 42 U.S.C. § 4332(2)(C)(iii).
[4] 40 C.F.R. § 1502.14.
[5] *Id.* at § 1502.14(a) (emphasis added).
[6] *Citizens Against Burlington, Inc. v. Busey*, 938 F.2d 190, 195 (D.C. Cir 1991) (citation omitted).
[7] 39 CFR § 775.11(c)(5).

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feasible from a technical and economic standpoint and based on common sense.[8] As the Ninth Circuit Court of Appeals has stressed, "[a]n agency must look at every reasonable alternative, with the range dictated by the nature and scope of the proposed action and sufficient to permit a reasoned choice."[9]

This DEIS appears to take an overly formulaic approach to alternatives instead of a commonsense approach that reflects reality. For example, having set out the requirements for the Next Generation Vehicle Fleet, the DEIS then explains why an all-BEV fleet is unfeasible or impractical at this time.[10] In particular, the DEIS uses three major bases for rejecting an all-electric alternative. First, it claims electric vehicles could not operate for 12,500 routes.[11] Second, it determines that left hand drive electric vehicles would not meet the needs of the USPS. Finally, the DEIS sprinkles costs concerns throughout the document. None of these arguments justify the approach taken.

i. 12,500 Delivery Routes Cannot Be Used to Justify Eliminating of Small Percentage BEV Options

The DEIS purports to analyze 100% purchase and deployment of electric vehicles as a "hypothetical maximum scenario." The USPS fails to explain why the electric vehicle ("EV") approaches analyzed include only 100% BEVs and 10% BEVs. In particular, the DEIS finds without actual documentation and justification "at least 12,500 delivery routes where route length, environmental conditions, or facility constraints make electric vehicles unfeasible or impractical."[12] The DEIS provides little to no evidence identifying which routes these are and how it identified them. Without more, the public cannot scrutinize this determination, which runs counter to NEPA's promotion of showing and justifying an agency's work and conclusions.

But, even if the 12,500 routes identified arguably could not be supported by a BEV, this represents a little more than 5% of the overall routes.[13] The DEIS fails to explain why a little more than 5% of the routes being precluded according to its assessment means the agency needs to purchase 90% ICE vehicles. In fact, the DEIS's findings lead to a different conclusion: that a "reasonable" alternative to analyze would be sufficient electric vehicles to serve the close to 95% of the routes that were not excluded. In fact, a "reasonable" range of alternatives would have examined several fleet mixes between 50% and 100% BEV.

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[8] *See, e.g.*, *Forty Most Asked Questions Concerning CEQ's NEPA Regulations,* Questions 1-6 (1981); *CEQ Guidance Regarding NEPA Regulations* (1983), both available at https://www.energy.gov/nepa/ceq-guidance-documents.
[9] *Alaska Wilderness Recreation and Tourism Association v. Morrison*, 67 F.3d 723, 729 (9th Cir. 1995) (quoting *Idaho Conservation League v. Mumma*, 956 F.1d 1058, 1520 (9th Cir. 1992)).
[10] DEIS, at 3-2-4.
[11] DEIS, at 4-37.
[12] DEIS, at 3-2.
[13] *Compare* DEIS, at 3-2 (noting "at least 12,500 delivery routes where route length, environmental conditions, or facility constraints make electric vehicles unfeasible or impractical") *with* DEIS, at p. 4-6 (noting 231,579 total delivery routes).

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ii. The 100% BEV Left-Hand Drive Vehicle Alternative Is A Straw Man Alternative

Similarly, the DEIS purports to analyze purchase and deployment of 100% left-handed commercially available electric vehicles despite explaining that there are no such vehicles currently available or planned by commercial manufacturers for future development. Moreover, even if they were available, that deployment would not meet the USPS purpose and need for curb-side delivery. The rationale given for including this apparently impossible, irrelevant alternative is "to consider the full range of impacts and in response to public comments requesting such an alternative."[14] This is nonsense. Indeed, the failure to use common sense here is an example of what often generates criticism about NEPA. But to be clear, nothing in NEPA requires "hypothetical" alternatives; what is required are reasonable alternatives and indeed, agencies lose cases when they clearly include "strawman" alternatives.[15]

Unfortunately, the DEIS fails to analyze the effects of any percentage of EV vehicles between a 10% minimum and 100%, which the USPS has stated is not possible at this time. A useful analysis would likely omit the 100% left-hand drive BEV and instead posit perhaps two or three different reasonable percentages for the EV segment of the total fleet. Clearly the USPS believes a right-hand drive BEV can be produced because it has selected its preferred alternative as one that would deploy thousands of these vehicles. To the extent, the USPS believes its selected contractor cannot produce greater levels of BEVs, then this further illuminates the unlawful segmentation that occurred in selecting the company prior to analyzing the fleet mix. An actually reasonable range of alternatives could actually lead to an informed decision instead of a mechanistic approach that seems to cover all possibilities but in reality has limited utility for the public, other agencies, Congress and, most importantly, the USPS' own decisionmakers.

iii. Costs Analysis is Unsupported and Cannot Be Used Preemptively to Limit Alternatives

Further, USPS also points to cost limitations as a factor in its analysis throughout the DEIS, beginning with the Cover Sheet which states that, "the Proposed Action is the most achievable given the Postal Service's financial condition as the BEV NGDV has a significantly higher total cost of ownership than the ICE NGDV, which is why the Proposed Action does not commit to more than 10% BEVs."[16] From the beginning, the DEIS does not take BEVs seriously by assuming costs will be an issue. At least one federal court has held that failing to analyze alternatives because of resource constraints is not a legitimate reason for failing to analyze an

[14] DEIS, at 3-6.
[15] *Union Neighbors United, Inc. v. Jewell,* 831 F.3d 564 (D.C. Cir. 2016).
[16] DEIS, at i.

alternative that would meet the agency's purpose and need.[17] In that case, there was evidence on the record that the U.S. Fish and Wildlife Service declined to analyze an alternative that would specifically meet its purpose and need because of budget constraints. Of course, the USPS is not funded by Congressionally authorized appropriations and, in fact, works under some very difficult financial restraints imposed by Congress. However, Congress could change that and there is an argument that they should be informed of what the USPS would be able to achieve with more reliable, better funding. But, even with the cost constraints alleged, the DEIS is unintelligible and fails to allow commenters to understand the basis for the cost conclusions.[18] Since the agency has not shown its work, it cannot use costs as a means to malign the potential to pursue a fleet mix with greater than 10% BEVs.

iv. *The Analysis Does Not Include Recognition of the Current Administration's Plans Regarding EV Charging Stations, thus Skewing Some of the Analysis.*

As one barrier to more robust use of electric vehicles, the DEIS identifies the lack of available infrastructure.[19] Yet there is no acknowledgement, let alone analysis, of the current administration's plans to increase the number of EV charging stations from 100,000 to 500,000 and take a number of other steps to substantially increase capacity for EVs.[20] Moreover, the DEIS glosses over challenges of converting ICE vehicles into BEV. For example, it states that vehicles purchased with old fashioned internal combustion engines will be capable of being retrofitted to alternative electric vehicle powertrain technology "if it is advantageous for the Postal Service to do so."[21] But the DEIS fails to analyze when the USPS might consider it "advantageous" and whether such retrofitting would likely be a feasible option financially for the USPS. The NEPA document cannot just gloss over the sunk costs of internal combustion engines.

[17] "It is not lost on the Court that agencies must work within limited budgets and, in the real world of resource constraint, cannot pursue all their policy goals at once. Rather, they must prioritize based on what they can afford to do. In this case, it seems that FWS chose only to consider options that 'would not result in changes to current management strategies" because considering changes to that scheme would require the expenditure of resources that the agency did not have. . . . . But NEPA's requirement to consider appropriate alternatives takes that option off the table. . . ." *Public Employees for Environmental Responsibility v. U.S. Fish and Wildlife Service*, 177 F. Supp. 3d 146, 154-155 (D.D.C. 2016).

[18] Dr. Sahu Report, at 5-7.

[19] DEIS, at 3-2.

[20] *FACT SHEET: Biden Administration Advances Electric Vehicle Charging Infrastructure, available at: https://www.whitehouse.gov/briefing-room/statements-releases/2021/04/22/fact-sheet-biden-administration-advances-electric-vehicle-charging-infrastructure/*

[21] DEIS, 3-1-2.

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v. *While Comparison of the Effect of the Proposed Action and Alternatives with the No Action Alternative Are, Of Course, Required, the DEIS Relies Too Heavily on the Unsurprising Beneficial Effect of Any of the Action Alternatives relative to Emissions from the Existing Vehicle Fleet*

The DEIS makes much of the fact that each of the alternatives would result in less pollutants and greenhouse gas ("GHG") emissions than the current fleet. While agencies need to compare the effects of each alternative against the other alternatives, the DEIS seems to use that fact as a defense or shield for its designation of the 10%/90% proposed action. Yet rather than comparing the proposed action's effects with the out-of-date, seriously polluting failing fleet, the analysis should be put in the context of the current affected environment, including the latest Intergovernmental Report on Climate Change ("IPCC") report and the administration's goals regarding climate change. For example, in *Center for Biological Diversity v. NHTSA*, 538 F.3d 1172 (9th Cir. 2008),[22] the National Traffic Safety Administration produced an EIS that similarly touted the fact that each alternative Corporate Average Fuel Economy ("CAFE") standard analyzed in the EIS would result in lower emissions than the then-current CAFE standard. That case focused on whether an environmental assessment ("EA") was sufficient or an EIS was required for the proposed changes in fuel standards. The court pointed out that "simply because the Final Rule may be an improvement over the MY 2007 CAFE standard does not necessarily mean that it will not have a 'significant effect' on the environment." Similarly, the fact that any of the alternatives will produce less emissions than the current fleet does not mean that the range of alternatives is adequate. Rather, the USPS needs to consider truly reasonable alternatives in the context of the projections from the latest IPPC report[23] documenting likely future scenarios.

III. USPS Failed to Take a Hard Look at Direct, Indirect and Cumulative Impacts.

In connection with a major action affecting the quality of the human environment such as this one, USPS is required to prepare a "detailed statement" discussing and disclosing the environmental impacts of that action.[24] To perform this task, USPS must "take a 'hard look' at the environmental consequences of its actions, including alternatives to its proposed course."[25] When undertaking its analysis, USPS must also "insure the professional integrity, including scientific integrity, of the discussions and analyses in environmental impact statements."[26]

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[22] *Center for Biological Diversity v. NHTSA*, 538 F.3d 1172 (9th Cir. 2008).
[23] *Available at* https://www.ipcc.ch/2021/08/09/ar6-wg1-20210809-pr/
[24] 42 U.S.C. § 4332(2)(C).
[25] *Sierra Club v. FERC*, 867 F.3d 1357, 1367 (D.C. Cir. 2017) (quoting *Balt. Gas & Elec. Co. v. Nat. Res. Def. Council,* 462 U.S. 87, 97 (1983)); *Robertson v. Methow Valley Citizens Council,* 490 U.S. 332, 350 (1989).
[26] 40 C.F.R. § 1502.24.

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A. The Direct Impacts Analysis is Flawed.

The USPS failed to analyze significant effects on the environment as required by NEPA. This is required by both CEQ and USPS's NEPA regulations.[27] "[B]oth beneficial and adverse effects on the environment can be significant within the meaning of NEPA."[28]

a. The DEIS' Air Quality Impact Analysis is Deficient.

The DEIS erroneously concludes that "[t]here would be no significant adverse cumulative impact on air quality from any of the Proposed Action or Alternatives 1.1 and 1.2 on a nationwide scale."[29] Among other things, the USPS assumes that emissions from brake and tire wear are the same for BEVs and ICE vehicles:

> Air emission factors vary based on the type of vehicle. Emissions were estimated using the EPA MOtor Vehicle Emission Simulator (MOVES) model, a state-of-the-science emission modeling system that estimates emissions for mobile sources for criteria pollutants, GHGs, and air toxics.
>
> The MOVES model does not account for emissions from generation of electricity for BEVs. It assumes fully electric vehicles have no tailpipe or evaporative emissions and that brake and tire wear emissions are identical to conventional vehicles.[30]

The USPS fails to assess whether brake dust will be reduced due to the BEVs improved brake-pad use from regenerative breaking.

Moreover, the DEIS violates NEPA by simply relying on the 2014 EPA MOVEs model, instead of performing the air quality analysis using the more recent MOVES model.[31] The justification used in the DEIS is the model is still being tweaked in states, but this does not matter. In fact, the DEIS assumes all routes are similar to Westchester County, NY, so it is not clear why these efforts would relate. At a minimum, the DEIS does not provide a rationale connection why it chose to use this outdated model.

Finally, the DEIS fails to provide evidence that older vehicles will not be placed back on the road and continue to pollute through a secondary market. In particular, the DEIS mentions that the USPS simply puts the vehicles out to bid on governmental websites. The DEIS also

[27] 40 C.F.R. § 1508.1(g); 39 C.F.R. § 775.11(a)(2)(iii).
[28] *Humane Soc. of U.S. v. Locke*, 626 F.3d 1040, 1056 n.9 (9th Cir. 2010); *Nat. Res. Def. Council, Inc. v. Herrington*, 768 F.2d 1355, 1431 (D.C. Cir. 1985); 40 C.F.R. § 1508.1(g)(1); 39 C.F.R. § 775.4(a).
[29] DEIS, at 75.
[30] DEIS, at 46.
[31] Dr. Sahu Report, at p. 11.

notes that once replaced, a "vehicle and/or parts are auctioned, sold, or scrapped."[32] If a vehicle is auctioned or sold, they could be placed back into service. Accordingly, the claimed emissions benefits would not be fully realized. The DEIS provides no evidence to understand the extent of emissions that continue to occur as a result of this. This failure violates NEPA and means the air emissions impacts are not accurately conveyed.

b. The DEIS' Health and Socioeconomic Impact Analysis is Deficient.

i. Employment

The USPS erroneously concludes that the Proposed Action, under either Hypothetical Maximum, and Alternatives 1.1 and 1.2 would result in no to negligible impact employment.[33] But the Proposed Action is set to be established not in Winnebago County, where Oshkosh is located, but instead in Spartanburg, South Carolina. Oshkosh expects to hire over 1,000 local team members there.[34] The DEIS fails to analyze the effects that the construction of the Spartanburg plant will have on the labor force, such as the impacts on union workers like the United Auto Workers who have contracts in Winnebago County.

ii. Environmental Justice

The DEIS's conclusion that the proposed action and the alternatives would result in no to negligible impacts on environmental justice is disingenuous.[35] It is well known that low-income communities and communities of color breathe some of the worst air in the country. According to the American Lung Association, people of color are 1.5 times more likely to live in an area with poor air quality than white people, and studies show that long-term exposure to even small amounts of air pollution make someone 8% more likely to die from COVID-19.[36]

Yet the DEIS states that "[s]ince deliveries would continue to be made to the more than 161 million delivery points regardless of socioeconomic status, both the Proposed Action and Alternatives would result in no impact on minority or low-income populations in terms of mail service or disproportionately high adverse economic effect."[37] The DEIS also states that

> [b]oth the Proposed Action and Alternatives would result in negligible beneficial impacts on air quality due to higher emission controls as compared to the high-maintenance and end-of-life delivery vehicles being replaced. Both the Proposed Action and Alternative 1.2 would result in negligible beneficial impacts on air quality due to better gas mileage of the newly purchased vehicles

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[32] DEIS, at 4-34.
[33] DEIS, at 65.
[34] *See* https://oshkoshdefense.com/oshkosh-selects-spartanburg-s-c-to-build-next-generation-postal-delivery-fleet/.
[35] DEIS, at 65.
[36] *See* https://www.lung.org/blog/environmental-justice-air-pollution.
[37] DEIS, at 37.

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> as compared to the high-maintenance and end-of-life delivery vehicles being replaced. Such beneficial impacts would occur *regardless of race or socioeconomic status*.[38]

This conclusion is overly simplistic, because a distribution of BEVs across the nation "regardless of minority or income status" does not equate to an equal distribution of beneficial or negative impacts in environmental justice communities. Take for example the South Coast Air Basin, which is home to more than 17 million people—about half the population of the state of California.[39] The South Coast consists of all of Orange County and the urban portions of Los Angeles, Riverside, and San Bernardino counties, and it is also home to the most ozone-polluted city in the nation. The region has been classified by the U.S. Environmental Protection Agency ("EPA") as an extreme nonattainment area for 1-hour and 8-hour ozone pollution, a moderate nonattainment area for the 1997 federal PM2.5 standards, and a serious nonattainment area for the 2006 and 2012 federal PM2.5 standards.[40] But given the South Coast's large size, the USPS could deploy BEVs vehicles in the South Coast without providing benefits to any environmental justice communities.

There is also a likelihood that under the 10% BEVs scenario, most of the benefits of BEVs will end up in California due to its anticipated Advanced Clean Fleets Rules,[41] since the DEIS states that BEVs will be placed on

> routes located in mild temperature ranges, routes with frequent and numerous curb-line stops as they best recapture the vehicle's motion (kinetic) energy via regenerative braking to recharge the battery, and *routes in locations with compromised air quality and/or states with proactive BEV policies and regulations*.[42]

The DEIS does not consider that this likely concentration of BEVs in California would result in few to no benefits being shared in environmental justice communities across the country, such as those in Louisiana's "Cancer Alley," Chicago, and Florida. At a minimum, the DEIS needs to acknowledge the forthcoming regulatory requirement and accordingly how the benefits of 100% BEVs will likely be skewed to California and not other disproportionately impacted communities. Moreover, the USPS has also failed to produce a procurement schedule, which would be important to understand the environmental benefits in communities. Without one, we have no idea whether the USPS has plans to slow walk the transition to what zero-emissions vehicles it does plan to procure.

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[38] DEIS, at 37 (emphasis added).
[39] *See* http://www.aqmd.gov/nav/about.
[40] 40 CFR § 81.305; 75 Fed. Reg. 24409 (May 5, 2010); 77 Fed. Reg. 30088 (May 21, 2012); 83 Fed. Reg. 25776 (June 4, 2018); 85 Fed. Reg. 57733 (Sep. 16, 2020).
[41] *See* California Air Resources Board, Advanced Clean Fleets Regulation Workshop at 39 (Sept. 9, 2021) https://ww2.arb.ca.gov/sites/default/files/2021-09/210909acfpres_ADA.pdf (noting regulation will apply to the federal government fleets).
[42] DEIS, at 23 (emphasis added).

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B. The Cumulative Impacts Analysis is Flawed.

The USPS also failed to sufficiently analyze cumulative significant impacts as required by USPS NEPA regulations.[43] The conclusion that "[i]mpacts from the Proposed Action and Alternatives 1.1 and 1.2 would not have the potential for significant adverse cumulative impacts on nationwide environmental resources when considered in combination with other actions nationwide" is flawed.[44] The USPS needs to take the necessary "hard look" at both cumulative negative and beneficial impacts of this project. Despite this project occurring on a nationwide scope, a more comprehensive EIS is possible and will prove to be more useful information in the long-term. While it is true that a cumulative effects analysis involves assumptions and uncertainties, speculating on the limited potential for future projects with similar impacts as the proposed project is contrary to NEPA and impermissibly narrows the scope of the EIS analysis. The USPS must conduct a thorough analysis on the following cumulative impacts.

a. NEPA Requires Looking at the Cumulative Benefits of an Increased BEV Alternative in Comparison to the 90% ICE Alternative.

The DEIS fails to weigh the cumulative benefits of any scenario with an increase of BEVs. Both CEQ and the USPS's NEPA regulations require the USPS to analyze not only negative cumulative effects, but beneficial cumulative effects as well.[45] As it stands, the DEIS considers three scenarios: one with 10% of the new vehicles being BEVs, one with 0% being BEVs, and one with 100% BEVs. But the DEIS makes the conclusory determination that despite the 100% BEV alternative resulting in about "200 percent fewer direct and indirect GHG (CO2e) emissions than under the 90 percent ICE NGDV Preferred Alternative, committing to purchase more than 10 percent BEV NGDV as part of the Preferred Alternative would not meet the Postal Service's Purpose and Need for the following reasons" because "[o]perational constraints would preclude the BEV NGDV deployment for more than 12,500 delivery routes."[46] At no point does the USPS weigh the beneficial impacts of other alternatives in light of projects with similar impacts. This analysis is particularly relevant because there will be more projects with similar impacts since the current administration has committed to transitioning the federal fleet to electric vehicles.[47] Accordingly, the DEIS must study the cumulative benefits of an increased BEV alternative in comparison to the 90% / 10% proposed action.

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[43] 39 C.F.R. § 775.11(1)(2)(i), (iii).
[44] DEIS, at 77.
[45] 40 C.F.R. § 1508.1(g)(1); 39 C.F.R. § 775.4(a); *Humane Soc. of U.S. v. Locke*, 626 F.3d 1040, 1056 n.9 (9th Cir. 2010); *Nat. Res. Def. Council, Inc. v. Herrington*, 768 F.2d 1355, 1431 (D.C. Cir. 1985) ("[B]oth beneficial and adverse effects on the environment can be significant within the meaning of NEPA, and thus require an EIS.").
[46] DEIS, at 66.
[47] Executive Order 14008, *Tackling the Climate Crisis at Home and Abroad*, 86 Fed. Reg. 7619 (Jan. 27, 2021).

b. The DEIS Fails to Look at Cumulative Impacts on Water Quality.

Although the DEIS addresses some of the impacts that brake and tire wear will have on air quality, it fails to analyze the potential for cumulative impacts on water, soil, wild and scenic rivers and coastal zones. For example, it fails to assess the cumulative impacts that tire wear will have on our storm water.[48] Due to the friction of rubber hitting pavement, tire fragments make their way into our oceans through rivers, waterways, and air. This presents negative environmental effects on our fish and wildlife, as well as our health because of its impact on the bottom of the food chain.[49] This can also pose a climate change risk, because studies show that tire particles are turning the Arctic's snow into a less reflective white, causing ice to absorb more light and melt faster.[50] The EIS must analyze the impact that the deployment of 165,000 replacement delivery vehicles over a ten-year period will have as their tires degrade over time.

c. The DEIS's Cumulative Health and Socioeconomic Impact Analysis is Deficient.

i. Oil Extraction and Transportation

The DEIS fails to address cumulative impacts of further oil and gas extraction. "The extraction and processing of oil and gas is associated with emissions of a wide range of hazardous air pollutants, including carcinogens such as benzene and endocrine disruptors," and exposure is linked to elevated cancer risk, pregnancy complications, and respiratory and cardiovascular disease.[51] Studies are also showing that the burden of oil refineries and petrochemical facilities falls disproportionately on Black, Brown, Indigenous, and poor communities. This analysis must not only consider the impacts on communities who live near affected oil and gas extraction sites; it must also consider the impacts of transporting extracted resources through communities. Oil and gas cannot be transported safely, and a study by Greenpeace shows that petroleum bulk stations and terminals are disproportionately located in poor and minority communities.[52] A sufficient cumulative impacts assessment must address extraction's contributions to climate change, public lands, and the pollution burden many communities already bear.

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[48] *See* https://www.sfei.org/sites/default/files/biblio_files/MicroplasticsExecutiveSummary.pdf.
[49] "Bottom feeders could be consuming fragments in the same unaware way they eat other microplastics. Studies show that fish pass over 90 percent of the microplastics they eat, but toxicity may still taint their tissues and travel up the food chain. Lab work suggests that marine animals affected by plastic pollution can experience respiratory and reproductive issues, cell damage, and even death." https://www.hakaimagazine.com/features/when-rubber-hits-the-road-and-washes-away/.
[50] Evangeliou, N., Grythe, H., Klimont, Z. et al. Atmospheric transport is a major pathway of microplastics to remote regions. Nat Commun 11, 3381 (2020).
[51] *See* https://www.greenpeace.org/usa/wp-content/uploads/2021/04/Fossil-Fuel-Racism.pdf.
[52] *Id.*

ii. Vehicle Emissions and Air Quality

The DEIS also lacked the necessary diligence and "hard look" at the cumulative air quality impacts from the project to conclude that the contribution of the project to cumulative impacts is insignificant. For example, the USPS never identifies the baseline it is using to determine the impacts on air quality as insignificant adverse cumulative impacts.[53] Moreover, as stated above, the DEIS ignores the possibility of the older, inefficient vehicles being used in the secondary market.[54] In fact, the DEIS concedes some vehicles replaced will potentially operate after replacement by using the phrase "if scrapped" when referring to vehicles.[55] Thus, in addition to a flaw in the direct emissions context, this represents a flaw in the cumulative impacts analysis.

iii. Occupational Exposure for USPS Workers

Additionally, the DEIS fails to address the occupational exposure to air pollution that USPS workers will continue to face if operating a new generation of combustible fuel-powered vehicles. In addition to operating one of the largest civilian fleets in the world, the USPS also has more retail locations than any other retailer in the nation.[56] With 644,000 employees driving polluting vehicles for another generation and/or working at retail locations—indirect sources of traffic pollution—the USPS will be exposing hundreds of thousands of workers to long-term air pollution. The lack of this analysis is distressing, given that the new fleet will continue to operate for the next several decades.

iv. Environmental Justice

Just as with the direct impacts, the DEIS fails to adequately analyze the cumulative impacts in environmental justice communities. Given the disproportionate air pollution burden, the DEIS understates the cumulative impacts on air quality in environmental justice communities. *Any* beneficial impacts on air quality that are equally distributed across the country will present at least twofold benefits for disproportionately burdened communities. One such benefit is the cumulative benefit that the 100% BEV alternative will have in contributing to the alleviation of a portion of environmental justice harms.

Conversely, any negative impacts on air quality will doubly impact environmental justice communities. The DEIS acknowledges that "[a]ir quality conditions vary widely across the geographic area in which the Postal Service operates the vehicles planned for replacement," and "EPA has designated nonattainment area for criteria pollutants throughout the U.S. based on historical compliance data against NAAQS."[57] But it lacks any discussion of the disproportionate cumulative impact that ICE vehicles will have on communities living in those nonattainment areas, which are easily identifiable given that the EPA explicitly designates them. The DEIS also fails to consider any of the cumulative environmental justice impacts of an Oshkosh plant being

[53] DEIS, at 75.
[54] *See* DEIS, at 4-34.
[55] DEIS, at 4-35.
[56] DEIS, at 34.
[57] *See* DEIS, at 45.

constructed and operated in Spartanburg, South Carolina.[58] Spartanburg itself is a community with a long environmental justice history, and nonprofits located there spent seventeen years revitalizing the community after receiving federal funding designated for environmental justice.[59] As such, the USPS should consider the environmental justice impacts of the Proposed Action's production in Spartanburg.

Importantly, the DEIS is inconsistent with the spirit of the current administration's efforts to champion for environmental justice. For example, Executive Order 14008's establishment of the Justice40 Initiative will ensure that Federal agencies work with states and local communities to deliver at least 40% of the overall benefits from Federal investments in climate and clean energy to disadvantaged communities.[60] In fact, communities in Spartanburg have worked "to ensure there is strong oversight of Justice40 investments by supporting legislation in South Carolina to create a committee to help identify disadvantaged communities and priority needs within those communities and to ensure that Justice40 funds deliver real benefits to community members."[61] Consistent with this Executive Order, the USPS has an opportunity to directly place BEVs in environmental justice communities. The cumulative benefits that BEVs will have with the other federal investments made in disadvantaged communities will have a significant impact on those communities.

IV. The DEIS Violates NEPA By Failing to Include Any Mitigation.

A core part of NEPA entails the commitment to analyze mitigation measures in the DEIS. There are several mitigation measures that the USPS should have pursued, including a requirement that all vehicles leaving the USPS are scrapped, instead of sold into a secondary market. Moreover, the DEIS should have analyzed mitigation measures or project features that would articulate a schedule for purchasing and deploying BEV in disadvantaged communities.

[58] *See* https://oshkoshdefense.com/oshkosh-selects-spartanburg-s-c-to-build-next-generation-postal-delivery-fleet/.
[59] *See* https://blog.epa.gov/2014/08/26/a-dream-realized-community-driven-revitalization-in-spartanburg/.
[60] *See* Executive Order 14008, footnote **Error! Bookmark not defined.**.
[61] *See* https://www.americanprogress.org/issues/green/reports/2021/06/22/500618/implementing-bidens-justice40-commitment-combat-environmental-racism.

V. Conclusion

We appreciate your consideration of these comments. We look forward to working with the USPS to cure the serious deficiencies in this document to ensure all decision-makers and the public are appropriately informed of the environmental consequences of this massive expansion project.

Sincerely,

Adrian L. Martinez

Adrian Martinez
Candice Youngblood
Earthjustice

Scott Hochberg
Center for Biological Diversity.

Andrea Issod
Sierra Club

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ATTACHMENT A

Comments on the United States Postal Service (USPS) Draft Environmental Impact Statement (DEIS) for its Next Generation Delivery Vehicle (NGDV) Acquisitions, August 2021

by

Dr. Ranajit (Ron) Sahu, Consultant[1]

October 15, 2021

A. Introduction

This DEIS purports to analyze the environmental impacts associated with the USPS's proposed purchase of between 50,000 to 165,000 NGDVs to replace a similar number of existing, aging delivery vehicles over a period of 10 years starting in 2023. The DEIS attempts to analyze impacts from several options including purchasing purpose-built NGDVs or commercial-off-the-shelf (COTS) vehicles, with either right-hand-drive (RHD) (the preferred configuration by the USPS in order to service routes with curb-line mailboxes) or left-hand-drive (LHD) configurations, and with two different types of powertrains, namely internal combustion engines (ICE) or battery electric vehicles. This report provides a general critique of the DEIS itself, with a specific focus on the analysis in the document of Battery Electric Vehicle (BEV) option(s).

It is clear from the DEIS that this procurement is the last phase of a long-drawn out solicitation process that began in 2015.[2] Unfortunately, given the time that has elapsed since the beginning of this process, BEV technologies have rapidly evolved, and the DEIS has been clearly constrained in exploring these technologies.

A general criticism of the DEIS is in order at the beginning. As the USPS notes, it operates one of the largest fleets of postal delivery vehicles (or any type of vehicles for that matter) and this procurement will result in 165,000 new NGDVs over 2023-2032. As such it represents one of the largest such procurements by any single entity. This means that it also presents a significant opportunity for the USPS to become a market leader in rapidly shifting away from carbon-based fuels with their direct and indirect greenhouse gas (GHG) emissions to a carbon-free or substantially carbon-free fleet. Unfortunately, this opportunity looks to be squandered based on the USPS's preferred option in the DEIS to acquire a mix of 90% ICE/10% BEV[3] vehicles through

[1] Resume provided in Attachment A.

[2] DEIS, Section 1-3.2 provides a discussion of the timeline and actions that began in 2015.

[3] While the DEIS repeatedly asserts that the USPS has not made up its mind as to the exact mix of ICE and BEV that it might ultimately procure, the DEIS only analyzes the 90% ICE/10% BEV and a 100% BEV option, rejecting that latter summarily based on unsupported grounds, as I discuss. Importantly, the DEIS does not address what steps, if

2032, a choice that is unsupported, arbitrary, and is already outdated as we move to a carbon-free world today, much less by 2032.

A further criticism of the DEIS is that it is simply analytically inadequate given the import of this major decision (i.e., to serve as a critical policy tool for one of the largest procurements of vehicles) and the lack of rigor in its analysis is striking. The document makes many, critical, unsupported assumptions; is internally inconsistent in critical details, substantially repetitive in many details; and is, overall, underwhelming. I provide specific examples later.

As a result of the focus on the BEV component, I do not provide comments on the various ICE options or the details of the analyses supporting those options. That is not to say that those analyses are proper – in fact, the same lack of rigor in the BEV analyses are equally prevalent in the ICE analyses as well. But it is a waste of time to nit-pick those details since they are moot.

As to whether the NGDV's should be RHD or LHD, I believe that the USPS has a valid point that its needs are best served by RHD vehicles, given the large number of routes with curb-line mailboxes that will need to be serviced by the new NGDVs. But even so, the DEIS provides little to no discussion of any efforts by the USPS, given its potential market clout via this procurement, to encourage multiple market players in the BEV space to design and supply COTS RHD BEVs suitable for the USPS's needs. Instead the DEIS simply notes that such vehicles are not available,[4] a not unsurprising conclusion given the ponderous nature of this procurement exercise that began in 2015, when there were not many BEV players in the market. The USPS has therefore failed to incorporate the rapid changes in the BEV market in the intervening six years into this procurement and has likewise failed to anticipate even more rapid changes to BEVs between now and 2032. As a result, the DEIS's analysis of BEVs is already dated and quaint. As examples, the DEIS makes no mention of: multiple and competing battery technologies for BEVs available now and likely in the future and related improvements in range; developments in charging methods that will result in faster charging times than the assumed Level 2 charging; and improvements in costs over time. Each of this is a major short-coming in the BEV analyses; collectively, they are fatal.

B. Alternatives Analyzed and Rejected

The DEIS analyzes two NGDV "Hypothetical Maximum" scenarios and two COTS vehicle alternatives along with the No-Action Alternative, as follows:

(i) Proposed Action Hypothetical Maximum scenario (purchase and deployment of 90% ICE and 10% BEV);
(ii) Proposed Action Hypothetical Maximum scenario (purchase and deployment of 100% BEV);

any, the USPS would take to proactively increase the presumptive BEV percentage to greater than 10%. Also, simply stating that "[T]he NGDV can also be retrofitted to keep pace with advances in BEV technologies…" as is stated in the DEIS (Section 1-3.2.2) as a conclusionary statement, with no details, is simply not credible.

[4] DEIS, Section 3-2.2.2, "[T]here is no RHD COTS BEV currently available or otherwise marketed by commercial manufacturers for future development."

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(iii) Alternative 1.1 (purchase and deployment of 100% RHD COTS ICE vehicles; and
(iv) Alternative 1.2 (purchase and deployment of 100% LHD COTS BEVs.

Let us examine the rationale behind these options first.

I note at the outset that the last alternative (iv), i.e., 100% LHD COTS BEVs is just a strawman, inserted into the analysis based on some public comments received during the Notice of Intent phase of preparation of the DEIS. The USPS vehemently, and somewhat persuasively makes the case that LHD configurations are simply not compatible with the needs of its delivery vehicles. So, this is, in reality, a non-option, with much wasted space and analysis in the DEIS.

Similarly, Alternative 1.1, i.e., item (iii) above is also a non-starter, given the inherent incompatibility of COTS vehicles to meet the USPS's legitimate and specialized needs for its delivery vehicles. Thus, that too is a made-up option, i.e., another strawman, inserted with the express purpose of later rejection.

As to the two Proposed Action alternatives (i) and (ii), the analysis in the DEIS makes clear that the 100% BEV option, i.e., item (ii) was also a strawman, since the basis of its rejection was that a fleet with all BEVs cannot service some 12,500 delivery routes in the USPS system. In fact, it appears to have been selected precisely so it would be dismissed as I discussed next, leaving the first option – i.e., 90% ICE / 10% BEV as the only remaining alternative.

C. Additional Analysis on the Lack of Consideration and Improper Rejection of Greater Than 10% BEV

Per discussion in the DEIS as summarized in Section 4-11.2, the DEIS selects the 90% ICE / 10% BEV options because this "Preferred Alternative is also the most achievable given the Postal Service''s financial condition, as the ICE NGDV is significantly less expensive than the BEV NGDV (see Table 3-1.1)….and committing to purchase more than 10 percent BEV NGDV as part of the Preferred Alternative would not meet the Postal Service''s Purpose and Need for the following reasons. Operational constraints would preclude the BEV NGDV deployment for more than 12,500 delivery routes (see Section 3-1.1)." I will examine these two criteria in more detail below.

I also note, for the record, that the DEIS also makes a half-hearted attempt to reject a higher percentage mix of BEVs on the grounds that "…spent BEV batteries would be an additional source of hazardous waste. While much of this material would be reclaimed or recycled, BEV battery recycling methods in the U.S. are currently limited and vary in recovery capabilities."[5] I don't

[5] DEIS, Executive Summary, p. iii.

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take this seriously because in later discussion, the DEIS admits that this is unlikely to be a continuing issue.[6]

C.1 Criteria: The 12,500 Difficult Routes for BEVs

With regard to the 12,500 delivery route limitation, the most complete description of that constraint in the DEIS is as follows:

"Operational limitations and certain Postal Service delivery environments would limit the use of electric-only vehicles. These limitations include a lack of available infrastructure, and at least 12,500 delivery routes where route length, environmental conditions, or facility constraints make electric vehicles unfeasible or impractical. For example, BEV NGDV on routes that exceed 70 miles might not have sufficient power to complete the route, especially as the battery ages and has less capacity. Limitations also exist with extreme cold climates where the use of heaters could reduce the available mileage by up to 50 percent. Facility constraints include smaller and/or leased properties, such as strip mall locations, which may have limited space for charging infrastructure and/or require landlord approval for construction activities (e.g., utility drops, conduit runs, transformer installation, and updates to distribution panels/circuit breakers)."[7]

Every aspect of this explanation and the conclusionary statements above are unsupported in the DEIS – with no citations, analyses, or any other type of supporting documentation. In fact, strikingly, for a DEIS dealing with procurement of delivery vehicles whose sole purpose is to service the delivery routes in the USPS system, there is little detail about these routes, other than the total number as a function of year in Table 4-3.1 (with 231,579 routes in 2020). For example, what is the distribution of the route lengths (and not just the average[8] of 21.05, as noted in Table G-1)? What are the aforementioned environmental conditions by which USPS classifies the routes? What happens if future BEVs are not constrained by the assumed (and outdated[9]) 70 mile per charge distance? What if the range is 200 miles instead on a single charge? What is the basis of the 50% reduction in miles/charge due to use of heaters? What is the distribution of facilities that are leased? that are small? that have limited space? that have landlord limitations? Presumably

[6] For example, in Section 5-1.2, the DEIS admits that "…spent batteries could be collected under streamlined universal waste collection standards to make it easier to send them for recycling or proper treatment and disposal. Recycling methods in the U.S. are limited and vary in recovery capabilities for spent BEV batteries; however, it is expected that recycling capacity over the effective life of the BEV NGDV would increase with the increasing nationwide adoption of BEVs."

[7] DEIS, Section 3-1.1. (emphasis added)

[8] In fact, the average may not be the best metric for central tendency, depending on the distribution. A better metric would be the median route length, which would give less weight to the very smallest and the very longest routes.

[9] Commercial passenger car BEVs are now achieving well over 200 miles per charge. And, the recently announced Ford Lightning, a heavy duty truck, has an expected range of around 300 miles. "…Ford says it's targeting a 230 mile EPA range for F-150 Lightning with the Standard range battery, and 300 miles for vehicles with the Extended range pack." https://insideevs.com/news/522603/f150-lightning-display-incredible-range/

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the USPS has all of this data. But none of the data and any subsequent analysis supports the statements about justifying its repeated assertion about the 12,500 difficult and non-BEV serviceable routes. In any case, even with the top line numbers, 12,500 represents just 5.4% of the 231,579 routes in 2020.

Therefore, the overall argument that USPS seems to be making, i.e., that it cannot have an all-BEVs delivery fleet because 5.4% of the delivery routes (based on questionable and unsupported, and likely obsolete assumptions, per above) may be challenging for such vehicles, is simply illogical.

C.2 Criteria: Cost

In addition to pointing to the unsupported 12,500 routes and with no details about these routes whatsoever as discussed above, the DEIS also rejects higher percentage BEV in the mix stating numerous times in the DEIS that it cannot afford to do so on the basis of cost, with two commingled arguments – i.e., the USPS's "financial condition" and the supposedly higher total cost of ownership for the BEVs: "[M]oreover, the Proposed Action is the most achievable given the Postal Service's financial condition as the BEV NGDV has a significantly higher total cost of ownership than the ICE NGDV, which is why the Proposed Action does not commit to more than 10 percent BEVs."[10] I address the total cost of ownership argument first.

C.2.1 Total Cost of Ownership

In support of its cost argument, the DEIS states that "[T]he 20-year estimated total costs for NGDV powertrains are presented in Table 3-1.1. The estimated cumulative total costs are based on costs for vehicle purchase, freight, training, manuals, technical data package, pre-delivery production costs, charging infrastructure, 20 years' estimated fuel and utility costs, and maintenance…."[11] And points to Appendix C of the DEIS for details. However, a thorough review of Appendix C resulted in just the following single sentence with regards to BEV costs: "[O]fferors provided NGDV Production proposals and pricing to the Postal Service in July 2020. The proposals included internal combustion engine (ICE) vehicles and battery electric vehicles (BEVs)."[12] That's it. No actual costs of any of the total costs of BEVs as enumerated above are provided in Appendix C.

Let us examine the referenced Table 3-1.1, which I have reproduced below, below for ease of reference.

[10] DEIS, Cover Sheet.

[11] DEIS, Section 3-1.1.

[12] DEIS, Section 1-3.2.2.

Table 3-1.1
20-Year Cumulative Estimated Total Costs for NGDV Powertrains

NGDV Powertrain	ICE NGDV	BEV NGDV
Total Estimated Cost [1]	$ 9.3 Billion	$ 11.6 Billion

[1] Present value [rounded] based on purchase of 75,000 vehicles)

First, as I note above this is based on no supporting data.

Second, the analysis appears to be based on a procurement of 75,000 vehicles (an arbitrary number with no basis, which only makes an appearance in the note to this table). Based on this the BEVs would supposedly cost $2.3 billion more than ICE delivery vehicles. This raises at least one obvious question: namely, assuming that there are fixed costs associated with tooling etc., for BEVs but less so for the ICE vehicles, the larger the number of vehicles the lower the incremental per unit cost. Thus, if instead of 75,000 the USPS procured, say, 150,000 BEVs, what would be the cost-differential in that case – i.e., 150,000 of each type? Clearly the lower the number to be procured the worse the differential for BEVs, given the fixed tooling costs involved. The DEIS provides no answer and not enough supporting information to be able to answer this and similar questions.

Third, consider maintenance. The DEIS correctly admits that BEVs are easier to maintain. In Section 4-1.1.4, the DEIS confirms that "BEVs are generally more mechanically reliable than ICE vehicles and would require less scheduled maintenance since BEVs have fewer moving parts (no engine or conventional transmission) and fluids to change." (citation omitted). The DEIS also notes in Section 4-1.3 that the delivery "vehicles are supported by more than 5,000 automotive technicians, mechanics, body repair personnel, and stockkeepers at more than 300 [vehicle maintenance facilities] VMFs. Deployment and maintenance of new NGDV or COTS vehicles would result in minimal to no changes to the total Postal Service vehicle maintenance workforce. This reiterates a statement in Section 3-1.2 that "[T]he deployment of new NGDV would result in minimal to no changes to the total Postal Service vehicle maintenance workforce."[13] This makes no sense. Since BEVs have far fewer moving parts and have fewer fluid change needs and overall need less maintenance, the number of VMFs and maintenance staff to service BEVs should be less than that for ICEs. So, treating both powertrains as the same from a maintenance cost standpoint is incorrect. And the cost analysis therefore does not credit BEVs with the lower maintenance costs as compared to ICEs.

Fourth, with regard to cost, the DEIS, indicating future flexibility, states that "[V]ehicles purchased with ICE powertrains will be capable of being retrofitted to alternative BEV powertrain technology if it is advantageous for the Postal Service to do so."[14] However, if that is the case, the retrofit

[13] DEIS, Section 3-1.2. (emphasis added)

[14] DEIS, Section 3-1.1. (emphasis added)

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costs should be charged against the ICE fleet that is to be so converted. It is not clear if any ICE retrofit costs were included, and, if so, how, in the cost analysis.

And, lastly, what about any potential carbon-tax or similar per-mile costs in the future, associated with ICE vehicles? It is clear that the DEIS does not contemplate this very-real possibility, especially as the procurement period extends to 2032. Any such cost would of course, be to the benefit of BEVs.

In summary, given the complete lack of details and transparency and with literally no supporting information, the summary costs in Table 3-1.1 should not be relied upon as a fundamental matter. And, given the analytical weaknesses in the Table 3-1.1 summary (i.e., choice of the arbitrary 75,000 units as basis) as well as the lack of inclusion of ICE retrofit costs and the clearly wrong assumption of no credits for BEVs as to the savings of its maintenance infrastructure with more BEVs and fewer ICEs, the cost summary in Table 3-1.1 showing that BEVs have a higher total cost of ownership simply cannot be relied upon.

C.2.1 USPS's Financial Condition

Although the DEIS mentions the financial condition of the USPS numerous times, it provides no details whatsoever as to the USPS's finances and the implied inability to handle the (unsupported) higher costs of BEVs. Therefore, I cannot comment on this aspect with any specificity.

I will note, however, numerous statements in the DEIS about attempts by the USPS to obtain additional funding, showing its intention to include more BEVs in the NGDV mix. But these statements generally ring hollow given the lack of details or any particulars. For example, in Section 1-3.2.3, the DEIS notes that "[T]he Postal Service has committed to a minimum quantity of 10 percent BEVs and <u>is seeking additional funding</u> to increase this quantity…" but no details of what additional funding and when that might be forthcoming is provided in the DEIS, thus making this statement unreliable. Again, in Section 3-1.1, the DEIS states that "[T]he Postal Service would accelerate its electric vehicle strategy by increasing the percentage of BEV powertrains <u>if its financial condition changes</u> or it receives additional funding for this purpose." Again, no details are provided, casting doubt that the BEV mix will ever be greater than 10%.

Based on this, there is but one logical conclusion.

<u>D. Logical Alternative – Higher Than 10% But Not 100% BEV Option – Not Analyzed</u>

The obvious and logical alternative that should flow from the above is, even conceding that there will be or may be some delivery routes (even though not even as high as 5.4% of the routes) which will not be compatible with (even future) BEVs, this alternative should procure just the number of ICEs needed for those "non-BEV" routes and have the rest of the routes be serviced by BEVs.

Therefore, my key comment is the omission of a High Percentage (to be determined based on route analysis) BEV / low-percentage ICE (just to serve the BEV-incompatible routes) mix in the DEIS. Along with appropriate route analysis, this mix should be determined and analyzed in the DEIS.

Yet, this logical option is nowhere to be found in the DEIS. This is a fatal flaw, unfortunately and is sufficient grounds to go back to the drawing board.

A much higher percentage of BEVs would, of course be consistent with the Biden Administration's Climate Goals, as noted in EPA's April 2,2021 comments as provided in Appendix B to the DEIS. "[A]n all-electric fleet would support the Administration's January 27, 2021 Executive Order 14008, *Tackling the Climate Crisis at Home and Abroad,* which, in part, directs federal agencies to develop a plan to achieve or facilitate clean and zero-emissions vehicles for federal, state, local, and Tribal fleets, including Postal Service vehicles." Arguably, by not considering a high (but less than 100%) BEV mix, the DEIS is not in compliance with E.O. 14008.

The DEIS provides no discussion of how its conclusions are consistent with the Department of Energy's push for electric vehicles in the Federal fleet.[15]

Finally, I note that while the DEIS presents very poor arguments, as discussed prior, to not considering a very high percent BEV mix, there are numerous examples of private entities in the US who are moving to all-electric or substantially all electric fleets in the same time period as the USPS is contemplating the roll-out of the NGDVs as replacements. While not all such entities have similar vehicle demands to that of the USPS delivery vehicles, arguably, Amazon, FedEx, and UPS do. And, as one of the commenters pointed out, each of these companies have announced significant conversions of their delivery fleets to zero-emissions vehicles, including electric. From the comments in Appendix B, "…(a) FedEx has issued detailed plans for its entire pickup and delivery fleet to be zero-emission electric vehicles by 2040.; (b) Amazon already uses electric delivery vehicles and plans to have 100,000 on the road by 2030; and (c) United Parcel Service has already begun using small zero-emissions vans similar to the type that the US Postal Service needs, with plans to have 10,000 by the middle of the decade." While I understand that these entities do not have the same needs as the USPS for RHD vehicles, nonetheless, it is not clear to what extent the USPS considered these developments in advancing higher mixes of BEVs in its procurement.

In the next several sections, I address a number of additional deficiencies in the DEIS.

E. Positive BEV Air Quality and GHG Impacts Understated

First, I agree with the finding in the DEIS that the inclusion of BEVs would provide the expected benefits for air quality, including GHG reductions, as well as many of the other benefits such as

[15] See, for example, https://www.energy.gov/eere/femp/electric-vehicles-federal-fleets

reduced fuel use, reduced noise, etc. noted in the DEIS with minimal impacts on the electric grid[16] (see Section 4-9.3.2).

I note however, that even with the DEIS correctly projecting air quality and GHG benefits with BEVs in the mix, that these benefits are underestimated.

The air quality and GHG analyses, as summarized in Section 4 and Appendix F provide comparisons of air pollutant and GHG emissions including both Direct (i.e., tailpipe) and Indirect (i.e., including air emissions associated with electric generation). See, for example, Table 4-6.2 for the 90% ICE / 10% BEV case and Table 4-6.5 for the 100% BEV case. Crucially, however, for the indirect emissions, the DEIS relies on EPA's eGRID (see Note 3, Table 4-6.2, for example). The emission factors used from eGRID are shown in Table F-5.b, reproduced below and highlighted in redbox.

Table F-5.b
Indirect Emissions from Energy Consumption by BEV using eGRID's Nationwide Emission Profile Factors

Proposed Scenarios	VOC (tpy)	NO_X (tpy)	CO (tpy)	$PM_{2.5}$ (tpy)	PM_{10} (tpy)	SO_2 (tpy)	CO_2e (MT)
Proposed Action - Purchase and Deployment of up to 165,000 NGDV (90% ICE NGDV + 10% BEV NGDV)	NA	41	NA	5	NA	38	46,748
Proposed Action - Purchase and Deployment of up to 165,000 NGDV (100% BEV NGDV)	NA	413	NA	45	NA	381	467,485
Alternative 1.2 - Purchase and Deployment of up to 165,000 COTS Vehicles (100% COTS BEV)	NA	191	NA	21	NA	176	215,968

eGRID US Nationwide Emission Profile Factor	VOC (lb/MWh)	NO_X (lb/MWh)	CO (lb/MWh)	$PM_{2.5}$ (lb/MWh)	PM_{10} (lb/MWh)	SO_2 (lb/MWh)	CO_2e (lb/MWh)
Nationwide eGRID Emission Profiles	NA	0.586	NA	0.0643	NA	0.541	889.21

These factors, however, reflect current eGRID emissions. They do not reflect the greening of the power sector in the US as reflected by more use of renewables. Thus, projected emissions for the various pollutants shown for electricity generation in the 2023-2032 time period would be lower than that shown in the table above. This would provide additional benefits to the BEVs than calculated in the DEIS. Thus, by not using reasonable projections of the future US electric grid's fuel and emissions profiles, and assuming that the grid's emissions remain static through 2032, the DEIS makes a significant analytical error and underestimates the air quality and GHG benefits of BEVs, at any level of mix.

F. Additional Unsupported Assumptions and Omissions

In this section, I will provide examples of several unsupported assumptions in the DEIS. I stress that these are just examples and this is not meant to be an exhaustive list.

[16] As stated in DEIS, Section 4-9.3.2 "[T]hus, existing bulk power systems are adequate for supplying electricity to 165,000 BEV NGDV…." i.e., even for the 100% BEV option.

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(i) Table 3-1.3, reproduced below shows the BEV specifications used in the analysis. It is reproduced below for convenience.

Table 3-1.3
BEV NGDV Specifications

Design Specification	Estimated Value
Curb Weight (lbs)	6,670
GVWR (lbs)	8,877
Payload (lbs)	2,207
Battery Type / Size	Nickel Manganese Cobalt Oxide / 94 kilowatt hour (kWh)
Range on Single Charge (miles)	70 (with and without air conditioning)

However, other than payload (roughly 1 ton) as assumed by the USPS, none of the other assumptions – i.e., for curb weight, battery type, battery size, and range are supported by any data or projections. Crucially, the DEIS assumes that all of these will remain static through 2032. While the weight and payload may remain so, it is implausible, given even current developments, and likely even more accelerated future developments, that the battery type, size, and vehicle range will remain at these assumed levels, into 2032. The DEIS needs to revisit these assumptions.

(ii) Relatedly, the DEIS notes that "[T]he Postal Service's BEV NGDV requirements also include the ability to charge to a minimum driving range of 70 miles within eight hours. The BEV NGDV would be expected to discharge around 20 percent of battery capacity under average conditions because of the low average delivery route mileage."[17] Like the point above, these assumptions too are both unsupported and held static in the DEIS's analysis, through 2032, and are plainly implausible. Again, the DEIS needs to revisit these assumptions.

(iii) In numerous instances, the DEIS relies on an assumed procurement and deployment of the number of NGDVs by year. An example is shown from Table F-3.b, for illustrative purposes. Not only does the DEIS provide no reasoned basis for the assumed number of vehicles by year as shown in this and other tables throughout the DEIS, Note (1) to this table explicitly characterizes this as "hypothetical": "[T]he above represents a hypothetical spread of vehicles to be replaced per year used only for the purpose of this EIS evaluation." It is improper to use a hypothetical, i.e., meaningless, set of values for this crucial driver of all of the environmental analyses in the DEIS. While there is obviously no correct way to predict the future (and no one is expecting the USPS to have a perfect crystal ball in this regard), the DEIS must make a reasonable projection of this annual procurement and not leave it as a "hypothetical" assumption.

(iv) Note (9) to Table F-3.b as well as similar language in notes to several other tables makes a curious reference to Westchester County, NY: for example, "[T]he emission factors were estimated based on an urban unrestricted road type in Westchester County, New York, and 25 mph of vehicle speed." This is inexplicable. It is not clear why this specific location was selected or what specific attribute of Westchester County renders it representative of the whole country,

[17] DEIS, Section 3-1.1.

with regards to its "road type" and vehicle speeds. Arguably portions of Westchester County are not "urban." In any case, the DEIS needs more explanation regarding this assumption, and, importantly, how the analysis would change, if other locations (i.e., several others) were so selected in its place.

(v) Note (10) to Table F-3.b and similar language in notes to other tables states that: "[A]lthough EPA recently released MOVES3 in January 2021 and continues to update this new model with the most recent release of MOVES3.01 in March 2021, the states are still testing and developing inputs in adopting this new model version within the two-year grace period. Therefore, MOVES2014b, an earlier version that is still valid for use, was used to estimate vehicular emission factors for this EIS." This deserves more explanation. The DEIS was issued in August 2021, i.e., many months after the March 2021 release of MOVES3.01. While acknowledging the grace period, the effect of this model change should have been included in the DEIS, at least as part of a sensitivity analysis for a few selected cases. If the results showed reasonable consistency with the prior version MOVES2014b, the confidence in all of the analyses which relied on the older model (now almost 7 years old) would be greater. Conversely, if the results using the new model were significantly different, as is very plausible, given the numerous changes to the vehicle mix and resulting emissions profiles, it would raise significant questions that are best answered now as opposed to left unanswered. The DEIS therefore needs to include analysis using MOVES3.01.

(vi) I also note a significant omission in the DEIS, namely the complete lack of any air quality analyses relating to toxic or hazardous air pollutant emissions from the tailpipes of the ICE fleet. While the air quality analysis focuses on the so-called criteria pollutants, i.e., those that have National Ambient Air Quality Standards (NAAQS), and GHG, it is improper to omit any discussion and analysis of this large class of toxic pollutants including carcinogens, mutagens, and others with short- and long-term adverse human health impacts. This would obviously further highlight the benefits of BEVs as opposed to ICE, including exposures in all communities including not just where deliveries are made, but also at the post-offices and vehicle maintenance facilities. This is a critical omission and must be remedied in an updated DEIS.

G. Sloppiness

In addition to the major issues and numerous flawed and/or unsupported assumptions used in the DEIS as discussed in this report, I must note that the level of confidence in the DEIS is diminished given avoidable inconsistencies. I will provide one example.

Consider, for instance, the size of the fleet. Section 1-2 states that "[T]he Postal Service owns and operates a <u>delivery fleet of over 206,000 vehicles</u> consisting of both purpose-built vehicles as well as commercial off-the-shelf (COTS) vehicles." In Section 4-1.1, however, it states that "[T]he Postal Service currently has a combined <u>delivery fleet of approximately 218,000 vehicles</u> comprised of approximately 138,000 RHD LLVs, 21,000 RHD FFVs, 51,000 COTS delivery vehicles and 8,000 COTS mixed delivery vehicles." Adding to the inconsistency, Section 4-4.2.2 states that "[T]he current Postal Service <u>delivery fleet of more than 217,000 custom-built and COTS vehicles</u> traveled approximately 1.2 billion miles in FY 2019. While a very careful reading

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might imply that the "over 206,000," "approximately 218,000," and "more than 217,000" numbers of delivery vehicles are all "consistent," it is nonetheless very sloppy not to use one consistent number for every analysis in the DEIS.

H. Conclusion

In summary, after careful review of the DEIS, it is clear that it cannot be used to make an informed decision on the USPS's NGDV fleet mix for 2023-2032 because it is incomplete, it's analyses rely on assumptions that are often arbitrary and unsupported, and, as a result, it fails to provide a coherent analysis as to the proper fraction of BEVs that should be part of the NGDV procurement. It is skewed to minimize and exclude the substantial environmental benefits of greater proportions of BEVs. As a result, it is already "behind" even before the first year of the 10-year procurement cycle. It should be redone.

Attachment A

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CONSULTANT, ENVIRONMENTAL AND ENERGY ISSUES

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EXPERIENCE SUMMARY

Dr. Sahu has over thirty one years of experience in the fields of environmental, mechanical, and chemical engineering including: program and project management services; design and specification of pollution control equipment for a wide range of emissions sources including stationary and mobile sources; soils and groundwater remediation including landfills as remedy; combustion engineering evaluations; energy studies; multimedia environmental regulatory compliance (involving statutes and regulations such as the Federal CAA and its Amendments, Clean Water Act, TSCA, RCRA, CERCLA, SARA, OSHA, NEPA as well as various related state statutes); transportation air quality impact analysis; multimedia compliance audits; multimedia permitting (including air quality NSR/PSD permitting, Title V permitting, NPDES permitting for industrial and storm water discharges, RCRA permitting, etc.), multimedia/multi-pathway human health risk assessments for toxics; air dispersion modeling; and regulatory strategy development and support including negotiation of consent agreements and orders.

He has over twenty eight years of project management experience and has successfully managed and executed numerous projects in this time period. This includes basic and applied research projects, design projects, regulatory compliance projects, permitting projects, energy studies, risk assessment projects, and projects involving the communication of environmental data and information to the public.

He has provided consulting services to numerous private sector, public sector and public interest group clients. His major clients over the past twenty six years include various trade associations as well as individual companies such as steel mills, petroleum refineries, chemical plants, cement manufacturers, aerospace companies, power generation facilities, lawn and garden equipment manufacturers, spa manufacturers, chemical distribution facilities, land development companies, and various entities in the public sector including EPA, the US Dept. of Justice, several states (including Oregon, New Mexico, Pennsylvania, and others), various agencies such as the California DTSC, and various municipalities. Dr. Sahu has performed projects in all 50 states, numerous local jurisdictions and internationally.

In addition to consulting, for approximately twenty years, Dr. Sahu taught numerous courses in several Southern California universities including UCLA (air pollution), UC Riverside (air pollution, process hazard analysis), and Loyola Marymount University (air pollution, risk assessment, hazardous waste management). He also taught at Caltech, his alma mater (various engineering courses), at the University of Southern California (air pollution controls) and at California State University, Fullerton (transportation and air quality).

Dr. Sahu has and continues to provide expert witness services in a number of environmental areas discussed above in both state and Federal courts as well as before administrative bodies (please see Annex A).

EXPERIENCE RECORD

2000-present **Independent Consultant.** Providing a variety of private sector (industrial companies, land development companies, law firms, etc.), public sector (such as the US Department of Justice), and public interest group clients with project management, environmental consulting, project management, as well as regulatory and engineering support consulting services.

1995-2000 Parsons ES. **Associate, Senior Project Manager and Department Manager for** Air Quality/Geosciences/Hazardous Waste Groups, Pasadena. Responsible for the management of a group of approximately 24 air quality and environmental professionals, 15 geoscience, and 10 hazardous waste professionals providing full-service consulting, project management, regulatory compliance and A/E design assistance in all areas.

Parsons ES, **Manager for Air Source Testing Services**. Responsible for the management of 8 individuals in the area of air source testing and air regulatory permitting projects located in Bakersfield, California.

1992-1995 Engineering-Science, Inc. **Principal Engineer and Senior Project Manager** in the air quality department. Responsibilities included multimedia regulatory compliance and permitting (including hazardous and nuclear materials), air pollution engineering (emissions from stationary and mobile sources, control of criteria and air toxics, dispersion modeling, risk assessment, visibility analysis, odor analysis), supervisory functions and project management.

1990-1992 Engineering-Science, Inc. **Principal Engineer and Project Manager** in the air quality department. Responsibilities included permitting, tracking regulatory issues, technical analysis, and supervisory functions on numerous air, water, and hazardous waste projects. Responsibilities also include client and agency interfacing, project cost and schedule control, and reporting to internal and external upper management regarding project status.

1989-1990 Kinetics Technology International, Corp. **Development Engineer.** Involved in thermal engineering R&D and project work related to low-NOx ceramic radiant burners, fired heater NOx reduction, SCR design, and fired heater retrofitting.

1988-1989 Heat Transfer Research, Inc. **Research Engineer**. Involved in the design of fired heaters, heat exchangers, air coolers, and other non-fired equipment. Also did research in the area of heat exchanger tube vibrations.

EDUCATION

1984-1988 Ph.D., Mechanical Engineering, California Institute of Technology (Caltech), Pasadena, CA.

1984 M. S., Mechanical Engineering, California Institute of Technology (Caltech), Pasadena, CA.

1978-1983 B. Tech (Honors), Mechanical Engineering, Indian Institute of Technology (IIT) Kharagpur, India

TEACHING EXPERIENCE

Caltech

"Thermodynamics," Teaching Assistant, California Institute of Technology, 1983, 1987.

"Air Pollution Control," Teaching Assistant, California Institute of Technology, 1985.

"Caltech Secondary and High School Saturday Program." - taught various mathematics (algebra through calculus) and science (physics and chemistry) courses to high school students, 1983-1989.

"Heat Transfer," - taught this course in the Fall and Winter terms of 1994-1995 in the Division of Engineering and Applied Science.

"Thermodynamics and Heat Transfer," Fall and Winter Terms of 1996-1997.

U.C. Riverside, Extension

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"Toxic and Hazardous Air Contaminants," University of California Extension Program, Riverside, California. Various years since 1992.

"Prevention and Management of Accidental Air Emissions," University of California Extension Program, Riverside, California. Various years since 1992.

"Air Pollution Control Systems and Strategies," University of California Extension Program, Riverside, California, Summer 1992-93, Summer 1993-1994.

"Air Pollution Calculations," University of California Extension Program, Riverside, California, Fall 1993-94, Winter 1993-94, Fall 1994-95.

"Process Safety Management," University of California Extension Program, Riverside, California. Various years since 1992-2010.

"Process Safety Management," University of California Extension Program, Riverside, California, at SCAQMD, Spring 1993-94.

"Advanced Hazard Analysis - A Special Course for LEPCs," University of California Extension Program, Riverside, California, taught at San Diego, California, Spring 1993-1994.

"Advanced Hazardous Waste Management" University of California Extension Program, Riverside, California. 2005.

Loyola Marymount University

"Fundamentals of Air Pollution - Regulations, Controls and Engineering," Loyola Marymount University, Dept. of Civil Engineering. Various years since 1993.

"Air Pollution Control," Loyola Marymount University, Dept. of Civil Engineering, Fall 1994.

"Environmental Risk Assessment," Loyola Marymount University, Dept. of Civil Engineering. Various years since 1998.

"Hazardous Waste Remediation" Loyola Marymount University, Dept. of Civil Engineering. Various years since 2006.

University of Southern California

"Air Pollution Controls," University of Southern California, Dept. of Civil Engineering, Fall 1993, Fall 1994.

"Air Pollution Fundamentals," University of Southern California, Dept. of Civil Engineering, Winter 1994.

University of California, Los Angeles

"Air Pollution Fundamentals," University of California, Los Angeles, Dept. of Civil and Environmental Engineering, Spring 1994, Spring 1999, Spring 2000, Spring 2003, Spring 2006, Spring 2007, Spring 2008, Spring 2009.

International Programs

"Environmental Planning and Management," 5 week program for visiting Chinese delegation, 1994.

"Environmental Planning and Management," 1 day program for visiting Russian delegation, 1995.

"Air Pollution Planning and Management," IEP, UCR, Spring 1996.

"Environmental Issues and Air Pollution," IEP, UCR, October 1996.

PROFESSIONAL AFFILIATIONS AND HONORS

President of India Gold Medal, IIT Kharagpur, India, 1983.

Member of the Alternatives Assessment Committee of the Grand Canyon Visibility Transport Commission, established by the Clean Air Act Amendments of 1990, 1992.

American Society of Mechanical Engineers: Los Angeles Section Executive Committee, Heat Transfer Division, and Fuels and Combustion Technology Division, 1987-mid-1990s.

Air and Waste Management Association, West Coast Section, 1989-mid-2000s.

PROFESSIONAL CERTIFICATIONS

EIT, California (#XE088305), 1993.

REA I, California (#07438), 2000.

Certified Permitting Professional, South Coast AQMD (#C8320), since 1993.

QEP, Institute of Professional Environmental Practice, since 2000.

CEM, State of Nevada (#EM-1699). Expiration 10/07/2021.

PUBLICATIONS (PARTIAL LIST)

"Physical Properties and Oxidation Rates of Chars from Bituminous Coals," with Y.A. Levendis, R.C. Flagan and G.R. Gavalas, *Fuel*, **67**, 275-283 (1988).

"Char Combustion: Measurement and Analysis of Particle Temperature Histories," with R.C. Flagan, G.R. Gavalas and P.S. Northrop. *Comb. Sci. Tech.* **60**, 215-230 (1988).

"On the Combustion of Bituminous Coal Chars," PhD Thesis, California Institute of Technology (1988).

"Optical Pyrometry: A Powerful Tool for Coal Combustion Diagnostics," *J. Coal Quality*, **8**, 17-22 (1989).

"Post-Ignition Transients in the Combustion of Single Char Particles," with Y.A. Levendis, R.C. Flagan and G.R. Gavalas, *Fuel*, **68**, 849-855 (1989).

"A Model for Single Particle Combustion of Bituminous Coal Char." Proc. ASME National Heat Transfer Conference, Philadelphia, **HTD-Vol. 106**, 505-513 (1989).

"Discrete Simulation of Cenospheric Coal-Char Combustion," with R.C. Flagan and G.R. Gavalas, *Combust. Flame*, **77**, 337-346 (1989).

"Particle Measurements in Coal Combustion," with R.C. Flagan, in "**Combustion Measurements**" (ed. N. Chigier), Hemisphere Publishing Corp. (1991).

"Cross Linking in Pore Structures and Its Effect on Reactivity," with G.R. Gavalas in preparation.

"Natural Frequencies and Mode Shapes of Straight Tubes," Proprietary Report for Heat Transfer Research Institute, Alhambra, CA (1990).

"Optimal Tube Layouts for Kamui SL-Series Exchangers," with K. Ishihara, Proprietary Report for Kamui Company Limited, Tokyo, Japan (1990).

"HTRI Process Heater Conceptual Design," Proprietary Report for Heat Transfer Research Institute, Alhambra, CA (1990).

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"Asymptotic Theory of Transonic Wind Tunnel Wall Interference," with N.D. Malmuth and others, Arnold Engineering Development Center, Air Force Systems Command, USAF (1990).

"Gas Radiation in a Fired Heater Convection Section," Proprietary Report for Heat Transfer Research Institute, College Station, TX (1990).

"Heat Transfer and Pressure Drop in NTIW Heat Exchangers," Proprietary Report for Heat Transfer Research Institute, College Station, TX (1991).

"NOx Control and Thermal Design," Thermal Engineering Tech Briefs, (1994).

"From Purchase of Landmark Environmental Insurance to Remediation: Case Study in Henderson, Nevada," with Robin E. Bain and Jill Quillin, presented at the AQMA Annual Meeting, Florida, 2001.

"The Jones Act Contribution to Global Warming, Acid Rain and Toxic Air Contaminants," with Charles W. Botsford, presented at the AQMA Annual Meeting, Florida, 2001.

PRESENTATIONS (PARTIAL LIST)

"Pore Structure and Combustion Kinetics - Interpretation of Single Particle Temperature-Time Histories," with P.S. Northrop, R.C. Flagan and G.R. Gavalas, presented at the AIChE Annual Meeting, New York (1987).

"Measurement of Temperature-Time Histories of Burning Single Coal Char Particles," with R.C. Flagan, presented at the American Flame Research Committee Fall International Symposium, Pittsburgh, (1988).

"Physical Characterization of a Cenospheric Coal Char Burned at High Temperatures," with R.C. Flagan and G.R. Gavalas, presented at the Fall Meeting of the Western States Section of the Combustion Institute, Laguna Beach, California (1988).

"Control of Nitrogen Oxide Emissions in Gas Fired Heaters - The Retrofit Experience," with G. P. Croce and R. Patel, presented at the International Conference on Environmental Control of Combustion Processes (Jointly sponsored by the American Flame Research Committee and the Japan Flame Research Committee), Honolulu, Hawaii (1991).

"Air Toxics - Past, Present and the Future," presented at the Joint AIChE/AAEE Breakfast Meeting at the AIChE 1991 Annual Meeting, Los Angeles, California, November 17-22 (1991).

"Air Toxics Emissions and Risk Impacts from Automobiles Using Reformulated Gasolines," presented at the Third Annual Current Issues in Air Toxics Conference, Sacramento, California, November 9-10 (1992).

"Air Toxics from Mobile Sources," presented at the Environmental Health Sciences (ESE) Seminar Series, UCLA, Los Angeles, California, November 12, (1992).

"Kilns, Ovens, and Dryers - Present and Future," presented at the Gas Company Air Quality Permit Assistance Seminar, Industry Hills Sheraton, California, November 20, (1992).

"The Design and Implementation of Vehicle Scrapping Programs," presented at the 86th Annual Meeting of the Air and Waste Management Association, Denver, Colorado, June 12, 1993.

"Air Quality Planning and Control in Beijing, China," presented at the 87th Annual Meeting of the Air and Waste Management Association, Cincinnati, Ohio, June 19-24, 1994.

Annex A

Expert Litigation Support

A. Occasions where Dr. Sahu has provided Written or Oral testimony before Congress:

1. In July 2012, provided expert written and oral testimony to the House Subcommittee on Energy and the Environment, Committee on Science, Space, and Technology at a Hearing entitled "Hitting the Ethanol Blend Wall – Examining the Science on E15."

B. Matters for which Dr. Sahu has provided affidavits and expert reports include:

2. Affidavit for Rocky Mountain Steel Mills, Inc. located in Pueblo Colorado – dealing with the technical uncertainties associated with night-time opacity measurements in general and at this steel mini-mill.
3. Expert reports and depositions (2/28/2002 and 3/1/2002; 12/2/2003 and 12/3/2003; 5/24/2004) on behalf of the United States in connection with the Ohio Edison NSR Cases. *United States, et al. v. Ohio Edison Co., et al.*, C2-99-1181 (Southern District of Ohio).
4. Expert reports and depositions (5/23/2002 and 5/24/2002) on behalf of the United States in connection with the Illinois Power NSR Case. *United States v. Illinois Power Co., et al.*, 99-833-MJR (Southern District of Illinois).
5. Expert reports and depositions (11/25/2002 and 11/26/2002) on behalf of the United States in connection with the Duke Power NSR Case. *United States, et al. v. Duke Energy Corp.*, 1:00-CV-1262 (Middle District of North Carolina).
6. Expert reports and depositions (10/6/2004 and 10/7/2004; 7/10/2006) on behalf of the United States in connection with the American Electric Power NSR Cases. *United States, et al. v. American Electric Power Service Corp., et al.*, C2-99-1182, C2-99-1250 (Southern District of Ohio).
7. Affidavit (March 2005) on behalf of the Minnesota Center for Environmental Advocacy and others in the matter of the Application of Heron Lake BioEnergy LLC to construct and operate an ethanol production facility – submitted to the Minnesota Pollution Control Agency.
8. Expert Report and Deposition (10/31/2005 and 11/1/2005) on behalf of the United States in connection with the East Kentucky Power Cooperative NSR Case. *United States v. East Kentucky Power Cooperative, Inc.*, 5:04-cv-00034-KSF (Eastern District of Kentucky).
9. Affidavits and deposition on behalf of Basic Management Inc. (BMI) Companies in connection with the BMI vs. USA remediation cost recovery Case.
10. Expert Report on behalf of Penn Future and others in the Cambria Coke plant permit challenge in Pennsylvania.
11. Expert Report on behalf of the Appalachian Center for the Economy and the Environment and others in the Western Greenbrier permit challenge in West Virginia.
12. Expert Report, deposition (via telephone on January 26, 2007) on behalf of various Montana petitioners (Citizens Awareness Network (CAN), Women's Voices for the Earth (WVE) and the Clark Fork Coalition (CFC)) in the Thompson River Cogeneration LLC Permit No. 3175-04 challenge.
13. Expert Report and deposition (2/2/07) on behalf of the Texas Clean Air Cities Coalition at the Texas State Office of Administrative Hearings (SOAH) in the matter of the permit challenges to TXU Project Apollo's eight new proposed PRB-fired PC boilers located at seven TX sites.

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14. Expert Testimony (July 2007) on behalf of the Izaak Walton League of America and others in connection with the acquisition of power by Xcel Energy from the proposed Gascoyne Power Plant – at the State of Minnesota, Office of Administrative Hearings for the Minnesota PUC (MPUC No. E002/CN-06-1518; OAH No. 12-2500-17857-2).

15. Affidavit (July 2007) Comments on the Big Cajun I Draft Permit on behalf of the Sierra Club – submitted to the Louisiana DEQ.

16. Expert Report and Deposition (12/13/2007) on behalf of Commonwealth of Pennsylvania – Dept. of Environmental Protection, State of Connecticut, State of New York, and State of New Jersey (Plaintiffs) in connection with the Allegheny Energy NSR Case. *Plaintiffs v. Allegheny Energy Inc., et al.*, 2:05cv0885 (Western District of Pennsylvania).

17. Expert Reports and Pre-filed Testimony before the Utah Air Quality Board on behalf of Sierra Club in the Sevier Power Plant permit challenge.

18. Expert Report and Deposition (October 2007) on behalf of MTD Products Inc., in connection with *General Power Products, LLC v MTD Products Inc.*, 1:06 CVA 0143 (Southern District of Ohio, Western Division) .

19. Expert Report and Deposition (June 2008) on behalf of Sierra Club and others in the matter of permit challenges (Title V: 28.0801-29 and PSD: 28.0803-PSD) for the Big Stone II unit, proposed to be located near Milbank, South Dakota.

20. Expert Reports, Affidavit, and Deposition (August 15, 2008) on behalf of Earthjustice in the matter of air permit challenge (CT-4631) for the Basin Electric Dry Fork station, under construction near Gillette, Wyoming before the Environmental Quality Council of the State of Wyoming.

21. Affidavits (May 2010/June 2010 in the Office of Administrative Hearings))/Declaration and Expert Report (November 2009 in the Office of Administrative Hearings) on behalf of NRDC and the Southern Environmental Law Center in the matter of the air permit challenge for Duke Cliffside Unit 6. Office of Administrative Hearing Matters 08 EHR 0771, 0835 and 0836 and 09 HER 3102, 3174, and 3176 (consolidated).

22. Declaration (August 2008), Expert Report (January 2009), and Declaration (May 2009) on behalf of Southern Alliance for Clean Energy in the matter of the air permit challenge for Duke Cliffside Unit 6. *Southern Alliance for Clean Energy et al., v. Duke Energy Carolinas, LLC*, Case No. 1:08-cv-00318-LHT-DLH (Western District of North Carolina, Asheville Division).

23. Declaration (August 2008) on behalf of the Sierra Club in the matter of Dominion Wise County plant MACT.us

24. Expert Report (June 2008) on behalf of Sierra Club for the Green Energy Resource Recovery Project, MACT Analysis.

25. Expert Report (February 2009) on behalf of Sierra Club and the Environmental Integrity Project in the matter of the air permit challenge for NRG Limestone's proposed Unit 3 in Texas.

26. Expert Report (June 2009) on behalf of MTD Products, Inc., in the matter of *Alice Holmes and Vernon Holmes v. Home Depot USA, Inc., et al.*

27. Expert Report (August 2009) on behalf of Sierra Club and the Southern Environmental Law Center in the matter of the air permit challenge for Santee Cooper's proposed Pee Dee plant in South Carolina).

28. Statements (May 2008 and September 2009) on behalf of the Minnesota Center for Environmental Advocacy to the Minnesota Pollution Control Agency in the matter of the Minnesota Haze State Implementation Plans.

29. Expert Report (August 2009) on behalf of Environmental Defense, in the matter of permit challenges to the proposed Las Brisas coal fired power plant project at the Texas State Office of Administrative Hearings (SOAH).

30. Expert Report and Rebuttal Report (September 2009) on behalf of the Sierra Club, in the matter of challenges to the proposed Medicine Bow Fuel and Power IGL plant in Cheyenne, Wyoming.

31. Expert Report (December 2009) and Rebuttal reports (May 2010 and June 2010) on behalf of the United States in connection with the Alabama Power Company NSR Case. *United States v. Alabama Power Company*, CV-01-HS-152-S (Northern District of Alabama, Southern Division).

32. Pre-filed Testimony (October 2009) on behalf of Environmental Defense and others, in the matter of challenges to the proposed White Stallion Energy Center coal fired power plant project at the Texas State Office of Administrative Hearings (SOAH).

33. Pre-filed Testimony (July 2010) and Written Rebuttal Testimony (August 2010) on behalf of the State of New Mexico Environment Department in the matter of Proposed Regulation 20.2.350 NMAC – *Greenhouse Gas Cap and Trade Provisions*, No. EIB 10-04 (R), to the State of New Mexico, Environmental Improvement Board.

34. Expert Report (August 2010) and Rebuttal Expert Report (October 2010) on behalf of the United States in connection with the Louisiana Generating NSR Case. *United States v. Louisiana Generating, LLC*, 09-CV100-RET-CN (Middle District of Louisiana) – Liability Phase.

35. Declaration (August 2010), Reply Declaration (November 2010), Expert Report (April 2011), Supplemental and Rebuttal Expert Report (July 2011) on behalf of the United States in the matter of DTE Energy Company and Detroit Edison Company (Monroe Unit 2). *United States of America v. DTE Energy Company and Detroit Edison Company*, Civil Action No. 2:10-cv-13101-BAF-RSW (Eastern District of Michigan).

36. Expert Report and Deposition (August 2010) as well as Affidavit (September 2010) on behalf of Kentucky Waterways Alliance, Sierra Club, and Valley Watch in the matter of challenges to the NPDES permit issued for the Trimble County power plant by the Kentucky Energy and Environment Cabinet to Louisville Gas and Electric, File No. DOW-41106-047.

37. Expert Report (August 2010), Rebuttal Expert Report (September 2010), Supplemental Expert Report (September 2011), and Declaration (November 2011) on behalf of Wild Earth Guardians in the matter of opacity exceedances and monitor downtime at the Public Service Company of Colorado (Xcel)'s Cherokee power plant. No. 09-cv-1862 (District of Colorado).

38. Written Direct Expert Testimony (August 2010) and Affidavit (February 2012) on behalf of Fall-Line Alliance for a Clean Environment and others in the matter of the PSD Air Permit for Plant Washington issued by Georgia DNR at the Office of State Administrative Hearing, State of Georgia (OSAH-BNR-AQ-1031707-98-WALKER).

39. Deposition (August 2010) on behalf of Environmental Defense, in the matter of the remanded permit challenge to the proposed Las Brisas coal fired power plant project at the Texas State Office of Administrative Hearings (SOAH).

40. Expert Report, Supplemental/Rebuttal Expert Report, and Declarations (October 2010, November 2010, September 2012) on behalf of New Mexico Environment Department (Plaintiff-Intervenor), Grand Canyon Trust and Sierra Club (Plaintiffs) in the matter of *Plaintiffs v. Public Service Company of New Mexico* (PNM), Civil No. 1:02-CV-0552 BB/ATC (ACE) (District of New Mexico).

41. Expert Report (October 2010) and Rebuttal Expert Report (November 2010) (BART Determinations for PSCo Hayden and CSU Martin Drake units) to the Colorado Air Quality Commission on behalf of Coalition of Environmental Organizations.

42. Expert Report (November 2010) (BART Determinations for TriState Craig Units, CSU Nixon Unit, and PRPA Rawhide Unit) to the Colorado Air Quality Commission on behalf of Coalition of Environmental Organizations.

43. Declaration (November 2010) on behalf of the Sierra Club in connection with the Martin Lake Station Units 1, 2, and 3. *Sierra Club v. Energy Future Holdings Corporation and Luminant Generation Company LLC*, Case No. 5:10-cv-00156-DF-CMC (Eastern District of Texas, Texarkana Division).

44. Pre-Filed Testimony (January 2011) and Declaration (February 2011) to the Georgia Office of State Administrative Hearings (OSAH) in the matter of Minor Source HAPs status for the proposed Longleaf Energy Associates power plant (OSAH-BNR-AQ-1115157-60-HOWELLS) on behalf of the Friends of the Chattahoochee and the Sierra Club).

45. Declaration (February 2011) in the matter of the Draft Title V Permit for RRI Energy MidAtlantic Power Holdings LLC Shawville Generating Station (Pennsylvania), ID No. 17-00001 on behalf of the Sierra Club.

46. Expert Report (March 2011), Rebuttal Expert Report (June 2011) on behalf of the United States in *United States of America v. Cemex, Inc.*, Civil Action No. 09-cv-00019-MSK-MEH (District of Colorado).

47. Declaration (April 2011) and Expert Report (July 16, 2012) in the matter of the Lower Colorado River Authority (LCRA)'s Fayette (Sam Seymour) Power Plant on behalf of the Texas Campaign for the Environment. *Texas Campaign for the Environment v. Lower Colorado River Authority*, Civil Action No. 4:11-cv-00791 (Southern District of Texas, Houston Division).

48. Declaration (June 2011) on behalf of the Plaintiffs MYTAPN in the matter of Microsoft-Yes, Toxic Air Pollution-No (MYTAPN) v. State of Washington, Department of Ecology and Microsoft Corporation Columbia Data Center to the Pollution Control Hearings Board, State of Washington, Matter No. PCHB No. 10-162.

49. Expert Report (June 2011) on behalf of the New Hampshire Sierra Club at the State of New Hampshire Public Utilities Commission, Docket No. 10-261 – the 2010 Least Cost Integrated Resource Plan (LCIRP) submitted by the Public Service Company of New Hampshire (re. Merrimack Station Units 1 and 2).

50. Declaration (August 2011) in the matter of the Sandy Creek Energy Associates L.P. Sandy Creek Power Plant on behalf of Sierra Club and Public Citizen. *Sierra Club, Inc. and Public Citizen, Inc. v. Sandy Creek Energy Associates, L.P.*, Civil Action No. A-08-CA-648-LY (Western District of Texas, Austin Division).

51. Expert Report (October 2011) on behalf of the Defendants in the matter of *John Quiles and Jeanette Quiles et al. v. Bradford-White Corporation, MTD Products, Inc., Kohler Co., et al.*, Case No. 3:10-cv-747 (TJM/DEP) (Northern District of New York).

52. Declaration (October 2011) on behalf of the Plaintiffs in the matter of *American Nurses Association et. al. (Plaintiffs), v. US EPA (Defendant)*, Case No. 1:08-cv-02198-RMC (US District Court for the District of Columbia).

53. Declaration (February 2012) and Second Declaration (February 2012) in the matter of *Washington Environmental Council and Sierra Club Washington State Chapter v. Washington State Department of Ecology and Western States Petroleum Association*, Case No. 11-417-MJP (Western District of Washington).

54. Expert Report (March 2012) and Supplemental Expert Report (November 2013) in the matter of *Environment Texas Citizen Lobby, Inc and Sierra Club v. ExxonMobil Corporation et al.*, Civil Action No. 4:10-cv-4969 (Southern District of Texas, Houston Division).

55. Declaration (March 2012) in the matter of *Center for Biological Diversity, et al. v. United States Environmental Protection Agency*, Case No. 11-1101 (consolidated with 11-1285, 11-1328 and 11-1336) (US Court of Appeals for the District of Columbia Circuit).

56. Declaration (March 2012) in the matter of *Sierra Club v. The Kansas Department of Health and Environment*, Case No. 11-105,493-AS (Holcomb power plant) (Supreme Court of the State of Kansas).

57. Declaration (March 2012) in the matter of the Las Brisas Energy Center *Environmental Defense Fund et al., v. Texas Commission on Environmental Quality*, Cause No. D-1-GN-11-001364 (District Court of Travis County, Texas, 261st Judicial District).

58. Expert Report (April 2012). Supplemental and Rebuttal Expert Report (July 2012). and Supplemental Rebuttal Expert Report (August 2012) on behalf of the states of New Jersey and Connecticut in the matter of the Portland Power plant *State of New Jersey and State of Connecticut (Intervenor-Plaintiff) v. RRI Energy Mid-Atlantic Power Holdings et al.*, Civil Action No. 07-CV-5298 (JKG) (Eastern District of Pennsylvania).

59. Declaration (April 2012) in the matter of the EPA's EGU MATS Rule, on behalf of the Environmental Integrity Project.

60. Expert Report (August 2012) on behalf of the United States in connection with the Louisiana Generating NSR Case. *United States v. Louisiana Generating, LLC*, 09-CV100-RET-CN (Middle District of Louisiana) – Harm Phase.

61. Declaration (September 2012) in the Matter of the Application of *Energy Answers Incinerator, Inc.* for a Certificate of Public Convenience and Necessity to Construct a 120 MW Generating Facility in Baltimore City, Maryland, before the Public Service Commission of Maryland, Case No. 9199.

62. Expert Report (October 2012) on behalf of the Appellants (Robert Concilus and Leah Humes) in the matter of Robert Concilus and Leah Humes v. Commonwealth of Pennsylvania Department of Environmental Protection and Crawford Renewable Energy, before the Commonwealth of Pennsylvania Environmental Hearing Board, Docket No. 2011-167-R.

63. Expert Report (October 2012), Supplemental Expert Report (January 2013), and Affidavit (June 2013) in the matter of various Environmental Petitioners v. North Carolina DENR/DAQ and Carolinas Cement Company, before the Office of Administrative Hearings, State of North Carolina.

64. Pre-filed Testimony (October 2012) on behalf of No-Sag in the matter of the North Springfield Sustainable Energy Project before the State of Vermont, Public Service Board.

65. Pre-filed Testimony (November 2012) on behalf of Clean Wisconsin in the matter of Application of Wisconsin Public Service Corporation for Authority to Construct and Place in Operation a New Multi-Pollutant Control Technology System (ReACT) for Unit 3 of the Weston Generating Station, before the Public Service Commission of Wisconsin, Docket No. 6690-CE-197.

66. Expert Report (February 2013) on behalf of Petitioners in the matter of Credence Crematory, Cause No. 12-A-J-4538 before the Indiana Office of Environmental Adjudication.

67. Expert Report (April 2013), Rebuttal report (July 2013), and Declarations (October 2013, November 2013) on behalf of the Sierra Club in connection with the Luminant Big Brown Case. *Sierra Club v. Energy Future Holdings Corporation and Luminant Generation Company LLC*, Civil Action No. 6:12-cv-00108-WSS (Western District of Texas, Waco Division).

68. Declaration (April 2013) on behalf of Petitioners in the matter of *Sierra Club, et al., (Petitioners) v Environmental Protection Agency et al. (Resppondents)*, Case No., 13-1112, (Court of Appeals, District of Columbia Circuit).

69. Expert Report (May 2013) and Rebuttal Expert Report (July 2013) on behalf of the Sierra Club in connection with the Luminant Martin Lake Case. *Sierra Club v. Energy Future Holdings Corporation and Luminant Generation Company LLC*, Civil Action No. 5:10-cv-0156-MHS-CMC (Eastern District of Texas, Texarkana Division).

70. Declaration (August 2013) on behalf of A. J. Acosta Company, Inc., in the matter of *A. J. Acosta Company, Inc., v. County of San Bernardino*, Case No. CIVSS803651.

71. Comments (October 2013) on behalf of the Washington Environmental Council and the Sierra Club in the matter of the Washington State Oil Refinery RACT (for Greenhouse Gases), submitted to the Washington State Department of Ecology, the Northwest Clean Air Agency, and the Puget Sound Clean Air Agency.

72. Statement (November 2013) on behalf of various Environmental Organizations in the matter of the Boswell Energy Center (BEC) Unit 4 Environmental Retrofit Project, to the Minnesota Public Utilities Commission, Docket No. E-015/M-12-920.

73. Expert Report (December 2013) on behalf of the United States in *United States of America v. Ameren Missouri*, Civil Action No. 4:11-cv-00077-RWS (Eastern District of Missouri, Eastern Division).

74. Expert Testimony (December 2013) on behalf of the Sierra Club in the matter of Public Service Company of New Hampshire Merrimack Station Scrubber Project and Cost Recovery, Docket No. DE 11-250, to the State of New Hampshire Public Utilities Commission.

75. Expert Report (January 2014) on behalf of Baja, Inc., in *Baja, Inc., v. Automotive Testing and Development Services, Inc. et. al*, Civil Action No. 8:13-CV-02057-GRA (District of South Carolina, Anderson/Greenwood Division).

76. Declaration (March 2014) on behalf of the Center for International Environmental Law, Chesapeake Climate Action Network, Friends of the Earth, Pacific Environment, and the Sierra Club (Plaintiffs) in the matter of *Plaintiffs v. the Export-Import Bank (Ex-Im Bank) of the United States*, Civil Action No. 13-1820 RC (District Court for the District of Columbia).

77. Declaration (April 2014) on behalf of Respondent-Intervenors in the matter of *Mexichem Specialty Resins Inc., et al., (Petitioners) v Environmental Protection Agency et al.*, Case No., 12-1260 (and Consolidated Case Nos. 12-1263, 12-1265, 12-1266, and 12-1267), (Court of Appeals, District of Columbia Circuit).

78. Direct Prefiled Testimony (June 2014) on behalf of the Michigan Environmental Council and the Sierra Club in the matter of the Application of DTE Electric Company for Authority to Implement a Power Supply Cost Recovery (PSCR) Plan in its Rate Schedules for 2014 Metered Jurisdictional Sales of Electricity, Case No. U-17319 (Michigan Public Service Commission).

79. Expert Report (June 2014) on behalf of ECM Biofilms in the matter of the US Federal Trade Commission (FTC) v. ECM Biofilms (FTC Docket #9358).

80. Direct Prefiled Testimony (August 2014) on behalf of the Michigan Environmental Council and the Sierra Club in the matter of the Application of Consumers Energy Company for Authority to Implement a Power Supply Cost Recovery (PSCR) Plan in its Rate Schedules for 2014 Metered Jurisdictional Sales of Electricity, Case No. U-17317 (Michigan Public Service Commission).

81. Declaration (July 2014) on behalf of Public Health Intervenors in the matter of *EME Homer City Generation v. US EPA* (Case No. 11-1302 and consolidated cases) relating to the lifting of the stay entered by the Court on December 30, 2011 (US Court of Appeals for the District of Columbia).

82. Expert Report (September 2014), Rebuttal Expert Report (December 2014) and Supplemental Expert Report (March 2015) on behalf of Plaintiffs in the matter of *Sierra Club and Montana Environmental Information Center (Plaintiffs) v. PPL Montana LLC, Avista Corporation, Puget Sound Energy, Portland General Electric Company, Northwestern Corporation, and Pacificorp (Defendants)*. Civil Action No. CV 13-32-BLG-DLC-JCL (US District Court for the District of Montana, Billings Division).

83. Expert Report (November 2014) on behalf of Niagara County, the Town of Lewiston, and the Villages of Lewiston and Youngstown in the matter of CWM Chemical Services, LLC New York State Department of Environmental Conservation (NYSDEC) Permit Application Nos.: 9-2934-00022/00225, 9-2934-00022/00231, 9-2934-00022/00232, and 9-2934-00022/00249 (pending).

84. *Declaration (January 2015) relating to Startup/Shutdown in the MATS Rule (EPA Docket ID No. EPA-HQ-OAR-2009-0234) on behalf of the Environmental Integrity Project.*

85. Pre-filed Direct Testimony (March 2015), Supplemental Testimony (May 2015), and Surrebuttal Testimony (December 2015) on behalf of Friends of the Columbia Gorge in the matter of the Application for a Site Certificate for the Troutdale Energy Center before the Oregon Energy Facility Siting Council.

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86. Brief of Amici Curiae Experts in Air Pollution Control and Air Quality Regulation in Support of the Respondents, On Writs of Certiorari to the US Court of Appeals for the District of Columbia, No. 14-46, 47, 48. *Michigan et. al., (Petitioners) v. EPA et. al., Utility Air Regulatory Group (Petitioners) v. EPA et. al., National Mining Association et. al., (Petitioner) v. EPA et. al.,* (Supreme Court of the United States).

87. Expert Report (March 2015) and Rebuttal Expert Report (January 2016) on behalf of Plaintiffs in the matter of *Conservation Law Foundation v. Broadrock Gas Services LLC, Rhode Island LFG GENCO LLC, and Rhode Island Resource Recovery Corporation (Defendants)*, Civil Action No. 1:13-cv-00777-M-PAS (US District Court for the District of Rhode Island).

88. Declaration (April 2015) relating to various Technical Corrections for the MATS Rule (EPA Docket ID No. EPA-HQ-OAR-2009-0234) on behalf of the Environmental Integrity Project.

89. Direct Prefiled Testimony (May 2015) on behalf of the Michigan Environmental Council, the Natural Resources Defense Council, and the Sierra Club in the matter of the Application of DTE Electric Company for Authority to Increase its Rates, Amend its Rate Schedules and Rules Governing the Distribution and Supply of Electric Energy and for Miscellaneous Accounting Authority, Case No. U-17767 (Michigan Public Service Commission).

90. Expert Report (July 2015) and Rebuttal Expert Report (July 2015) on behalf of Plaintiffs in the matter of *Northwest Environmental Defense Center et. al., v. Cascade Kelly Holdings LLC, d/b/a Columbia Pacific Bio-Refinery, and Global Partners LP (Defendants)*, Civil Action No. 3:14-cv-01059-SI (US District Court for the District of Oregon, Portland Division).

91. Declaration (August 2015, Docket No. 1570376) in support of "Opposition of Respondent-Intervenors American Lung Association, et. al., to Tri-State Generation's Emergency Motion;" Declaration (September 2015, Docket No. 1574820) in support of "Joint Motion of the State, Local Government, and Public Health Respondent-Intervenors for Remand Without Vacatur;" Declaration (October 2015) in support of "Joint Motion of the State, Local Government, and Public Health Respondent-Intervenors to State and Certain Industry Petitioners' Motion to Govern, *White Stallion Energy Center, LLC v. US EPA*, Case No. 12-1100 (US Court of Appeals for the District of Columbia).

92. Declaration (September 2015) in support of the Draft Title V Permit for Dickerson Generating Station (Proposed Permit No 24-031-0019) on behalf of the Environmental Integrity Project.

93. Expert Report (Liability Phase) (December 2015) and Rebuttal Expert Report (February 2016) on behalf of Plaintiffs in the matter of *Natural Resources Defense Council, Inc., Sierra Club, Inc., Environmental Law and Policy Center, and Respiratory Health Association v. Illinois Power Resources LLC, and Illinois Power Resources Generating LLC (Defendants)*, Civil Action No. 1:13-cv-01181 (US District Court for the Central District of Illinois, Peoria Division).

94. Declaration (December 2015) in support of the Petition to Object to the Title V Permit for Morgantown Generating Station (Proposed Permit No 24-017-0014) on behalf of the Environmental Integrity Project.

95. Expert Report (November 2015) on behalf of Appellants in the matter of *Sierra Club, et al. v. Craig W. Butler, Director of Ohio Environmental Protection Agency et al.*, ERAC Case No. 14-256814.

96. Affidavit (January 2016) on behalf of Bridgewatch Detroit in the matter of *Bridgewatch Detroit v. Waterfront Petroleum Terminal Co., and Waterfront Terminal Holdings, LLC.*, in the Circuit Court for the County of Wayne, State of Michigan.

97. Expert Report (February 2016) and Rebuttal Expert Report (July 2016) on behalf of the challengers in the matter of the Delaware Riverkeeper Network, Clean Air Council, et. al., vs. Commonwealth of Pennsylvania Department of Environmental Protection and R. E. Gas Development LLC regarding the Geyer well site before the Pennsylvania Environmental Hearing Board.

98. Direct Testimony (May 2016) in the matter of Tesoro Savage LLC Vancouver Energy Distribution Terminal, Case No. 15-001 before the State of Washington Energy Facility Site Evaluation Council.

99. Declaration (June 2016) relating to deficiencies in air quality analysis for the proposed Millenium Bulk Terminal, Port of Longview, Washington.

100. Declaration (December 2016) relating to EPA's refusal to set limits on PM emissions from coal-fired power plants that reflect pollution reductions achievable with fabric filters on behalf of Environmental Integrity Project, Clean Air Council, Chesapeake Climate Action Network, Downwinders at Risk represented by Earthjustice in the matter of *ARIPPA v EPA, Case No. 15-1180.* (D.C. Circuit Court of Appeals).

101. Expert Report (January 2017) on the Environmental Impacts Analysis associated with the Huntley and Huntley Poseidon Well Pad on behalf citizens in the matter of the special exception use Zoning Hearing Board of Penn Township, Westmoreland County, Pennsylvania.

102. Expert Report (January 2017) on the Environmental Impacts Analysis associated with the Apex Energy Backus Well Pad on behalf citizens in the matter of the special exception use Zoning Hearing Board of Penn Township, Westmoreland County, Pennsylvania.

103. Expert Report (January 2017) on the Environmental Impacts Analysis associated with the Apex Energy Drakulic Well Pad on behalf citizens in the matter of the special exception use Zoning Hearing Board of Penn Township, Westmoreland County, Pennsylvania.

104. Expert Report (January 2017) on the Environmental Impacts Analysis associated with the Apex Energy Deutsch Well Pad on behalf citizens in the matter of the special exception use Zoning Hearing Board of Penn Township, Westmoreland County, Pennsylvania.

105. Affidavit (February 2017) pertaining to deficiencies water discharge compliance issues at the Wood River Refinery in the matter of *People of the State of Illinois (Plaintiff) v. Phillips 66 Company, ConocoPhillips Company, WRB Refining LP (Defendants)*, Case No. 16-CH-656, (Circuit Court for the Third Judicial Circuit, Madison County, Illinois).

106. Expert Report (March 2017) on behalf of the Plaintiff pertaining to non-degradation analysis for waste water discharges from a power plant in the matter of *Sierra Club (Plaintiff) v. Pennsylvania Department of Environmental Protection (PADEP) and Lackawanna Energy Center*, Docket No. 2016-047-L (consolidated), (Pennsylvania Environmental Hearing Board).

107. Expert Report (March 2017) on behalf of the Plaintiff pertaining to air emissions from the Heritage incinerator in East Liverpool, Ohio in the matter of *Save our County (Plaintiff) v. Heritage Thermal Services, Inc. (Defendant), Case No. 4:16-CV-1544-BYP*, (US District Court for the Northern District of Ohio, Eastern Division).

108. Rebuttal Expert Report (June 2017) on behalf of Plaintiffs in the matter of *Casey Voight and Julie Voight (Plaintiffs) v Coyote Creek Mining Company LLC (Defendant)*, Civil Action No. 1:15-CV-00109 (US District Court for the District of North Dakota, Western Division).

109. Expert Affidavit (August 2017) and Penalty/Remedy Expert Affidavit (October 2017) on behalf of Plaintiff in the matter of *Wildearth Guardians (Plaintiff) v Colorado Springs Utility Board (Defendant,)* Civil Action No. 1:15-cv-00357-CMA-CBS (US District Court for the District of Colorado).

110. Expert Report (August 2017) on behalf of Appellant in the matter of *Patricia Ann Troiano (Appellant) v. Upper Burrell Township Zoning Hearing Board (Appellee)*, Court of Common Pleas of Westmoreland County, Pennsylvania, Civil Division.

111. Expert Report (October 2017), Supplemental Expert Report (October 2017), and Rebuttal Expert Report (November 2017) on behalf of Defendant in the matter of *Oakland Bulk and Oversized Terminal (Plaintiff) v City of Oakland (Defendant,)* Civil Action No. 3:16-cv-07014-VC (US District Court for the Northern District of California, San Francisco Division).

112. Declaration (December 2017) on behalf of the Environmental Integrity Project in the matter of permit issuance for ATI Flat Rolled Products Holdings, Breckenridge, PA to the Allegheny County Health Department.

113. Expert Report (Harm Phase) (January 2018), Rebuttal Expert Report (Harm Phase) (May 2018) and Supplemental Expert Report (Harm Phase) (April 2019) on behalf of Plaintiffs in the matter of *Natural Resources Defense Council, Inc., Sierra Club, Inc., and Respiratory Health Association v. Illinois Power Resources LLC, and Illinois Power Resources Generating LLC (Defendants)*, Civil Action No. 1:13-cv-01181 (US District Court for the Central District of Illinois, Peoria Division).

114. Declaration (February 2018) on behalf of the Chesapeake Bay Foundation, et. al., in the matter of the Section 126 Petition filed by the state of Maryland in *State of Maryland v. Pruitt (Defendant)*, Civil Action No. JKB-17-2939 (Consolidated with No. JKB-17-2873) (US District Court for the District of Maryland).

115. Direct Pre-filed Testimony (March 2018) on behalf of the National Parks Conservation Association (NPCA) in the matter of *NPCA v State of Washington, Department of Ecology and BP West Coast Products, LLC*, PCHB No. 17-055 (Pollution Control Hearings Board for the State of Washington.

116. Expert Affidavit (April 2018) and Second Expert Affidavit (May 2018) on behalf of Petitioners in the matter of *Coosa River Basin Initiative and Sierra Club (Petitioners) v State of Georgia Environmental Protection Division, Georgia Department of Natural Resources (Respondent) and Georgia Power Company (Intervenor/Respondent)*, Docket Nos: 1825406-BNR-WW-57-Howells and 1826761-BNR-WW-57-Howells, Office of State Administrative Hearings, State of Georgia.

117. Direct Pre-filed Testimony and Affidavit (December 2018) on behalf of Sierra Club and Texas Campaign for the Environment (Appellants) in the contested case hearing before the Texas State Office of Administrative Hearings in Docket Nos. 582-18-4846, 582-18-4847 (Application of GCGV Asset Holding, LLC for Air Quality Permit Nos. 146425/PSDTX1518 and 146459/PSDTX1520 in San Patricio County, Texas).

118. Expert Report (February 2019) on behalf of Sierra Club in the State of Florida, Division of Administrative Hearings, Case No. 18-2124EPP, Tampa Electric Company Big Bend Unit 1 Modernization Project Power Plant Siting Application No. PA79-12-A2.

119. Declaration (March 2019) on behalf of Earthjustice in the matter of comments on the renewal of the Title V Federal Operating Permit for Valero Houston refinery.

120. Expert Report (March 2019) on behalf of Plaintiffs for Class Certification in the matter of *Resendez et al v Precision Castparts Corporation* in the Circuit Court for the State of Oregon, County of Multnomah, Case No. 16cv16164.

121. Expert Report (June 2019), Affidavit (July 2019) and Rebuttal Expert Report (September 2019) on behalf of Appellants relating to the NPDES permit for the Cheswick power plant in the matter of *Three Rivers Waterkeeper and Sierra Club (Appellants) v. State of Pennsylvania Department of Environmental Protection (Appellee) and NRG Power Midwest (Permittee)*, before the Commonwealth of Pennsylvania Environmental Hearing Board, EHB Docket No. 2018-088-R.

122. Affidavit/Expert Report (August 2019) relating to the appeal of air permits issued to PTTGCA on behalf of Appellants in the matter of *Sierra Club (Appellants) v. Craig Butler, Director, et. al., Ohio EPA (Appellees)* before the State of Ohio Environmental Review Appeals Commission (ERAC), Case Nos. ERAC-19-6988 through -6991.

123. Expert Report (October 2019) relating to the appeal of air permit (Plan Approval) on behalf of Appellants in the matter of *Clean Air Council and Environmental Integrity Project (Appellants) v. Commonwealth of Pennsylvania Department of Environmental Protection and Sunoco Partners Marketing and Terminals L.P.*, before the Commonwealth of Pennsylvania Environmental Hearing Board, EHB Docket No. 2018-057-L.

124. Expert Report (December 2019), Affidavit (March 2020), Supplemental Expert Report (July 2020), and Declaration (February 2021) on behalf of Earthjustice in the matter of *Objection to the Issuance of PSD/NSR and Title V permits for Riverview Energy Corporation*, Dale, Indiana, before the Indiana Office of Environmental Adjudication, Cause No. 19-A-J-5073.

125. Affidavit (December 2019) on behalf of Plaintiff-Intervenor (Surfrider Foundation) in the matter of *United States and the State of Indiana (Plaintiffs), Surfrider Foundation (Plaintiff-Intervenor), and City of Chicago (Plaintiff-Intervenor) v. United States Steel Corporation (Defendant)*, Civil Action No. 2:18-cv-00127 (US District Court for the Northern District of Indiana, Hammond Division).

126. Declarations (January 2020, February 2020, May 2020, July 2020, and August 2020) and Pre-filed Testimony (April 2021) in support of Petitioner's Motion for Stay of PSCAA NOC Order of Approval No. 11386 in the matter of the *Puyallup Tribe of Indians v. Puget Sound Clean Air Agency (PSCAA) and Puget Sound Energy (PSE)*, before the State of Washington Pollution Control Hearings Board, PCHB No. P19-088.

127. Expert Report (April 2020) on behalf of the plaintiff in the matter of Orion Engineered Carbons, GmbH (Plaintiff) vs. Evonik Operations, GmbH (formerly Evonik Degussa GmbH) (Respondent), before the German Arbitration Institute, Case No. DIS-SV-2019-00216.

128. Expert Independent Evaluation Report (June 2020) for *PacifiCorp's Decommissioning Costs Study Reports dated January 15, 2020 and March 13, 2020 relating to the closures of the Hunter, Huntington, Dave Johnston, Jim Bridger, Naughton, Wyodak, Hayden, and Colstrip (Units 3&4) plants*, prepared for the Oregon Public Utility Commission (Oregon PUC).

129. Direct Pre-filed Testimony (July 2020) on behalf of the Sierra Club in the matter of *the Application of the Ohio State University for a certificate of Environmental Compatibility and Public Need to Construct a Combined Heat and Power Facility in Franklin County, Ohio*, before the Ohio Power Siting Board, Case No. 19-1641-EL-BGN.

130. Expert Report (August 2020) and Rebuttal Expert Report (September 2020) on behalf of WildEarth Guardians (petitioners) in the matter of *the Appeals of the Air Quality Permit No. 7482-M1 Issued to 3 Bear Delaware Operating – NM LLC (EIB No. 20-21(A) and Registrations Nos. 8729, 8730, and 8733 under General Construction Permit for Oil and Gas Facilities (EIB No. 20-33 (A)*, before the State of New Mexico, Environmental Improvement Board.

131. Expert Report (July 2020) on the *Initial Economic Impact Analysis (EIA) for A Proposal To* Regulate *NOx Emissions from Natural Gas Fired Rich-Burn Natural Gas Reciprocating Internal Combustion Engines (RICE) Greater Than 100 Horsepower* prepared on behalf of Earthjustice and the National Parks Conservation Association in the matter of Regulation Number 7, Alternate Rules before the Colorado Air Quality Control Commission.

132. Expert Report (August 2020) and Supplemental Expert Report (February 2021) on the Potential Remedies to Avoid Adverse Thermal Impacts from the Merrimack Station on behalf of Plaintiffs in the matter of *Sierra Club Inc. and the* Conservation *Law Foundation (Plaintiffs) v. Granite Shore Power, LLC et. al., (Defendants)*, Civil Action No. 19-cv-216-JL (US District Court for the District of New Hampshire.)

133. Expert Report (August 2020) and Supplemental Expert Report (December 2020) on behalf of Plaintiffs in the matter of *PennEnvironment Inc., and Clean Air Council (Plaintiffs) and Allegheny County Health Department (Plaintiff-Intervenor) v. United States Steel Corporation (Defendant)*, Civil Action No. 2-19-cv-00484-MJH (US District Court for the Western District of Pennsylvania.)

134. Pre-filed Direct Testimony (October 2020) and Sur-rebuttal Testimony (November 2020) on behalf of petitioners (Ten Persons Group, including citizens, the Town of Braintree, the Town of Hingham, and the City of Quincy) in the matter of Algonquin Gas Transmission LLC, Weymouth MA, No. X266786 Air Quality Plan Approval, before the Commonwealth of Massachusetts, Department of Environmental Protection, the Office of Appeals and Dispute Resolution, OADR Docket Nos. 2019-008, 2019-009, 2019010, 2019-011, 2019-012 and 2019-013.

135. Expert Report (November 2020) on behalf of Protect PT in the matter of *Protect PT v. Commonwealth of Pennsylvania Department of Environmental Protection and Apex Energy (PA) LLC*, before the Commonwealth of Pennsylvania Environmental Hearing Board, Docket No. 2018-080-R (consolidated with 2019-101-R)(the "Drakulic Appeal").

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136. Expert Report (December 2020) on behalf of Plaintiffs in the matter of *Sierra Club Inc. (Plaintiff) v. GenOn Power Midwest LP (Defendants)*, Civil Action No. 2-19-cv-01284-WSS (US District Court for the Western District of Pennsylvania.)

137. Pre-filed Testimony (January 2021) on behalf of the Plaintiffs (Shrimpers and Fishermen of the Rio Grande Valley represented by Texas RioGrande Legal Aid, Inc.) in the matter of the Appeal of Texas Commission on Environmental Quality (TCEQ) Permit Nos. 147681, PSDTX1522, GHGPSDTX172 for the Jupiter Brownsville Heavy Condensate Upgrader Facility, Cameron County, before the Texas State Office of Administrative Hearings, SOAH Docket No. 582-21-0111, TCEQ Docket No. 2020-1080-AIR.

138. Expert Report (June 2021) and Declarations (May 2021 and June 2021) on behalf of Plaintiffs in the matter of *Sierra Club (Plaintiff) v. Woodville Pellets, LLC (Defendant)*, Civil Action No. 9:20-cv-00178-MJT (US District Court for the Eastern District of Texas, Lufkin Division.)

139. Declaration (July 2021) on behalf of Plaintiffs in the matter of *Stephanie Mackey and Nick Migliore, on behalf of themselves and all others similarly situated (Plaintiffs) v. Chemtool Inc. and Lubrizol Corporation (Defendants)*, Case No. 2021-L-0000165, State of Illinois, Circuit Court of the 17th Judicial Circuit, Winnebago County.

140. Expert Report (April 2021) and Sur-Rebuttal Report (June 2021) on behalf of the Plaintiffs in the matter of *Modern Holdings, LLC, et al. (Plaintiffs) v. Corning Inc., et al. (Defendants)*, Civil Action No. 5:13-cv-00405-GFVT. (US District Court for the Eastern District of Kentucky, Central Division at Lexington).

141. Expert Witness Disclosure (June 2021) on behalf of the Plaintiffs in the matter of *Jay Burdick, et. al., (Plaintiffs) v. Tanoga Inc. (d/b/a Taconic) (Defendant)*, Index No. 253835, (State of New York Supreme Court, County of Rensselaer).

142. Expert Report (June 2021) on behalf of Appellants in the matter of *PennEnvironment and Earthworks (Appellants) v. Commonwealth of Pennsylvania Department of Environmental Protection (Appellee) and MarkWest Liberty Midstream and resource, LLC (Permittee)*, before the Commonwealth of Pennsylvania Environmental Hearing Board, EHB Docket No. 2020-002-R.

143. Expert Reports (March 2021 and May 2021) regarding the Aries Newark LLC Sludge Processing Facility, Application No. CPB 20-74, Central Planning Board, City of Newark, New Jersey.

144. Expert Report (April 2021) for *Charles Johnson Jr. (Plaintiff) v. BP Exploration and Production Inc., et. al. (Defendant)*, Civil Action No. 2:20-CV-01329. (US District Court for the Eastern District of Louisiana, New Orleans Division).

145. Expert Report (April 2021) for *Floyd Ruffin (Plaintiff), v. BP Exploration and Production Inc., et. al. (Defendant)*, Civil Action No. 2:20-cv-00334-CJB-JCW (US District Court for the Eastern District of Louisiana, New Orleans Division).

146. Expert Report (May 2021) for *Clifford Osmer (Plaintiff) v. BP Exploration and Production Inc., et. al., (Defendants)* related to No. 2:19-CV-10331 (US District Court for the Eastern District of Louisiana. New Orleans Division).

147. Expert Report (June 2021) for *Antonia Saavedra-Vargas (Plaintiff) v. BP Exploration and Production Inc., et. al. (Defendant)*, Civil Action No. 2:18-CV-11461 (US District Court for the Eastern District of Louisiana, New Orleans Division).

148. Affidavit (June 2021) for Lourdes Rubi in the matter of *Lourdes Rubi (Plaintiff) v. BP Exploration and Production Inc., et. al., (Defendants)*, related to 12-968 BELO in MDL No. 2179 (US District Court for the Eastern District of Louisiana, New Orleans Division).

149. Expert Report (May 2021) for *James Noel (Plaintiff) v. BP Exploration and Production Inc., et. al. (Defendant)*, Civil Action No. 1:19-CV-00694 (US District Court for the Southern District of Alabama, Mobile Division).

150. Expert Report (June 2021) for *Wallace Smitht (Plaintiff) v. BP Exploration and Production Inc., et. al. (Defendant)*, Civil Action No. 2:19-CV-12880 (US District Court for the Eastern District of Louisiana, New Orleans Division).

C. Occasions where Dr. Sahu has provided oral testimony in depositions, at trial or in similar proceedings include the following:

151. Deposition on behalf of Rocky Mountain Steel Mills, Inc. located in Pueblo, Colorado – dealing with the manufacture of steel in mini-mills including methods of air pollution control and BACT in steel mini-mills and opacity issues at this steel mini-mill.

152. Trial Testimony (February 2002) on behalf of Rocky Mountain Steel Mills, Inc. in Denver District Court.

153. Trial Testimony (February 2003) on behalf of the United States in the Ohio Edison NSR Cases, *United States, et al. v. Ohio Edison Co., et al.*, C2-99-1181 (Southern District of Ohio).

154. Trial Testimony (June 2003) on behalf of the United States in the Illinois Power NSR Case, *United States v. Illinois Power Co., et al.*, 99-833-MJR (Southern District of Illinois).

155. Deposition (10/20/2005) on behalf of the United States in connection with the Cinergy NSR Case. *United States, et* al. *v. Cinergy Corp., et al.*, IP 99-1693-C-M/S (Southern District of Indiana).

156. Oral Testimony (August 2006) on behalf of the Appalachian Center for the Economy and the Environment re. the Western Greenbrier plant, WV before the West Virginia DEP.

157. Oral Testimony (May 2007) on behalf of various Montana petitioners (Citizens Awareness Network (CAN), Women's Voices for the Earth (WVE) and the Clark Fork Coalition (CFC)) re. the Thompson River Cogeneration plant before the Montana Board of Environmental Review.

158. Oral Testimony (October 2007) on behalf of the Sierra Club re. the Sevier Power Plant before the Utah Air Quality Board.

159. Oral Testimony (August 2008) on behalf of the Sierra Club and Clean Water re. Big Stone Unit II before the South Dakota Board of Minerals and the Environment.

160. Oral Testimony (February 2009) on behalf of the Sierra Club and the Southern Environmental Law Center re. Santee Cooper Pee Dee units before the South Carolina Board of Health and Environmental Control.

161. Oral Testimony (February 2009) on behalf of the Sierra Club and the Environmental Integrity Project re. NRG Limestone Unit 3 before the Texas State Office of Administrative Hearings (SOAH) Administrative Law Judges.

162. Deposition (July 2009) on behalf of MTD Products, Inc., in the matter of *Alice Holmes and Vernon Holmes v. Home Depot USA, Inc., et al.*

163. Deposition (October 2009) on behalf of Environmental Defense and others, in the matter of challenges to the proposed Coleto Creek coal fired power plant project at the Texas State Office of Administrative Hearings (SOAH).

164. Deposition (October 2009) on behalf of Environmental Defense, in the matter of permit challenges to the proposed Las Brisas coal fired power plant project at the Texas State Office of Administrative Hearings (SOAH).

165. Deposition (October 2009) on behalf of the Sierra Club, in the matter of challenges to the proposed Medicine Bow Fuel and Power IGL plant in Cheyenne, Wyoming.

166. Deposition (October 2009) on behalf of Environmental Defense and others, in the matter of challenges to the proposed Tenaska coal fired power plant project at the Texas State Office of Administrative Hearings (SOAH). (April 2010).

167. Oral Testimony (November 2009) on behalf of the Environmental Defense Fund re. the Las Brisas Energy Center before the Texas State Office of Administrative Hearings (SOAH) Administrative Law Judges.

168. Deposition (December 2009) on behalf of Environmental Defense and others, in the matter of challenges to the proposed White Stallion Energy Center coal fired power plant project at the Texas State Office of Administrative Hearings (SOAH).

169. Oral Testimony (February 2010) on behalf of the Environmental Defense Fund re. the White Stallion Energy Center before the Texas State Office of Administrative Hearings (SOAH) Administrative Law Judges.

170. Deposition (June 2010) on behalf of the United States in connection with the Alabama Power Company NSR Case. *United States v. Alabama Power Company*, CV-01-HS-152-S (Northern District of Alabama, Southern Division).

171. Trial Testimony (September 2010) on behalf of Commonwealth of Pennsylvania – Dept. of Environmental Protection, State of Connecticut, State of New York, State of Maryland, and State of New Jersey (Plaintiffs) in connection with the Allegheny Energy NSR Case in US District Court in the Western District of Pennsylvania. *Plaintiffs v. Allegheny Energy Inc., et al.*, 2:05cv0885 (Western District of Pennsylvania).

172. Oral Direct and Rebuttal Testimony (September 2010) on behalf of Fall-Line Alliance for a Clean Environment and others in the matter of the PSD Air Permit for Plant Washington issued by Georgia DNR at the Office of State Administrative Hearing, State of Georgia (OSAH-BNR-AQ-1031707-98-WALKER).

173. Oral Testimony (September 2010) on behalf of the State of New Mexico Environment Department in the matter of Proposed Regulation 20.2.350 NMAC – *Greenhouse Gas Cap and Trade Provisions*, No. EIB 10-04 (R), to the State of New Mexico, Environmental Improvement Board.

174. Oral Testimony (October 2010) on behalf of the Environmental Defense Fund re. the Las Brisas Energy Center before the Texas State Office of Administrative Hearings (SOAH) Administrative Law Judges.

175. Oral Testimony (November 2010) regarding BART for PSCo Hayden, CSU Martin Drake units before the Colorado Air Quality Commission on behalf of the Coalition of Environmental Organizations.

176. Oral Testimony (December 2010) regarding BART for TriState Craig Units, CSU Nixon Unit, and PRPA Rawhide Unit) before the Colorado Air Quality Commission on behalf of the Coalition of Environmental Organizations.

177. Deposition (December 2010) on behalf of the United States in connection with the Louisiana Generating NSR Case. *United States v. Louisiana Generating, LLC*, 09-CV100-RET-CN (Middle District of Louisiana).

178. Deposition (February 2011 and January 2012) on behalf of Wild Earth Guardians in the matter of opacity exceedances and monitor downtime at the Public Service Company of Colorado (Xcel)'s Cherokee power plant. No. 09-cv-1862 (D. Colo.).

179. Oral Testimony (February 2011) to the Georgia Office of State Administrative Hearings (OSAH) in the matter of Minor Source HAPs status for the proposed Longleaf Energy Associates power plant (OSAH-BNR-AQ-1115157-60-HOWELLS) on behalf of the Friends of the Chattahoochee and the Sierra Club).

180. Deposition (August 2011) on behalf of the United States in *United States of America v. Cemex, Inc.*, Civil Action No. 09-cv-00019-MSK-MEH (District of Colorado).

181. Deposition (July 2011) and Oral Testimony at Hearing (February 2012) on behalf of the Plaintiffs MYTAPN in the matter of Microsoft-Yes, Toxic Air Pollution-No (MYTAPN) v. State of Washington, Department of Ecology and Microsoft Corporation Columbia Data Center to the Pollution Control Hearings Board, State of Washington, Matter No. PCHB No. 10-162.

182. Oral Testimony at Hearing (March 2012) on behalf of the United States in connection with the Louisiana Generating NSR Case. *United States v. Louisiana Generating, LLC*, 09-CV100-RET-CN (Middle District of Louisiana).

183. Oral Testimony at Hearing (April 2012) on behalf of the New Hampshire Sierra Club at the State of New Hampshire Public Utilities Commission, Docket No. 10-261 – the 2010 Least Cost Integrated Resource Plan (LCIRP) submitted by the Public Service Company of New Hampshire (re. Merrimack Station Units 1 and 2).

184. Oral Testimony at Hearing (November 2012) on behalf of Clean Wisconsin in the matter of Application of Wisconsin Public Service Corporation for Authority to Construct and Place in Operation a New Multi-Pollutant Control Technology System (ReACT) for Unit 3 of the Weston Generating Station, before the Public Service Commission of Wisconsin, Docket No. 6690-CE-197.

185. Deposition (March 2013) in the matter of various Environmental Petitioners v. North Carolina DENR/DAQ and Carolinas Cement Company, before the Office of Administrative Hearings, State of North Carolina.

186. Deposition (August 2013) on behalf of the Sierra Club in connection with the Luminant Big Brown Case. *Sierra Club v. Energy Future Holdings Corporation and Luminant Generation Company LLC*, Civil Action No. 6:12-cv-00108-WSS (Western District of Texas, Waco Division).

187. Deposition (August 2013) on behalf of the Sierra Club in connection with the Luminant Martin Lake Case. *Sierra Club v. Energy Future Holdings Corporation and Luminant Generation Company LLC*, Civil Action No. 5:10-cv-0156-MHS-CMC (Eastern District of Texas, Texarkana Division).

188. Deposition (February 2014) on behalf of the United States in *United States of America v. Ameren Missouri*, Civil Action No. 4:11-cv-00077-RWS (Eastern District of Missouri, Eastern Division).

189. Trial Testimony (February 2014) in the matter of *Environment Texas Citizen Lobby, Inc and Sierra Club v. ExxonMobil Corporation et al.*, Civil Action No. 4:10-cv-4969 (Southern District of Texas, Houston Division).

190. Trial Testimony (February 2014) on behalf of the Sierra Club in connection with the Luminant Big Brown Case. *Sierra Club v. Energy Future Holdings Corporation and Luminant Generation Company LLC*, Civil Action No. 6:12-cv-00108-WSS (Western District of Texas, Waco Division).

191. Deposition (June 2014) and Trial (August 2014) on behalf of ECM Biofilms in the matter of the *US Federal Trade Commission (FTC) v. ECM Biofilms* (FTC Docket #9358).

192. Deposition (February 2015) on behalf of Plaintiffs in the matter of *Sierra Club and Montana Environmental Information Center (Plaintiffs) v. PPL Montana LLC, Avista Corporation, Puget Sound Energy, Portland General Electric Company, Northwestern Corporation, and Pacificorp (Defendants)*, Civil Action No. CV 13-32-BLG-DLC-JCL (US District Court for the District of Montana, Billings Division).

193. Oral Testimony at Hearing (April 2015) on behalf of Niagara County, the Town of Lewiston, and the Villages of Lewiston and Youngstown in the matter of CWM Chemical Services, LLC New York State Department of Environmental Conservation (NYSDEC) Permit Application Nos.: 9-2934-00022/00225, 9-2934-00022/00231, 9-2934-00022/00232, and 9-2934-00022/00249 (pending).

194. Deposition (August 2015) on behalf of Plaintiff in the matter of *Conservation Law Foundation (Plaintiff) v. Broadrock Gas Services LLC, Rhode Island LFG GENCO LLC, and Rhode Island Resource Recovery Corporation (Defendants)*, Civil Action No. 1:13-cv-00777-M-PAS (US District Court for the District of Rhode Island).

195. Testimony at Hearing (August 2015) on behalf of the Sierra Club in the matter of *Amendments to 35 Illinois Administrative Code Parts 214, 217, and 225* before the Illinois Pollution Control Board, R15-21.

196. Deposition (May 2015) on behalf of Plaintiffs in the matter of *Northwest Environmental Defense Center et. al., (Plaintiffs) v. Cascade Kelly Holdings LLC, d/b/a Columbia Pacific Bio-Refinery, and Global Partners LP (Defendants)*, Civil Action No. 3:14-cv-01059-SI (US District Court for the District of Oregon, Portland Division).

197. Trial Testimony (October 2015) on behalf of Plaintiffs in the matter of *Northwest Environmental Defense Center et. al., (Plaintiffs) v. Cascade Kelly Holdings LLC, d/b/a Columbia Pacific Bio-Refinery, and Global Partners LP (Defendants)*, Civil Action No. 3:14-cv-01059-SI (US District Court for the District of Oregon, Portland Division).

198. Deposition (April 2016) on behalf of the Plaintiffs in *UNatural Resources Defense Council, Respiratory Health Association, and Sierra Club (Plaintiffs) v. Illinois Power Resources LLC and Illinois Power Resources Generation LLC (Defendants)*, Civil Action No. 1:13-cv-01181 (Central District of Illinois, Peoria Division).

199. Trial Testimony at Hearing (July 2016) in the matter of Tesoro Savage LLC Vancouver Energy Distribution Terminal, Case No. 15-001 before the State of Washington Energy Facility Site Evaluation Council.

200. Trial Testimony (December 2016) on behalf of the challengers in the matter of the Delaware Riverkeeper Network, Clean Air Council, et. al., vs. Commonwealth of Pennsylvania Department of Environmental Protection and R. E. Gas Development LLC regarding the Geyer well site before the Pennsylvania Environmental Hearing Board.

201. Trial Testimony (July-August 2016) on behalf of the United States in *United States of America v. Ameren Missouri*, Civil Action No. 4:11-cv-00077-RWS (Eastern District of Missouri, Eastern Division).

202. Trial Testimony (January 2017) on the Environmental Impacts Analysis associated with the Huntley and Huntley Poseidon Well Pad Hearing on behalf citizens in the matter of the special exception use Zoning Hearing Board of Penn Township, Westmoreland County, Pennsylvania.

203. Trial Testimony (January 2017) on the Environmental Impacts Analysis associated with the Apex energy Backus Well Pad Hearing on behalf citizens in the matter of the special exception use Zoning Hearing Board of Penn Township, Westmoreland County, Pennsylvania.

204. Trial Testimony (January 2017) on the Environmental Impacts Analysis associated with the Apex energy Drakulic Well Pad Hearing on behalf citizens in the matter of the special exception use Zoning Hearing Board of Penn Township, Westmoreland County, Pennsylvania.

205. Trial Testimony (January 2017) on the Environmental Impacts Analysis associated with the Apex energy Deutsch Well Pad Hearing on behalf citizens in the matter of the special exception use Zoning Hearing Board of Penn Township, Westmoreland County, Pennsylvania.

206. Deposition Testimony (July 2017) on behalf of Plaintiffs in the matter of *Casey Voight and Julie Voight v Coyote Creek Mining Company LLC (Defendant)* Civil Action No. 1:15-CV-00109 (US District Court for the District of North Dakota, Western Division).

207. Deposition Testimony (November 2017) on behalf of Defendant in the matter of *Oakland Bulk and Oversized Terminal (Plaintiff) v City of Oakland (Defendant,)* Civil Action No. 3:16-cv-07014-VC (US District Court for the Northern District of California, San Francisco Division).

208. Deposition Testimony (December 2017) on behalf of Plaintiff in the matter of *Wildearth Guardians (Plaintiff) v Colorado Springs Utility Board (Defendant)* Civil Action No. 1:15-cv-00357-CMA-CBS (US District Court for the District of Colorado).

209. Deposition Testimony (January 2018) in the matter of National Parks Conservation Association (NPCA) v. State of Washington Department of Ecology and British Petroleum (BP) before the Washington Pollution Control Hearing Board, Case No. 17-055.

210. Trial Testimony (January 2018) on behalf of Defendant in the matter of *Oakland Bulk and Oversized Terminal (Plaintiff) v City of Oakland (Defendant,)* Civil Action No. 3:16-cv-07014-VC (US District Court for the Northern District of California, San Francisco Division).

211. Trial Testimony (April 2018) on behalf of the National Parks Conservation Association (NPCA) in the matter of NPCA v State of Washington, Department of Ecology and BP West Coast Products, LLC, PCHB No. 17-055 (Pollution Control Hearings Board for the State of Washington.

212. Deposition (June 2018) (harm Phase) on behalf of Plaintiffs in the matter of *Natural Resources Defense Council, Inc., Sierra Club, Inc., and Respiratory Health Association v. Illinois Power Resources LLC, and Illinois Power Resources Generating LLC (Defendants)*, Civil Action No. 1:13-cv-01181 (US District Court for the Central District of Illinois, Peoria Division).

213. Trial Testimony (July 2018) on behalf of Petitioners in the matter of *Coosa River Basin Initiative and Sierra Club (Petitioners) v State of Georgia Environmental Protection Division, Georgia Department of Natural Resources (Respondent) and Georgia Power Company (Intervenor/Respondent)*, Docket Nos: 1825406-BNR-WW-57-Howells and 1826761-BNR-WW-57-Howells, Office of State Administrative Hearings, State of Georgia.

214. Deposition (January 2019) and Trial Testimony (January 2019) on behalf of Sierra Club and Texas Campaign for the Environment (Appellants) in the contested case hearing before the Texas State Office of Administrative Hearings in Docket Nos. 582-18-4846, 582-18-4847 (Application of GCGV Asset Holding, LLC for Air Quality Permit Nos. 146425/PSDTX1518 and 146459/PSDTX1520 in San Patricio County, Texas).

215. Deposition (February 2019) and Trial Testimony (March 2019) on behalf of Sierra Club in the State of Florida, Division of Administrative Hearings, Case No. 18-2124EPP, Tampa Electric Company Big Bend Unit 1 Modernization Project Power Plant Siting Application No. PA79-12-A2.

216. Deposition (June 2019) relating to the appeal of air permits issued to PTTGCA on behalf of Appellants in the matter of *Sierra Club (Appellants) v. Craig Butler, Director, et. al., Ohio EPA (Appellees)* before the State of Ohio Environmental Review Appeals Commission (ERAC), Case Nos. ERAC-19-6988 through -6991.

217. Deposition (September 2019) on behalf of Appellants relating to the NPDES permit for the Cheswick power plant in the matter of *Three Rivers Waterkeeper and Sierra Club (Appellants) v. State of Pennsylvania Department of Environmental Protection (Appellee) and NRG Power Midwest (Permittee)*, before the Commonwealth of Pennsylvania Environmental Hearing Board, EHB Docket No. 2018-088-R.

218. Deposition (December 2019) on behalf of the Plaintiffs in the matter of David Kovac, individually and on behalf of wrongful death class of Irene Kovac v. BP Corporation North America Inc., Circuit Court of Jackson County, Missouri (Independence), Case No. 1816-CV12417.

219. Deposition (February 2020, virtual) and testimony at Hearing (August 2020, virtual) on behalf of Earthjustice in the matter of *Objection to the Issuance of PSD/NSR and Title V permits for Riverview Energy Corporation*, Dale, Indiana, before the Indiana Office of Environmental Adjudication, Cause No. 19-A-J-5073.

220. Hearing (July 14-15, 2020, virtual) on behalf of the Sierra Club in the matter of *the Application of the Ohio State University for a certificate of Environmental Compatibility and Public Need to Construct a Combined Heat and Power Facility in Franklin County, Ohio*, before the Ohio Power Siting Board, Case No. 19-1641-EL-BGN.

221. Hearing (September 2020, virtual) on behalf of WildEarth Guardians (petitioners) in the matter of *the Appeals of the Air Quality Permit No. 7482-M1 Issued to 3 Bear Delaware* Operating *NM LLC (EIB No. 20-21(A) and Registrations Nos. 8729, 8730, and 8733 under General Construction Permit for Oil and Gas Facilities (EIB No. 20-33 (A)*, before the State of New Mexico, Environmental Improvement Board.

222. Deposition (December 2020, March 4-5, 2021, all virtual) and Hearing (April 2021, virtual) in support of Petitioner's Motion for Stay of PSCAA NOC Order of Approval No. 11386 in the matter of the *Puyallup Tribe of Indians v. Puget Sound Clean Air Agency (PSCAA) and Puget Sound Energy (PSE)*, before the State of Washington Pollution Control Hearings Board, PCHB No. P19-088.

223. Hearing (September 2020, virtual) on the *Initial Economic Impact Analysis (EIA) for A Proposal To* Regulate *NOx Emissions from Natural Gas Fired Rich-Burn Natural Gas Reciprocating Internal Combustion Engines (RICE) Greater Than 100 Horsepower* prepared on behalf of Earthjustice and the National Parks Conservation Association in the matter of Regulation Number 7, Alternate Rules before the Colorado Air Quality Control Commission.

224. Deposition (December 2020, virtual and Hearing February 2021, virtual) on behalf of the Plaintiffs (Shrimpers and Fishermen of the Rio Grande Valley represented by Texas RioGrande Legal Aid, Inc.) in the matter of the Appeal of Texas Commission on Environmental Quality (TCEQ) Permit Nos. 147681, PSDTX1522, GHGPSDTX172 for the Jupiter Brownsville Heavy Condensate Upgrader Facility, Cameron County, before the Texas State Office of Administrative Hearings, SOAH Docket No. 582-21-0111, TCEQ Docket No. 2020-1080-AIR.

225. Deposition (January 2021, virtual) on behalf of Plaintiffs in the matter of *PennEnvironment Inc., and Clean Air Council (Plaintiffs) and Allegheny County Health Department (Plaintiff-Intervenor) v. United States Steel Corporation (Defendant)*, Civil Action No. 2-19-cv-00484-MJH (US District Court for the Western District of Pennsylvania.)

226. Deposition (February 2021, virtual) on behalf of Plaintiffs in the matter of *Sierra Club Inc. (Plaintiff) v. GenOn Power Midwest LP (*Defendants*)*, Civil Action No. 2-19-cv-01284-WSS (US District Court for the Western District of Pennsylvania.)

227. Deposition (April 2021, virtual) on the Potential Remedies to Avoid Adverse Thermal Impacts from the Merrimack Station on behalf of Plaintiffs in the matter of *Sierra Club Inc. and the* Conservation *Law Foundation (Plaintiffs) v. Granite Shore Power, LLC et. al., (Defendants)*, Civil Action No. 19-cv-216-JL (US District Court for the District of New Hampshire.)

228. Deposition (June 2021, virtual) on behalf of Plaintiffs in the matter of *Sierra Club (Plaintiff) v. Woodville Pellets, LLC (Defendant)*, Civil Action No. 9:20-cv-00178-MJT (US District Court for the Eastern District of Texas, Lufkin Division).

229. Deposition (June 2021, virtual) on behalf of the Plaintiffs in the matter of *Modern Holdings, LLC, et al. (Plaintiffs) v. Corning Inc., et al. (Defendants)*, Civil Action No. 5:13-cv-00405-GFVT. (US District Court for the Eastern District of Kentucky, Central Division at Lexington).

230. Testimony (June 2021, virtual) regarding the Aries Newark LLC Sludge Processing Facility, Application No. CPB 20-74, Central Planning Board, City of Newark, New Jersey.

Air Products and Chemicals, Inc.
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October 12, 2021

Mr. Davon Collins
Environmental Counsel
United States Postal Service
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NEPA@usps.gov
Document ID-2021-0122-0001

RE: Notice of Availability of Draft Environmental Impact Statement for Purchase of Next Generation Delivery Vehicles

Dear Mr. Collins,

Air Products appreciates the opportunity to provide comments on the U.S. Postal Service's (USPS) Draft Environmental Impact Statement for Purchase of Next Generation Delivery Vehicles (NGDV).

Air Products is a world leading supplier of hydrogen and hydrogen mobility solutions with over 60 years of experience. The Company's technologies are used in over 1.5 million refueling operations annually, across 20 countries and over 250 projects. In California, the primary market for hydrogen fuel cell electric vehicles (FCEV) in the United States, Air Products:

- operates 9 hydrogen productions plants – Sacramento, Wilmington, Carson, Martinez and Torrance – and approximately 30 miles of hydrogen pipeline to support the petroleum refining industry;
- supplies 80% of the hydrogen for the mobility market in California; and
- operates 6 retail light-duty hydrogen refueling stations and the heavy-duty transit bus refueling station for the Orange County Transportation Authority.

Air Products has also announced a $5 billion green hydrogen project, which will come online by 2025 and provide renewable hydrogen on a global scale. We have additionally committed to investing $2 billion in fueling infrastructure to bring this fuel to market to power buses, medium and heavy-duty trucks, and other applications. We look forward to bringing a portion of that investment, and green hydrogen, to markets across the United States.

Fuel cell technologies and hydrogen energy are being increasingly viewed as essential decarbonization options across the United States and around the world for a wide range of sectors, including transportation of goods and people. Fuel cell electric vehicles use fuel cells to generate electricity onboard through an electrochemical reaction of hydrogen, not combustion. The light-duty fuel cell electric vehicles on the road today are capable of traveling 300 to 400 miles on a tank of fuel, with refueling in just three to five minutes. Fuel cell electric vehicle transportation is showing great promise for the medium-duty and delivery van market in particular due to their long-range, fast refueling, and scalability – allowing for smooth operations for fleets using an efficient centralized fueling capability.

After a lengthy 6-year selection process, the USPS awarded a contract in February 2021 to Oshkosh Defense, LLC, for the development of Next Generation Delivery Vehicles that will include both internal combustion engine and battery electric drivetrain options. Air Products strongly recommends that fuel cell electric vehicles and adaptation of fuel cell drivetrains be considered for this environmental impact assessment, in this and future procurement efforts by the USPS. We believe that fuel cell transportation is well-aligned for the USPS in both meeting its delivery and service needs, as well as providing the environmental benefits that are sought by the agency.

In just the last few years, there has been considerable commercial development in fuel cell transportation and hydrogen fueling. Today, over 11,000 light-duty fuel cell electric consumer vehicles have been sold in California, accompanied by dozens of fuel cell electric buses in revenue service across the country, and a growing deployment of medium- and heavy-duty vehicles for long-haul transport and delivery services, including customers like DHL, UPS, and FedEx.

The Federal government operates a total fleet of approximately 634,000 vehicles. The Postal Service owns and operates a delivery fleet of over 206,000 vehicles (approximately one third of the entire federal fleet) consisting of both purpose-built vehicles as well as commercial off-the-shelf (COTS) vehicles. The Postal Service's proposed action is to purchase over a 10-year period of 50,000 to 165,000 purpose-built, NGDV to replace existing delivery vehicles nationwide that are approaching the end of their service life. The Postal Service is further proposing that the new vehicles consist of a mix of ICE and BEV powertrains, with at least 10 percent BEVs. Given the existing and proposed zero emission vehicle goals of the Federal government, individual states and auto manufacturers, in addition to the fact that the USPS fleet is one-third of the entire Federal government fleet, this proposed vehicle mix is insufficient.

The Biden Administration this year has established significant goals to reduce greenhouse gas emissions from the transportation sector to address global warming. These include the January 2021 Executive Order which initiated a Federal Clean Vehicle Procurement Strategy that directed federal officials to develop plans to convert all federal fleets to zero emission vehicles, including Postal Service vehicles. President Biden's American Jobs Plan includes $15 billion to fund deployment of a national network of 500,000 public chargers for electric vehicles by 2030. In further support of the deployment of zero emission vehicles nationwide, US DOT announced in April its latest round of Alternative Fuel Corridor designations established by the FAST Act of 2015. This program recognizes highway segments that have infrastructure plans to enable travel on alternative fuels, including hydrogen. Cumulative designations for all fuel types (electric, hydrogen, propane, natural gas) include 134 Interstates and 125 US highways/State roads, covering almost 166,000 miles of the NHS in 49 States plus DC.

The initiatives above are in addition to the bold initiatives of California and New York to eliminate sales of internal combustion engine vehicles starting in 2035. California's ZEV program is also currently being implemented in 11 other states. Moreover, President Biden signed an executive order in August setting the goal of 50 percent of all new vehicle sales for light, medium and heavy-duty vehicles be zero emission vehicles in 2030. This action was supported by announcements from GM and Ford of their plans to sell 40 percent to 50 percent zero-emissions vehicles by 2030. GM has said it will sell only electric vehicles by 2035.

As the White House American Jobs Plan May 2021 statement urges, "now is the…time for long-term transformative investments". In recognition of the rapidly expanding adoption of zero emission vehicle requirements across the country, Air Products strongly recommends that the USPS accelerate its procurement of zero emission vehicles, including fuel cell electric vehicles, to more closely align its NGDV procurement with the goals initiated by the Biden Administration and individual states across the country.

We look forward to greater coordination and collaboration with the Postal Service on hydrogen fuel cell vehicle infrastructure deployment going forward. Should you have any questions or wish to discuss these comments further, I can be reached at any time by email at guterej@airproducts.com or by phone at (949) 474-1860.

Thank you very much for your time and consideration.

Sincerely,

Eric J. Guter
Vice President, Hydrogen Mobility Solutions
Air Products and Chemicals, Inc.

Comments on USPS Draft Environmental Impact Statement for Purchase of Next Generation Delivery Vehicles

Document ID: USPS-2021-0122-0001
October 12, 2021

The Center for Transportation and the Environment
730 Peachtree Street, Suite 450
Atlanta , GA 30308

The Center for Transportation and the Environment urges USPS to conduct fleet electrification transition planning before committing to specific fleet technology composition.

In the Environmental Impact Statement (EIS), the USPS states that its preferred Proposed Action is to purchase and deploy a fleet of next generation delivery vehicles (NGDV) that consists of a mix of internal combustion engine (ICE) vehicles and at least 10 percent battery electric vehicles (BEV), based on a "flexible design platform." The Center for Transportation and the Environment (CTE) strongly urges USPS to conduct comprehensive fleet electrification planning before committing to such specific vehicle technology choices that will lock in harmful emissions and high retrofit and maintenance costs for decades to come.

CTE acknowledges that some routes may not be suitable for currently available zero-emission vehicle technology but is concerned that USPS's assumptions regarding vehicle technology applicability will lead to high future costs and missed emissions avoidance opportunities. USPS states a preference for a fleet composition of 90 percent ICE vehicles based in part on the assessment of BEV operational constraints precluding use of BEVs on 12,500 routes; however, 12,500 unsuitable routes in the context of 165,000 vehicles to be procured indicates that electric vehicles could be operationally suitable for 90 percent of USPS service routes. In addition, the EIS shows a 20 percent premium on total cost of ownership (TCO) for BEVs. There is little evidence to support this much of a cost differential from ICE vehicles, and these costs do not align with industry cost numbers for zero-emission light-duty vehicles. The TCO comparisons also do not reflect the costs of retrofitting ICE vehicles to zero-emission technology, which USPS indicates will be a core future strategy for emissions abatement. These concerning operational and cost assumptions by USPS indicate that more comprehensive planning is absolutely critical before committing to specific fleet compositions.

The move to electric vehicles for an entire fleet is a paradigm shift that requires operational changes, new considerations and decision-making for fleet operators and managers, and workforce training. CTE offers the following comments in support of USPS deploying a modernized, safe, effective, and environmentally-friendly delivery fleet.

Relying on retrofits to achieve electric vehicle procurement goals will result in higher costs and design challenges.

CTE questions the lack of analysis in the EIS regarding retrofitting ICE NGDVs to conform with a future need for electric vehicles. Policy and market trends indicate that fleet electrification is becoming the norm throughout the United States, and these trends should not be ignored given the typical 24-year service life of USPS vehicles. The EIS states, "the Postal Service selected a flexible design platform that can accommodate advancements in powertrain technology, including emerging BEV and ICE powertrain alternatives. Vehicles purchased with ICE powertrains will be capable of being retrofitted to alternative BEV powertrain technology if it is advantageous for the Postal Service to do so." (3-1). USPS assumes that it can meet future needs for electric vehicles with retrofits but has not considered the cost implications or challenges in doing so. Neither the cost comparison in Table 3-1.1 nor the information presented in Appendix C indicate that the costs of retrofit were assessed.

The proposal to retrofit ICE-equipped vehicles with electric powertrains severely compromises the potential of electric powertrains to improve the cost effectiveness and functionality of the vehicles. Some of the benefits of electric vehicles in this application (e.g., greater interior volume, lower load floor, greater electric range) can only be maximized when the vehicles are designed specifically around an electric powertrain. Given the 24 year service life for USPS vehicles, USPS should consider future electrification needs and greenhouse gas emissions avoidances before procurement to avoid latent retrofit costs.

Given the challenges and costs of retrofits, it is likely that if the USPS pursues the Proposed Action of 90 percent ICE and 10 percent BEV NGDVs, that the agency will end up with higher costs to electrify the fleet and will ultimately be out of sync with the rest of the federal fleet as it electrifies in the near future.

USPS should conduct a proper fleet electrification plan before procuring specific vehicle technologies.

CTE urges the USPS to commit to full fleet electrification planning and consider a modified *Proposed Action Hypothetical Maximum scenario (Purchase and Deployment of 100 Percent BEV NGDV)* that studies the available options for electric vehicle range extension, like fuel cell electric vehicles and optimized charging strategies for battery electric vehicles. CTE acknowledges that electric vehicles face different operational challenges than ICE vehicles, such as infrastructure availability and range considerations, as the EIS states. Based on CTE's experience deploying BEVs in local delivery operations, however, the current electrification target of 10 percent underestimates the portion of USPS delivery operations that can be completed with electric vehicles. In practice, most local package delivery operations can be accomplished with readily available electric delivery vehicles today. With proper fleet transition planning, as described below, the operational challenges that USPS identifies can be mitigated. Fleet electrification planning can help determine an appropriate and realistic electrification goal that maximizes environmental and community benefits while minimizing costs.

Fleet electrification plans are proven tools for successful large-scale fleet electrification.

The EIS states that, "The Postal Service would evaluate ICE and BEV NGDV deployment based on existing nationwide delivery route characteristics and other established factors to prioritize potential placement of the two powertrains." (3-2) CTE encourages a fleet electrification plan to accomplish this evaluation.

Fleet electrification plans help optimize the benefits of both conventional and electric vehicle technology to ensure maximum benefit for the USPS and its customers. The Fleet Electrification Planning process would evaluate (a) the operational feasibility and technology requirements of the USPS's existing operations; (b) the cost-benefit ratio of various operational strategies, including all candidate powertrain technologies; and (c) the infrastructure requirements for fleet electrification to develop a fleet electrification plan that optimizes costs, efficiency, and environmental benefits.

Setting a 10 percent electric vehicle target without a fleet electrification study will significantly impact the USPS's ability to realize the full benefits of electric-drive technology, as well as greatly increase the risk of the electric NGDVs failing to meet their service and cost savings requirements. Alternatively, with proper planning, the USPS can leverage the capabilities of industry planners and engineers to optimize the USPS's adoption of the next generation fleet to reduce operational costs, while avoiding the failures that can result from incompletely planning electric-drive operations.

These kinds of electrification plans have been recognized by the public transit industry as effective planning tools. The Federal Transit Administration (FTA) is encouraging transit agencies to develop zero-emission transition plans and is considering prioritizing agencies that have plans when evaluating applications for funding. As evidence of the efficacy of these planning efforts, California's Innovative Clean Transit (ICT) regulation requires that transit agencies in California submit zero-emission bus rollout plans showing how each transit agency plans to achieve a full transition to zero-emission buses. Nonprofit organizations such as CTE should support the USPS in completing a fleet electrification plan. Nonprofits not affiliated with any individual company or technology and would be honest brokers and honest reporters to the USPS.

Fleet electrification planning will enable the USPS to maintain its current procurement and deployment timeline while ensuring that the maximum number of electric vehicles are deployed in the most cost-effective and operationally efficient manner. With proper planning, the USPS can leverage the capabilities of experienced zero-emission fleet planners and engineers to optimize the adoption of the next-generation fleet.

USPS can capitalize on existing support for electrification.

Substantial policymaker support already exists for an all-electric USPS fleet. Lawmakers have submitted a letter to the Biden Administration to support the necessary funding for electrifying the USPS delivery fleet and to require at least 75 percent of the USPS's new fleet be electric or zero-emission. This EIS indicates that cost is a major concern for USPS. CTE encourages USPS to consider electrification planning for a modernized, electrified future rather than relying on unproven retrofit designs that may cost more in the long-run from design challenges, suboptimal performance, and fleet inefficiencies.

COMMENTS ON U.S. POSTAL SERVICE's DRAFT EIS FOR PURCHASE OF NEXT GENERATION DELIVERY VEHICLE

Submitted by Robert Yuhnke
on behalf of Elders Climate Action

The following comments asking the U.S. Postal Service (USPS) to analyze the adverse and beneficial environmental consequences of how its investment in a new generation of postal delivery vehicles contribute to the national policy of achieving a zero emission economy are submitted on behalf of Elders Climate Action (ECA), the ECA Chapters in States with ozone non-attainment areas (including but not limited to Northern California and Southern California, Massachusetts, Arizona, District of Columbia, Maryland and Virginia), and ECA members who reside, work and recreate in these non-attainment areas.

ECA, its chapters and members have a stake in this decision both because 1) we are the elders of families whose health and well-being are personally affected by exposure to the hazardous air pollution conditions existing in 230 urban counties where the NAAQS for ozone and/or PM2.5 are violated, and 2) we are the parents and grandparents of children who will be compelled to live their lives in the extreme conditions that are now occurring and will worsen as a result of the climate heating caused by the GHG pollutants emitted from combustion of carbon fuels in motor vehicles.

Executive Summary.

The U.S. Postal Service's (USPS) draft Environmental Impact Statement (DEIS) on the proposed purchase of next generation delivery vehicles (NGDVs) is inadequate because it fails to satisfy basic requirements of NEPA and implementing regulations promulgated by the Council on Environmental Quality, 40 CFR Parts 1500-1508, for a number of reasons.

Most important among our objections is the failure of the DEIS to compare the clean battery electric vehicle (BEV) and the internal combustion engine (ICE) fossil fuel vehicle alternatives with respect to their environmental outcomes as required by NEPA, and with respect to their relative implementation of the national policy defined by the President in Executive Order 14008.[1]

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[1] 86 Fed. Reg. 7619, at 7622 (February 1, 2021) Executive Order No. 14008 "To Tackle Climate Change," January 27, 2021 [emphasis added].
Sec. 201. Policy. Even as our Nation emerges from profound public health and economic crises borne of a pandemic, we face a climate crisis that threatens our people and communities, public health and economy, and, starkly, our ability to live on planet Earth. Despite the peril that is already evident, there is promise in the solutions — opportunities to create well-paying union jobs to build a modern and sustainable infrastructure, deliver an equitable, clean energy future, and **put the United States on a path to achieve net-zero emissions, economy-wide, by no later than 2050.**
We must listen to science — and act. We must strengthen our clean air and water protections. We must hold polluters accountable for their actions. We must deliver environmental justice in communities all across America. The Federal Government must drive assessment, disclosure, and mitigation of climate pollution and climate-related risks in every sector of our economy, marshaling the creativity, courage, and capital necessary to make our Nation resilient in the face of this threat. Together, we must combat the climate crisis with bold, progressive action that

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The DEIS reports differences in the emissions of greenhouse gases (GHGs) and co-pollutants that are the products of combustion of carbon fuels from the 100% BEV, the 90% ICE and the No Action alternatives, but the DEIS does not estimate, disclose and compare for the public and the decisionmaker the different future environmental effects of adding the cumulative total of GHG emissions from the fleet of NGVDs between 2023 and 2050 to the atmospheric loadings of GHGs on climate, or the differences between the beneficial public health effects of reducing public exposure to pollutants that harm human health.

Specifically, the DEIS –

1) fails to evaluate how the USPS fleet decision will contribute to, or interfere with, implementing President Biden's National Policy to "**put the United States on a path to achieve net-zero [GHG] emissions, economy-wide, by no later than 2050.**"
2) Compares the two future fleet alternatives (100% BEV and 90% ICE) with current fleet (No Action alternative) GHG emissions to conclude that either option will have no adverse impact on climate because either alternative will emit less GHGs, but fails to account for the different climate outcomes that will result from adding to the atmosphere the GHG emissions attributable to each future alternative.
3) Unreasonably assumes that GHG emissions will be reduced because future emissions from either future alternative will be less than the current fleet, but this assumption is inconsistent with the statement of purpose and need that makes clear the current fleet cannot continue in service until 2050, and must be replaced.
4) Fails to make the most important climate impact comparison which is the difference – approximately 29 million metric tonnes (mMT) of CO_2e -- between the total GHG emissions that will be added to the atmosphere by each of the two future fleet alternatives between 2023 and 2050.
5) Unreasonably relies exclusively on the Social cost of Carbon (SCC) to estimate climate impacts because the SCC formula fails to account for major climate impacts such as, but not limited to, the effect of wildfires induced by climate change on a) loss of life, b) human health, c) destruction of property, businesses, and natural resources, and d) the iterative climate effects of converting forests from a GHG sink into a major source of GHG emissions.
6) Fails to estimate the comparative impact that co-pollutants, (e.g., nitrogen oxides, volatile organic gases, respirable particulate matter (PM10) and inhalable particulate matter (PM2.5)) emitted from each future fleet alternative will have on a) ozone formation in urban nonattainment areas, b) public exposure to these co-pollutants and

combines the full capacity of the Federal Government with efforts from every corner of our Nation, **every level of government**, and every sector of our economy.
It is the policy of my Administration to organize and deploy the full capacity of its agencies to combat the climate crisis to implement a Government-wide approach that reduces climate pollution in every sector of the economy; increases resilience to the impacts of climate change; protects public health; conserves our lands, waters, and biodiversity; delivers environmental justice; and spurs well-paying union jobs and economic growth, especially through innovation, commercialization, and deployment of clean energy technologies and infrastructure.

ozone, or c) the human health and pre-mature mortality effects that exposure to these harmful pollutants will have on exposed populations.

Based on these fundamental omissions and deficiencies, and other less serious deficiencies, the DEIS is not in compliance with NEPA and fails to satisfy the USPS's obligation to inform the public and the decisionmaker of the significant differences in the relative impacts on the human environment that will result from choosing between the two primary future fleet alternatives.

I. NEPA Requires Analysis of Impacts of Emissions from Agency Action on the Human Environment, Not Just a Report of Emissions.

The DEIS for the purchase of a new fleet of NGDVs fails to comply with numerous requirements of NEPA by relying on analyses showing that both of the new fleet alternatives being considered will emit fewer tons of GHGs and co-pollutants than the current delivery fleet. But showing that alternatives will emit less GHGs that cumulatively contribute to an existing worsening climate crisis, and less co-pollutants that are currently contributing to urban air quality that violates one or more national ambient air quality standards (NAAQS), does not relieve an agency from the obligation to disclose the continuing harm that emissions from alternatives will cause or contribute to. In addition, NEPA imposes a duty to consider how reasonable alternatives could remediate or eliminate harm to the environment.

Most commonly a proposed project or program is analyzed under NEPA to determine what adverse impact it will likely have, and alternatives must be considered that can avoid or minimize those impacts.[2] But NEPA also requires consideration of "reasonable alternatives that would … enhance the quality of the human environment." 40 CFR § 1502.1. This obligation implements the statutory directive that the Federal Government "use all practicable means … to the end that the Nation may – (2) assure for all Americans safe, healthful, [and] productive … surroundings; … and (6) enhance the quality of renewable resources." 42 U.S.C. § 4331(b). Consideration of alternatives that enhance the human environment serve the congressional declaration that the "purposes" of NEPA include "promot[ing] efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man…." 42 U.S.C. § 4321.

The NEPA rule requires that agencies implement Executive Order 11514 which requires that

> … the heads of Federal agencies shall: (a) Monitor, evaluate, and control on a continuing basis their agencies' activities so as to protect and enhance the quality of the environment. Such activities shall include those directed to controlling pollution and enhancing the environment and those designed to accomplish other program objectives which may

[2] *See* 40 CFR § 1502.1 (duty to inform of alternatives that can avoid or minimize adverse impacts); §§ 1502.14 and 1502.16(e) (duty to compare alternatives based on their environmental impacts); §§ 1502.14(f) and 1502.16(h) (duty to disclose all means to mitigate adverse environmental impacts not avoided by preferred alternative); § 1508.20 (must consider mitigation that "avoid[s] the impact altogether" and "compensating for the impact by replacing or providing substitute resources or environments").

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> affect the quality of the environment. Agencies shall develop programs and measures to protect and enhance environmental quality and shall assess progress in meeting the specific objectives of such activities.

This E.O. emphasizes the obligation under NEPA to use federal authority to control pollution to enhance the human environment. In the context of the climate crisis where GHG emissions are causing severe impacts including wildfire, devastating hurricanes, frequent massive floods and extended drought, future GHG emissions must be eliminated to achieve zero emissions in order to stabilize the climate and prevent further harm to human civilization.

NEPA specifically requires that an alternatives analysis include a comparison of impacts on the human environment that include health.

> Effects include ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems), aesthetic, historic, cultural, economic (such as the effects on employment), social, or *health effects*. Effects may also include those resulting from actions that may have both beneficial and detrimental effects, even if on balance the agency believes that the effect will be beneficial.

40 CFR §1508(g)(1) (2020).

The DEIS fails completely to determine the impact that future fleet emissions will have on health.

II. Climate Impacts of GHG Emissions Not Disclosed.

The DEIS presents an analysis of GHG emissions (calculated as CO2e) that uses EPA's MOVES model to estimate direct tailpipe emissions from operating 165,000 delivery vehicles more than 1 billion miles annually, and DOE's GREET and GRID models to estimate upstream emissions resulting from the production of the gasoline used to power the ICE vehicles and electricity to power BEVs). But the DEIS is fundamentally flawed because it fails to present any comparison of the climate impacts of the two alternative future NGVD fleets under consideration by the USPS, and uses a methodology for estimating climate impacts of GHG emissions that fails to account for the effects of climate-induced wildfires.

A. The DEIS Analysis Fails to Compare Alternatives.

These modeling analyses showing that direct GHG emissions from the combustion of gasoline in the replacement ICE fleet will be 311,739 MT in 2032 when all 165,000 existing vehicles have been replaced.[3] Annual GHG emissions from the fleet thereafter will continue at that rate for the remaining useful life of the vehicles, reported to be 24 years, until at least 2056. Between 2023

[3] DEIS, Appdx F, Table F-3.a.

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when the first replacement vehicles are purchased and 2050, total direct GHG emissions from the new ICE fleet will add approximately 7 million MT (CO2e)[4] to the atmosphere.

In addition, the modeling analysis using DOE's GREET model estimates that upstream emissions associated with the production, refining and transport of the gasoline used in the new ICE fleet will add another 715,078 MT[5] annually after all 165,000 old ICE vehicles have been replaced. Total GHG emissions from operation of the new ICE fleet will total 1,026,817 MT annually, and over 23 million MT during the expected useful life of the new ICE fleet.

By comparison, direct GHG emissions from the BEV fleet would be zero from 2023 through to 2050 and subsequent years. Indirect emissions from generation of the electric power used to charge the vehicles would emit 467,485 MT CO2e annually,[6] for a total of 10.5 million MT over the expected useful life of the BEV fleet.

The difference in GHG emissions between the ICE fleet and BEV fleet options is 12.5 million MT over the expected useful life of the NGDVs. The differential impact on the human environment that will result from adding 12.5 million MT of CO2e to the atmosphere from the ICE alternative that would not occur if the BEV alternative were chosen, are not addressed anywhere in the DEIS. Instead, the DEIS only compares the GHG emissions from each of the future fleet options with emissions from the current fleet that will be replaced.

This analysis is fundamentally flawed because, as the USPS explains in its statement of purpose and need, "current outdated delivery vehicles, many as much as 32 years in operation, are inefficient, increasingly unreliable, costly to maintain and lack certain modern safety and operational features needed for mail carriers."[7] These vehicles will not remain in service for another two or three decades to add future GHG emissions to the atmosphere. The comparison needs to be made between the fleets that will be in service during future decades.

Based on this flawed comparison with vehicles that will not remain in service, the DEIS states that "No effects of climate change are expected" for either the ICE Alternative 1.1 or the BEV Alternative 1.2 because future annual GHG emissions will be less than current annual emissions from the fleet to be replaced. The failure to describe the different impacts of these two future alternatives violates the duty of the agency to

> … present the environmental impacts of the proposed action and the alternatives in comparative form based on the information and analysis presented in the sections on the affected environment (§ 1502.15) and the environmental consequences (§ 1502.16). In this section, agencies shall: (b) Discuss each alternative considered in detail, including the proposed action, so that reviewers may evaluate their comparative merits.

40 CFR §1502.14 (2020).

[4] Total GHG emissions from the ICE fleet include 311,739 MT annually for 18 years (2032-2050), and an escalating ratio of the 2032 total for each of the years 2023-2031 when the new vehicles are being added to the fleet.
[5] DEIS, Appdx F, Table F-6.a.
[6] DEIS, Appdx F, Table F-5.b.
[7] DEIS, p. 2-2.

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B. Estimating Climate Impacts Requires Consideration of How Much Each Alternative Contributes to Total Atmospheric Loadings of GHGs.

The science reported by the Intergovernmental Panel on Climate Change (IPCC) makes clear that climate impacts are determined by the total loadings of GHGs that have accumulated in the atmosphere at any future point in time, and not by the rate of annual emissions: "Every tonne of CO_2 emissions adds to global warming."[8]

> This Report reaffirms with high confidence the AR5 finding that there is a near-linear relationship between cumulative anthropogenic CO2 emissions and the global warming they cause. *** This relationship implies that reaching net zero anthropogenic CO2 emissions is a requirement to stabilize human-induced global temperature increase at any level, but that limiting global temperature increase to a specific level would imply limiting cumulative CO2 emissions to within a carbon budget[43].[9]

Unlike most co-pollutants that have their greatest impact near the emission source where concentrations are greatest and are subsequently removed relatively quickly (hours or days) from the atmosphere by various deposition processes, GHGs such as CO2, CH4 and N2O trap heat when they are dispersed in the atmosphere and remain for decades to centuries before they are removed.

To estimate the climate impacts of any NGDV fleet alternative, the total cumulative CO2 emissions associated with the energy system used by that alternative during its useful life must be determined. The DEIS fails to disclose the total cumulative emissions of CO2 from each alternative during the 24 years that such vehicles are expected to remain in service. It provides information from which we have estimated that the total cumulative difference in CO2 emissions between the future alternative fleets is 12.5 million MT, as discussed *supra*.

This difference in total cumulative CO2 emissions can then be used to estimate the amount of atmospheric warming that will be caused by emissions from each fleet alternative between now and 2050, and in turn estimate the other environmental consequences that will be induced by the warming. Similarly, the cumulative amount of CO2 emitted from each alternative can be used to calculate the amount that will be absorbed into the oceans and contribute to the formation of carbonic acid that acidifies sea water. These impacts can then be compared to determine the relative amount of environmental harm that will be associated with each alternative.

But the DEIS fails to disclose the difference in total cumulative CO2 emissions between the ICE and BEV fleet alternatives, and fails to use that cumulative difference in emissions to compare the relative climate impact of each alternative.

C. DEIS Fails to Consider Policy Established by Executive Order 14008.

[8] "Climate Change 2021, Summary for Policymakers," IPCC (August, 2021), at SPM-37. Available at 2108-09 IPCC_AR6_WGI_SPM.pdf.
[9] *Id.,* D.1.1, p. SPM-36. N43: "Historical cumulative CO2 emissions determine to a large degree warming to date, while future emissions cause future additional warming. The remaining carbon budget indicates how much CO2 could still be emitted while keeping warming below a specific temperature level."

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The NEPA rules require that

> Environmental impact statements shall state how alternatives considered in it and decisions based on it will or will not achieve the requirements of sections 101 and 102(1) of NEPA as interpreted in the regulations in this subchapter and other environmental laws and policies.

40 CFR §1502.2(d). President Biden's Executive Order 14008 establishes the national policy to "put the United States on a path to achieve net-zero emissions, economy-wide, by no later than 2050."[10] This policy defines what enhancing the human environment means in the context of climate change, and the role that federal agencies must play to implement the directive in NEPA, the NEPA rules and E.O. 11514 to "protect and enhance" the environment.

The DEIS fails to discuss or explain how the USPS will use its authority to fulfill this obligation to protect and enhance the human environment from the effects of climate change.

D. Social Cost of Carbon is an Inadequate Tool for Estimating Climate Impacts.

The Social Cost of Carbon (SCC) has been developed by a federal Interagency Task Force to provide a tool for estimating the monetary value of the environmental damage associated with some impacts of climate change. USPS used that tool to estimate the alleged benefits that would accrue from replacing the existing vehicle fleet with each of the proposed alternative fleets. As discussed above, that analysis does not provide any information to compare the climate impacts of the two proposed future fleet alternatives.

The SCC is an inadequate tool for comparing alternatives because it fails to include significant environmental impacts induced by climate change. Most notable among the omitted impacts are estimates of the incidence, frequency and burn area destroyed by wildfire, and the related costs caused by wildfire including the costs of lost lives, injury to public health from hazardous smoke pollution caused by wildfire, destruction of homes, businesses, schools and infrastructure, loss of environmental resources including forests and the environmental services forests provide such as wood products for residential and commercial structures, clean water supplies, stabilizing slopes, protecting aquatic habitats from sedimentation, and providing habitat for terrestrial and avian wildlife.

SCC may be used to estimate costs associated with impacts that it incorporates into the tool. But to the extent that it fails to account for significant environmental impacts of climate change it may not be relied upon by USPS as the exclusive tool for estimating the comparative impacts of climate change caused by emissions from each of the proposed fleet alternatives. Attached to this comment, and incorporated herein, we submit a summary of the available science that describes some of the expected impacts of wildfire in California and the Pacific Northwest as the climate continues to warm toward 1.5° C above the pre-industrial baseline. Those impacts include the potential to incinerate as much as 25% to 40% of the State of Oregon within this decade, extensive episodes of smoke pollution that will potentially make the region uninhabitable for

[10] 86 Fed. Reg. 7619, 7622.

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sensitive populations during the wildfire season, and converting the temperate rainforest from northern California to British Columbia from a large carbon sink into a massive source of GHG emissions.

The additional 12.5 million MT of GHG emissions from the ICE fleet compared to the BEV fleet during the decades before 2050 will contribute to accelerating the impacts of wildfire, either in frequency and intensity of the fires, or by advancing in time when the expected impacts will fully materialize, or both. The inability at this time to fully quantify and monetize those effects does not provide a lawful rationale for not including those impacts in the likely effects associated with choosing the ICE alternative over the cleaner BEV alternative.

III. Comparative Impacts on Human Health Are Totally Ignored.

The DEIS acknowledges that "There would be beneficial impacts on ambient air quality in cities and suburbs where new ICE vehicles and BEVs are deployed because of the higher emission controls of the newer vehicles."[11] The DEIS also acknowledges that each of the two future fleet alternatives will result in differences in co-pollutant emissions, but does not make any effort to determine the relative impact that each fleet's emissions will have on public health.

A. EIS Must Estimate Impacts of Emissions on Human Health.

NEPA and the case law are clear that merely reporting emissions of harmful pollutants without determining the impact that those emissions will have on the human environment does not satisfy an agency's obligation to inform the decisionmaker of the impacts the decision will have. The NEPA regulation lists effects on "health" as an outcome that must be addressed in an EIS.[12] This DEIS is silent with respect to health effects.

Courts reject EISs that fail to "evaluate the incremental impact that these emissions will have on climate change or the environment more generally." *Center for Biological Diversity v. Nat'l Highway Traffic Safety Admin.*, 538 F3d 1172, 1217 (9th Cir. 2008). An EIS that merely reports emissions is insufficient because it fails to "discuss the *actual* environmental effects resulting from those emissions," or "provide the necessary contextual information about the cumulative and incremental environmental impacts" that NEPA requires.

Here the DEIS reports that producing the fuel for a 90% ICE fleet will emit 1176 tons/year of nitrogen oxides (NOx)[13] and emit another 10.65 tons from the tailpipes, compared to 413 tons/year of NOx emitted from the power plants that generate the electric power for the BEV fleet.[14] The ICE fleet will cause 773 more tons of NOx to be emitted each year than the BEV fleet.[15]

NOx itself has harmful effects on human health, and NOx emissions are a primary precursor to the formation in the atmosphere of both ozone and inhalable particles. Because of the adverse

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[11] DEIS, §6-4.2, p. 6-2.
[12] 40 CFR §1508(g)(2).
[13] DEIS, Appdx F, Table F-6.a.
[14] *Id.*, Table F-5.b.
[15] (1176 + 10 = 1186) – 413 = 773.

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effects that all three of these pollutants have on public health, NOx, ozone and fine particles smaller than 2.5 microns (PM2.5) are each governed by national ambient air quality standards (NAAQS) promulgated under the Clean Air Act.[16] In our scoping comments, ECA identified

Exposure to each of these pollutants has a significant impact on human health, but the DEIS does not disclose a) the differences in NOx emissions between the ICE and BEV fleet alternatives, b) the likely exposure to these pollutants in the locations where USPS fleet operations are concentrated, or c) the expected health effects associated with exposure to these pollutants.

The NOx emissions data that we report here is available from multiple data tables in Appendix F which contains the data obtained from the emissions calculations performed using EPA's MOVES emissions model and DOE's GREET and eGRID models, but those data are not presented in the DEIS to inform the public or the decisionmaker of the difference in NOx emissions between the ICE and BEV fleets.

In addition, there is no discussion in any NEPA document of the expected health consequences of the public being exposed to an additional 773 tons/year of nitrogen oxides if the ICE fleet option is chosen rather than the BEV option. The failure to discuss the significance of these differences in emissions for their public health consequences makes the DEIS inadequate to fulfill the agency duty under NEPA.

B. Emission Differences Are Significant.

The significance of an additional 773 tons/year of NOx can be understood by comparing those emissions with NOx emissions in a large nonattainment area where NOx emissions contribute to violations of the ozone NAAQS.

Attached is the Emissions Inventory from the Ozone State Implementation Plan (SIP) submitted by California to EPA for approval under the Clean Air Act. Note that total NOx emissions in the San Joaquin Air Planning region is roughly 200 t/yr in 2021, and that the plan expects emissions to be reduced by 69 t/yr by 2031. Only one or two emission categories will achieve emission reductions larger than 5 t/yr during that period. In other words, in a large nonattainment area where NOx emission play a major role in causing violations of national air quality standards, a reduction of 5 t/yr from a major source category is significant with respect to reducing ozone formation and helping to bring that area into attainment of the NAAQS.

A reduction of NOx emissions by 773 t/yr will be distributed across the entire USPS national fleet, but fleet operations must be concentrated in some large metropolitan areas where the USPS transfers and delivers large amounts of mail to and from air shipping hubs and other regional facilities. In those areas, NOx emissions from the USPS fleet would likely reach 1% to 2% of total fleet emissions (i.e, 7 to 14 t/yr).

The DEIS fails to provide this kind of analysis for metropolitan areas where the USPS operates a significant portion of its fleet. In the scoping comments submitted on April 5, ECA and other

[16] *See* 40 CFR Part 50.

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commenters requested that emissions be analyzed in areas most affected by USPS fleet operations. That request was not addressed in the DEIS. We renew that request here.

Respectfully submitted,

Robert Yuhnke

Elders Climate Action, Policy Committee

October 18, 2021

Via Electronic Mail

Mr. Davon Collins
Environmental Counsel
United States Postal Service
475 L'Enfant Plaza SW, Office 6606
Washington, DC 20260-6201

Re: Draft Environmental Impact Statement for Purchase of Next Generation Delivery Vehicles

Dear Mr. Collins:

The undersigned organizations write to submit these comments on the United States Postal Service's Draft Environmental Impact Statement for Purchase of Next Generation Delivery Vehicles ("DEIS"). After careful review of the DEIS, we have determined that the analysis therein does not comply with the National Environmental Policy Act ("NEPA") and the commendable commitments made by the Biden Administration to cut climate pollution in half by 2030 and advance environmental justice. Accordingly, we respectfully request that the Postal Service undertake a compliant environmental review and produce a final EIS that takes into consideration both the public and the planet's health.

As you note in the DEIS, the Postal Service has the largest civilian fleet in the world, consisting of over 230,000 vehicles, "[t]he majority of [which] are on the road delivering mail at least six days per week in *every community*."[1] The Postal Service has both an opportunity and a responsibility to lead the way in our transition to 100 percent zero-emissions vehicles. This is especially true considering that transportation is the largest source of climate pollution in the U.S. and air pollution from fossil fuel vehicles harms people's health, especially in low-income communities and communities of color. By upgrading to electric vehicles, the Postal Service can bring cleaner air to almost every community in the country.

[1] DEIS at 19 (emphasis added).

Comments on Postal Service DEIS
October 18, 2021
Page 2

For these reasons, we are deeply disappointed by the DEIS. In addition to the fact that this decision will directly harm every community in the country, those harms will be magnified in the low-income communities and communities of color who already carry a disproportionate air pollution burden. Because the procurement of this new fleet will have impacts on our roads for decades, our communities cannot afford to invest in additional vehicles that will increase dangerous air pollution. The Postal Service's plans to purchase tens of thousands of new fossil fuel vehicles to add to its fleet are also unsupported by adequate analysis. The Proposed Action's approach of committing to purchase only 10 percent electric vehicles is woefully inadequate to rise to the challenge of climate change and protect public health. Our lungs and our planet deserve better.

Importantly, this proposal also fails to comply with the commitments President Biden has already made to advance environmental justice by cutting climate pollution in half by 2030. This includes establishing the Justice40 Initiative, which will ensure that federal agencies work with states and local communities to deliver at least 40 percent of the overall benefits from Federal investments in climate and clean energy to disadvantaged communities.[2] This proposal will also leave the Postal Service behind as the rest of the federal fleet advances to zero-emissions technology.[3] Accordingly, the Postal Service must make decisions today that put the U.S. on a path to an all-electric, zero-emissions transportation future.

Thank you for your consideration of these comments. As you are no doubt aware, the relevant federal laws emphasize a thorough, up-front review of all the environmental effects of proposed actions. We urge you to commit to purchasing 100 percent battery electric vehicles for the postal fleet and reiterate our request for a final EIS that complies with NEPA and the spirit of the current administration's Executive Orders.

Sincerely,

Adrian Martinez Candice Youngblood **Earthjustice**	Katherine Garcia **Sierra Club**	Scott Hochberg **Center for Biological Diversity**
Matthew N. Metz **Coltura**	Alice Henderson **Environmental Defense Fund**	Andrea Marpillero-Colomina **GreenLatinos**
Jennifer Helfrich **Ceres**	Joel Levin **Plug In America**	Jonna Hamilton **Union of Concerned Scientists**

cc: Louis DeJoy, United States Postmaster General

[2] Executive Order 14008, *Tackling the Climate Crisis at Home and Abroad*, 86 Fed. Reg. 7619 (Jan. 27, 2021).
[3] *Id.*

ATTN: Mr. Davon Collins
Environmental Counsel
United States Postal Service
475 L 'Enfant Plaza SW
Washington DC 20260-6201

Subject: Comment on USPS Draft Environmental Impact Statement for Purchase of the Next Generation Delivery Vehicles

The following comments associated with the Next Generation Delivery Vehicle (NGDV) acquisition are intended to assist the USPS in addressing methodological flaws in the Draft Environmental Impact Statement (DEIS) as published in the Federal Register. These comments also focus on the application of USPS' data and criteria as articulated in the NGDV Request for Proposal (RFP) as well as information documented from other government sources.

USPS is an independent agency that has little experience preparing a DEIS on such a high-value procurement. It is not surprising that many of the data points used in the DEIS are inconsistent and therefore flawed when applied and compared to the USPS' published NGDV information. The NGDV procurement is the largest USPS procurement in its history.

The DEIS must accurately reflect NEPA criteria. Therefore, USPS should consider our comments to improve its objectivity and guide the preparation of a supplemental EIS. Addressing the focus will also lessen the friction between the EPA and USPS. It is important that USPS recognize that it operates over one-fourth of the approximate 800,000 overall government vehicles.

The most significant issue is how USPS identifies fleet policy alternatives in the DEIS. Many critics state that the decision to select an internal combustion engine (ICE) replacement mail truck as the NGDV appears to have missed the objective of an improved purpose-built fleet. However, transitioning a portion of the fleet to electric vehicles (EVs) could mitigate the disappointment if an objective analysis of the alternatives is comprehensive.

The EPA received over 1,700 comments on the Notice of Intent (NOI) to publish the DEIS and publically responded to 13 of those comments. It is anticipated that the DEIS will receive significantly more comments than the NOI. We intend that our comments are used to assist EPA in responding to those comments.

It was encouraging that notwithstanding USPS' ICE selection or the DEIS' methodology, there is a conclusion that at least 10% of the vehicles should be EVs.

Hopefully, as USPS addresses issues herein the cost/benefit and environmental impacts will justify even more than 10% EV over the transition years.

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SIGNIFICANT DEIS DATA POINTS

Overview

a) The USPS will acquire a mix of ICE, hybrid, or EVs over the next ten years;
b) In the three-vehicle types in the current fleet, over 206,000 vehicles are at or have exceeded their planned lives and need to be replaced; and,
c) Maintenance costs associated with the current fleet are at an all-time high.

Vehicle Acquisition Strategy

a) NGDVs are to incorporate new technologies to accommodate needs and adaptations in safety, ergonomics, and Total Cost of Ownership (TCO) inclusive of reducing the fleet's carbon footprint and emissions.
b) The three-phase NGDV selection process was designed to evaluate and test the cost/benefit of competing prototypes. This resulted in an ICE being selected over other available vehicle powertrains such as hybrid and electric drivetrains.
c) The purchase/production of 50,000-165,000 vehicles under the acquisition strategy requires the assembly of the vehicle in the US as well as the incorporation of emerging technologies for alternative fuel capabilities.

Alternatives Evaluated by USPS

a) The NGDV competition evaluated the performances of qualified prototypes that included
   1. Right-hand drive (RHD) purpose-built ICE vehicle.
   2. RHD purpose-built battery electric vehicle (BEV).
   3. RHD purpose-built hybrid vehicle.
b) The USPS received compliant offers for low and zero-emission vehicles. However, the DEIS did not evaluate those proposed prototypes; and instead analyzed two NGDV Hypothetical Maximum scenarios and two commercial off the shelf (COTS) vehicle alternatives. The USPS acknowledges that the two COTS alternatives are unachievable, leading to a confusing analysis of alternatives.
c) The alternatives in the DEIS are what the USPS considers to be the full potential range of policy alternatives even though other scenarios are readily achievable.
   1) Proposed Action Hypothetical Maximum scenario (purchase and deployment of 90% ICE and 10% BEV): This preferred action aligns with the USPS' current buy-and-replace vehicle strategy. The USPS currently purchases updated vehicles and has purchased a handful of alternative fuel vehicles. The USPS' preferred action is functionally the same as the no-action alternative as it is simply replacing old ICE vehicles with new ICE vehicles; mirroring USPS' current strategy. While the DEIS indicates that a mix of vehicles currently owned by the USPS consumes 8.3 mpg the vehicle being replaced is conventionally cited as achieving over 9 mpg. The fuel consumption of the proposed mix, cited in Section G, of 8.6 mpg is likely to produce more emissions (particularly CO2) than the current fleet.
   2) Proposed Action Hypothetical Maximum scenario (purchase and deployment of 100% BEV): The USPS lists perceived limitations of 100% BEV fleet as lacking available infrastructure, and that at least 12,500 delivery routes where route length, environmental conditions, or facility constraints make electric vehicles infeasible or impractical. However; this is inconsistent with the Potential Environmental

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Impacts Summary Matrix which indicates that the 100% BEV alternative demonstrates the most benefits of the alternatives based on the evaluation criteria.

i. Alternative 1.1: Purchase and deployment of 100% RHD COTS ICE Vehicles; and,
ii. Alternative 1.2: Purchase and deployment of 100% LHD COTS BEVs.

3) No-Action Alternative: USPS argues that this alternative is unique from their preferred action without basis or supporting data. Their current buy-and-replace strategy is continued by the decision to purchase additional ICE vehicles.

Environmental Consequences

a) The Proposed Action will not result in significant beneficial impacts on transportation safety, traffic noise, air pollutant and GHG emissions, community emergency services, and fuel (gasoline) consumption.
b) Alternative 1.1 and Alternative 1.2 would result in beneficial impacts on transportation safety, traffic noise, air pollutant and GHG emissions, community emergency services, and result in lower fuel consumption compared to that of the replaced vehicles.
c) The 100% BEV and COTS BEV scenarios would provide greater benefit on traffic noise reduction than would the ICE and COTS ICE scenarios since BEVs are quieter than ICE vehicles.
d) The 100% BEV NGDV, and COTS BEV scenarios would require fewer lubricants, oils, and greases compared to existing ICE vehicles.
e) BEVs would have operational constraints for more than 12,500 delivery routes, and spent BEV batteries would be an additional source of hazardous waste.
f) The Proposed Action scenarios and Alternatives 1.1 and 1.2 would result in no to negligible impact on economics, employment, environmental justice, traffic, accessibility, parking, public transportation, engine noise from ICE vehicle operation, community utility services, utility availability and demand capacity, energy consumption, and solid and hazardous waste treatment and disposal.
g) The No-Action Alternative would not satisfy the Purpose and Need for the purchase of new delivery vehicles to replace aged delivery vehicles with outdated safety features and poor performance characteristics. Impacts would remain unchanged, and the benefits from replacing end-of-life delivery vehicles with modern vehicles would not be realized.

Mitigation

a) The USPS states without providing specific data that the implementation of the Proposed Action NGDV Hypothetical Maximum or Alternative 1.1 or 1.2 scenarios would serve to mitigate the existing impacts on the environment compared to the No-Action Alternative (continued operation of the high-maintenance and end-of-life delivery vehicles) even though the majority of the fleet will be replaced with the same ICE technology as the old vehicles. The USPS fails to explain how maintaining the same level of required fuel and maintenance as the current fleet over the life of the vehicle mitigates any current issues.
b) Preferred Alternative
    1) The Postal Service's preferred alternative is to purchase and deploy up to 90% ICE NGDVs with at least 10% BEV NGDVs.
    2) The USPS considers the Preferred Alternative as the most achievable citing its financial condition. The DEIS calculated that the ICE NGDV is less expensive than

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the BEV option but only references an Office of Inspector General's report as the data used to calculate costs. The DEIS does not provide the underlying assumptions or numbers that support the calculation. Providing this data in the supplemental EIS would provide clarity on how the financial condition of USPS impacts the decision to select the Preferred Action.

3) The 90% ICE NGDV Preferred Alternative would result in approximately the same fuel consumption and reduced direct and indirect greenhouse gas emissions as compared to the existing delivery vehicles being replaced. Over the life of the vehicles, fuel consumption would increase as fuel efficiency in ICE decreases over time as maintenance needs increase.
4) The USPS states that the BEV NGDV alternative would result in about 200% fewer direct and indirect greenhouse gas emissions than the 90% ICE NGDV Preferred Alternative and that committing to purchase more than 10% BEV NGDV as part of the Preferred Alternative would not meet the Postal Service's Purpose and Need for the following reasons.
    i. Operational constraints would preclude the BEV NGDV deployment for more than 12,500 delivery routes because of environmental conditions. However, an objective and comprehensive supplemental EIS would provide an analysis associated with routes and the corresponding drivetrains. The USPS states the 12,500 routes amount to approximately 5% of total USPS routes. The NGDV RFP requirement was that a vehicle must be able to travel a 70-mile route in one shift without refueling. This requirement would have been met by offerors. Industry data has demonstrated that a BEV that meets the needs of the USPS has ranges that exceed 100 miles on a single charge. It is confusing that the USPS would take the position that a BEV could not reliably meet this standard when industry data reflects otherwise. To maximize cost savings and mitigate environmental impacts the USPS should include a route analysis that would demonstrate how many routes would be attributed to ICEs, hybrids, and BEVs.
5) Alternative 1.1, to purchase and deploy 100% RHD COTS ICE vehicles, would also not meet the Postal Service's Purpose and Need as they are not designed to optimize postal service operations; therefore, this is not a reasonable alternative to be included.
6) Alternative 1.2, to purchase and deploy 100% LHD COTS BEVs, also would not meet the Postal Service's Purpose and Need, as the COTS BEVs would have operational constraints that would not allow deployment of BEVs for more than 12,500 delivery routes. Again, this claim lacks comprehensive analyses for support.
    i. Being LHD, the COTS BEVs would not support curb-line deliveries.
    ii. Although the COTS BEV market and technology are rapidly evolving, LHD BEVs are still in development and are currently available only in small quantities.
    iii. RHD COTS BEVs are not currently available or otherwise marketed by commercial manufacturers for future development.
7) The No-Action Alternative, or status quo, would not meet the Postal Service's purpose and need. It would not provide any replacement vehicles for accident-damaged, high-maintenance, and end-of-life delivery vehicles.

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i. It would not meet the purpose and need to provide more energy-efficient vehicles, updated technology, increased cargo capacity and improved loading characteristics, improved ergonomics and carrier safety, and reduced maintenance costs.
ii. It would result in higher fuel (gasoline) usage than both the Proposed Action Hypothetical Maximum scenarios and Alternative 1.2, and greater air emissions than the Proposed Action and Alternative 1.1 and 1.2 scenarios.

Note: The option to purchase 100% BEV RHD vehicles compliant with the USPS specifications have not been included for comparative purposes.

The methodological flaws require further clarification if the USPS intends to conduct an objective and comprehensive EIS. We are sensitive to both the complexity of variables to consider and the urgent need for the proposed new fleet of USPS vehicles and do not intend to stall the process. By clarifying these topics, we hope to streamline the transition into the NGDV that is the most economical, environmentally friendly, and feasible option for the USPS.

NEPA intends to encourage agencies to scope their DEIS with feasible policy alternatives that push the boundaries of innovation and critical thinking to achieve the best possible solution. In this case, the definition of the best possible solution limits direct and indirect environmental impacts of the proposed action to the fullest extent possible, while being technically and economically feasible. While the DEIS published by USPS does aim to reach the best possible solution, the underlying analysis, and alternative comparison matrix concludes that the 100% BEV option is the most beneficial however, this is not articulated as the preferred action.

USPS DEIS CALCULATIONS

The USPS indicated in the DEIS the selected ICE vehicle would operate at 8.6 miles per gallon (MPG). Based on publically available USPS data the current Long Life Vehicle (LLV) operates on an average of 9 MPG. Based on $3.00 per gallon the LLV would cost approximately $0.33 per mile and the annual fuel cost would be approximately $2,100 per vehicle per year.

If the DEIS applied their projected 8.6 MPG to the same cost analysis there would be an increase in fuel cost, not a decrease which is one of the drivers associated with the NGDV program; to save money. The cost would be $0.35 per mile and increase annual fuel cost per vehicle to approximately $2,200.

The confusion is that no data or accompanying assumptions that validate the DEIS MPG calculation are presented. Additionally, it is not possible to validate the cumulative impacts of using fossil fuels (from production to emissions) without presenting and considering this information.

The methodology associated with computing the TCO is also confusing. The DEIS states that estimated cumulative total costs are based on costs for vehicle purchase, freight, training, manuals, technical data packages, pre-delivery production costs, charging infrastructure, 20 years' estimated fuel and utility costs, and maintenance. However, the corresponding data points used to make the cost estimates are not included in the DEIS. The DEIS states that relevant cost data are presented in Appendix C but, upon careful examination, no numbers are provided. There is only a reference to an Office of Inspector General report and literature associated with the NGDV program.

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It is also not clear in the cost estimates as to why the present value calculation is based on the purchase of 75,000 vehicles when the order is for up to 165,000. USPS does not explain why they choose 75,000 as their number. Based on their analysis, the ICE NGDV would cost $9.3 billion and the BEV NGDV could cost $11.6 billion. If the analysis included the underlying assumptions and conducted a present value analysis for 165,000 vehicles instead one would expect significantly different results.

The USPS plans to retrofit purpose-built ICE vehicles in the future with an electric powertrain, which they claim reduces the economic impact compared to purchasing new BEVs. If the data associated with retrofitting were included in USPS' TCO, the cost associated with the ICE option would be significantly different.

Additionally, it is also confusing as to why the USPS concluded that the cost of the necessary charging infrastructure for a BEV fleet is *so costly* that more than 10% BEV is not economically feasible. Once again, if the data driving that conclusion were provided and evaluated against information available from the Department of Energy one could conclude that the additional infrastructure needs would not exceed the lifetime impacts associated with the ICE vehicle. Additionally, there are several approaches one could evaluate to address charging infrastructure deployment, maintenance, and cost. The DEIS cites specific solutions to charging infrastructure concerns and concluded that those needs would not result in any additional adverse effects. It suggested smart charging techniques that would significantly reduce the cost of deploying the infrastructure. These approaches to mitigate costs and impacts associated with charging infrastructure would provide a comprehensive analysis.

For example, the DEIS could evaluate options to include partnerships with utility companies. By engaging inequitable service contracts with utilities operating the charging stations, the utilities could cover the costs of deploying charging stations. There are also Federal subsidies proposed in legislation that will cover charging infrastructure and additional proposed congressional legislation intended to mitigate these costs. Publically shared charging could bring down the cost even more since USPS trucks will only charge at night; possibly even only once or twice a week for some trucks (depending on the routes). This would open up an opportunity for the USPS to allow private citizens access to their chargers during the day for a fee.

The DEIS includes in its calculation of charging infrastructure one charger per vehicle. However, the USPS also states in the DEIS that it would not be necessary for there to be a charger for every vehicle. Chargers could be deployed more efficiently based on battery capacity and route data. Since the USPS acknowledges that not every vehicle will need a charger, it is inconsistent to include the cost of one charger per vehicle in the cost estimate.

The DEIS states that BEVs are unreliable as their battery capacity depletes over time. The DEIS should include battery capacity data to support this claim. There are reasonable solutions to mitigate this issue such as analyzing which vehicles should conduct specific routes. As capacity depletes, the vehicles can be rotated to avoid any battery replacement.

Additionally, the DEIS cites that a BEV is unreliable in cold conditions. However, publically available data does not support this. Vehicle manufacturers have invested in mitigating this concern by including battery-warming technologies to improve reliability in BEVs. Including the data that supports their determination would enhance the USPS' credibility and provide answers to concerned organizations and citizens.

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About The EOP Foundation Inc.

The mission of The EOP Foundation is to enhance the knowledge base, skill set, and decision-making capacity of our Federal workforce to promote more efficient and effective public policy by educating them on the intricacies of our unique and complex Federal government.

To serve its mission, the Foundation performs budgetary, economic, regulation, and public policy analysis, and conducts resilience training for the public and private sectors to enhance America's governmental competency and global competitiveness.

The EOP Foundation has six general operating areas:

1. **Federal Budget and Management** – Provide analyses and assessments of significant Federal budget program impacts associated with government operations.
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    - *Understanding the Regulatory Policies & Processes of the United States Government (2nd edition);*
    - *Understanding the Ethics Policy of the U.S. Government (2nd edition);*
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4. **National Energy and Environmental Policy** – Provide evaluation of existing and proposed policies, technologies, and processes designed to meet our energy needs and reduce adverse environmental impacts.
5. **Science and Technology Policy** – Provide assessment of existing and proposed policies used to formulate and implement science and technology policies, and provide an evaluation of how well such policies are implemented and administered.
6. **Native American Policy** – Provide assessment of issues and existing and proposed policies used to formulate and implement Native American policies, and provide an evaluation of how well such policies are implemented and administered.

The EOP Foundation, a 501(c)(3) nonprofit entity, was founded in 1993 by former senior-level budget and regulatory officials from the White House Office of Management and Budget. Its current staff reflects a broader swatch of government interaction and includes former heads and staff of Federal departments and agencies, Congressional members and their staff, Washington-based think tank analysts, former State and local government officials, and national trade association members.

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October 12, 2021

To: United States Postmaster General Louis DeJoy
From: Sierra Club
Re: Notice of Availability of Draft Environmental Impact Statement for Purchase of Next Generation Delivery Vehicles

For the attention of United States Postmaster General Louis DeJoy:

352 Sierra Club supporters urged the USPS to electrify its postal delivery vehicle fleet. All 165,000 vehicles that will be purchased to modernize the fleet should be electric vehicles.

The names of the individuals submitting comments are listed in the rest of this document. Additionally, this document includes 113 personalized public comments, all of which are listed below. Each of the individuals signed onto the following text:

> *The United States Postal Service has an opportunity — and a responsibility — to lead the way in our transition to 100 percent zero-emissions vehicles. Transportation is the largest source of climate pollution in the U.S., and air pollution from fossil fuel vehicles harms people's health, especially in low-income communities and communities of color. By upgrading to electric vehicles, USPS can bring cleaner air throughout the country.*
>
> *I am deeply disappointed that the Postal Service plans to purchase tens of thousands of new fossil fuel vehicles to add to its fleet. These vehicles will be on the road for decades, and we can't afford to lock in more dangerous air pollution. Postmaster General DeJoy's proposal to electrify 10 percent of the fleet is woefully inadequate given the climate crisis and the need to protect public health. Our lungs and our planet deserve better.*
>
> *President Biden has committed to take bold action to cut climate pollution in half by 2030 and advance environmental justice. The Postal Service must make decisions today that put the U.S. on a path to a clean transportation future. I urge you to commit to purchasing 100 percent battery electric vehicles for the postal fleet.*
>
> *We are counting on you to make the right choice to protect our health and the planet.*

Thank you for considering this public input.

Sincerely,

Katherine Garcia
Acting Director of Sierra Club's Clean Transportation for All campaign

Full comments

- Ian Elder, Brooklyn, NY 11226

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- Jessica Enzmann, Bay shore, NY 11706
- Michael Miloff, Blasdell, NY 14219 We need to decrease faster, we can't afford to buy more gas vehicles.
- Victoria Cagle, Chester, VA 23831 Hi all new vehicles purchased need to be electric!
- John Massman, Antioch, IL 60002
- Karen Klepack, Costa Mesa, CA 92626
- Hirak Pati, Moore, SC 29369 Dear Postmaster General Dejoy, It is important to me that you purchase all-electric vehicles for the US Postal Service. You have the chance to create jobs while providing cleaner air for postal workers and the American public. Take advantage of the opportunity to do so today!
- Daniel Solow, Forest Hills, NY 11375
- Robert Waltman, Greeley, CO 80634
- Heather Erwin, Orange Park, FL 32073
- Wendy Washburn, Aldan, PA 19018 At least consider hybrid vehicles. Electric or hybrid, the USPS will save a lot of money on gas. That alone is reason enough to go electric for local mail delivery.
- Steven Chesney, Brooklyn Park, MN 55443 A new purchase of internal combustion vehicles is both a lost opportunity and a poor investment of public money.
- Gregory Suter, Long Island City, NY 11101 This is something that has to be done to better protect the air quality of American neighborhoods. I would happily see my tax dollars go to this program.
- Mario Fornarelli, Norridge, IL 60706 Hydrogen fuel cell electric vehicles and hydrogen refueling stations too
- Colleen Friesen, Petaluma, CA 94952
- Alicia Jackowiak, Wauwatosa, WI 53226
- Darrell Clarke, Pasadena, CA 91101
- Tyler Lund, Florham Park, NJ 7932 It is time and we have an incredible opportunity at this point to have the USPS act as a global leader and role model for the country in completely electrifying the postal fleet. This is likely our largest chance to make a huge impact on the goal to move to clean vehicles and reduce emissions to slow climate change and reduce the impact.
- Joshua Houdek, Minneapolis, MN 55417
- Frank Blake, Houston, TX 77006
- Mathieu Bonin, Los Angeles, CA 90011 USPS needs to electrify its vehicles, as has been done in other countries. It's a necessary step to fight climate change!
- Emily Goldknopf, Los Angeles, CA 90026
- Nathaniel Shoaff, Montpelier, VT 5602
- Jessica Beverly, Woodstock, IL 60098
- tim sevener, Mount Tabor, NJ 07878
- Morgan Goodwin, Glendale, CA 91204 this is a golden opportunity, we got your back!
- Benjamin Tibbets, Fitchburg, WI 53713
- Daniel Saldana, Atlanta, GA 30328 I care about the world I leave my children and vote based on this issue!

- Michael Meade, Azusa, CA 91702 Time for the USPS to minimize its carbon footprint and keep air clean in my neighborhood!
- Becky Charlton, Liberty, IL 62347.
- Elliott Bush, Upper Arlington, OH 43221
- Samantha Dynowski, West Hartford, CT 06107
- Nicholas Cheranich, Napa, CA 94558 It's crazy to continue with a fossil fuel infrastructure. Please take the lead in transitioning to a fossil free future by upgrading to an all-electric fleet of vehicles within the USPS.
- Marjaneh Moini, Oakland, CA 94618
- Margot Haynes, Montague, MI 49437 Help reduce carbon emissions and save $ too!
- Dave Leibert, EASTON, PA 18042 Hi. The Lehigh Valley where I live has poor air quality mostly from gas and diesel cars and trucks. I would like to see new USPS vehicles that air fully electric. This would improve local air quality and be an important milestone in the switch to electric vehicles. Please consider this idea. Thanks
- Ken Hughes, Santa Fe, NM 87507
- Chris Calvert, Santa Fe, NM 87501
- Ray Pingle, El Dorado HIlls, CA 95762
- Avi Rappoport, Berkeley, CA 94703 Now is the time to invest in the future. Electric postal vehicles would be a big plus, gas or diesel would make the problems worse!
- Mary Lunetta, Idyllwild, CA 92549
- Tom Gorman, Santa Fe, NM 87508
- Dave Arndt, Baltimore, MD 21230
- Bruce Goff, Eagan, MN 55123
- David Quick, Mount Pleasant, SC 29464 Please help clean the air for both postal workers and our families.
- Michael Gitner, Arlington, VA 22207
- Benjamin West, St. Louis, MO 63104 It is ridiculous the new postal vehicle fleet is not expected to be majority electric, in particular where many of these vehicles only drive short distances in densely populated areas.
- Kim Floyd, Palm Desert, CA 92260 Now is the time for bold action. We need great leadership to mitigate the devastation coming from climate disruption. Thank you for taking this opportunity to lead away from a climate crisis.
- Chad Rybka, Bernardsville, NJ 7924 Please consider this!
- Katie Davis, Goleta, CA 93117 As I write this another wildfire is threatening my town and the smell of smoke is in the air. At the same time, the houses around me are in the midst of being rebuilt from a prior fire that tore through our neighborhood on a record-breaking hot night. Meanwhile, another offshore oil spill is fouling our coast. USPS needs to do its part to get us off fossil fuels by going all electric ASAP.
- John Holtzclaw, San Francisco, CA 94133
- Erich Champion, Scotts Valley, CA 95066
- Austin Grubb, Hanover, PA 17331
- Amy Crook, Norristown, PA 19401
- Jennifer Hall, Shoreview, MN 55126

- Stuart and Mary Ellen Knappmiller, St Paul, MN 55106 We drive a 2014 Prius still, but will switch to an EV soon. We have solar on our roof installed in 2017. Our 12 year old granddaughter is pretty pessimistic about adults acting to try to keep her life from being hellish.
- Chad Wong, Sarasota, FL 24060
- Lionel Mares, Sun Valley, CA 91352 I strongly urge the USPS to upgrade its fleet to electric vehicles to help slow down carbon emissions. We can still take action now to reverse climate change and to save the USPS money in the long term if we can upgrade its fleet to electric vehicles.
- Kent Strumpell, Los Angeles, CA 90045
- Charming Evelyn, Los Angeles, CA 90020
- Ronald Williams, Robbinsdale, MN 55422 Dear Postmaster General DeJoy: Since the Postal Service fleet is so large, purchase for electric vehicles would make a big impact. Also, set a great example.
- Greg Jensen, Fredericksburg, VA 22401
- David Podsiadik, Michigan City, IN 46360 No nonsense decision, 100% electric. Let's set the bar.
- Jean Lofy, Portland, OR 97222 We suffered from the severe wildfires here in Oregon last year. On one day, Portland posted the worst air quality in the WORLD! Follow the science. Electrify everything!
- Edgar Cid, Edgar, NY 11757
- Emily Cyr, Chicago, IL 60657
- Larisa Manescu, Washington, DC 20009 I really don't want us to miss this opportunity to electrify the world's biggest civilian fleet! All people in all neighborhoods deserve clean air - and our mail delivery is a perfect place to start. We must go beyond 10% electric!
- Julianne Tharp, Brandon, MS 39047
- Leslie Flanagan, Charlotte, NC 28211
- Rahul Isola, Cornelius, NC 28031
- matt bubernak, louisville, CO 80027 We need this.
- Mel Castro, Tucson, AZ 85711 I care about the impact we have on our planet and you should too. Let's try to leave the world better than we found it.
- Katherine Garcia, Washington, DC 20011
- Kenyon Karl, Saco, ME 4072
- Andee Krasner, Jamaica Plain, MA 2130 Electric vehicles cost less to maintain, they lower air pollution, and they are great for the planet. It's a win win win for our kids.
- Hillary Larson, Denver, CO 80218 We need the whole USPS fleet, not 10 percent, to be electric. I live in Colorado and have watched the air quality and fires become worse every year -- this summer we had the worst air quality in the globe. With transportation as our nation's largest carbon polluter, we must take every action possible to protect our air and climate. Thank you.
- Janelle Wolf, Bemidji, MN 56601
- MIWA TAKAKI, Redondo Beach, CA 90278
- Arthur Feinstein, Arthur, CA 94107
- Yailine Maldonado, Los Angeles, CA 90018

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- Tim Minotas, Oakland Township, MI 48306
- Jesse Piedfort, Seattle, WA 98133
- jason bishop, UNION CITY, CA 94587 pls pls pls specify battery electric when ordering new USPS trucks. postal workers have suffered long enough. I personally can smell the mail before I can hear it being delivered.
- Bryan Peters, Point Pleasant, NJ 8742 I want electric USPS vehicles in my community to better our environment and protect our citizens.
- Rich Nymoen, Roseville, MN 55113
- David Sacerdote, Palo Alto, CA 94306 I, like pretty much every American, have to breathe the exhaust from the existing USPS vehicle fleet. Switching to electified zero-emissions vehicles will mean that neither I nor anybody around me needs to do that.
  In addition, for the start-stop heavy workload that USPS subjects its vehicles to, electric vehicles with regenerative braking have far lower maintenance costs than the legacy gas and diesel vehicles the USPS has been using.
  It's worth making the capital investment in lower-cost-of-maintenance and cleaner vehicles today.
- Chris Gilbert, BERKELEY, CA 94707
- Kathleen Powers Conti, Austin, TX 78705 Hello, We owe it to ourselves and our children to ensure the well being of our environment and also support the USPS.
- Laura Rosenberger Haider, Fresno, CA 93702 Gasoline consumption is causing more oil wells to be drilled in California and stronger extraction chemicals to be used to get the last drops. These will eventually leak and release harmful gases and contribute to climate change like the rest of the abandoned & idle oil wells that are safety hazards (many of which are still leaking gases and chemicals coming from newer oil wells) and costing a lot of money to seal and clean and remediate the environmental destruction and polluted water that threaten neighbors' health.
- Laureen Zunner, Albuquerque, NM 87112 If I can go electric so can USPS!
- Jacob Turner-Remmers, Waukesha, WI 53188
- Howard Dash, Las Cruces, NM 88007 Dear Postmaster DeJoy, I strongly urge you to replace all the postal vehicles with 100% electric vehicles. Postal vehicles are ideal for electrification as most of them travel distances that allow them to be recharged overnight. Most of the postal vehicles are old and need replacement. Now is the time to go electric. Thank you.
- Carl Klein, Evanston, IL 60202
- Bill Beren, Upper Montclair, NJ 7043
- Pat McLaughlin, Norristown, PA 19401
- Andy Heaslet, St Louis, MO 63116 Why make an investment in technology that will be out of date within this decade. Please make big investments in the future - not in the past!
- Collin Thompson, San Antonio, TX 78216 The United States must be a leader in the fight against climate change. By electrifying the USPS fleet, the government would set an example to other governments, businesses, and individuals showing its commitment to cleaner air and a healthier climate, as well as changes for a better world are possible.

- William Grant, Godfrey, IL 62035
- Natalie Smith, Barboursville, VA 22923 As someone who lives in rural Virginia, I know that it takes a long time on the road to reach all of the mailboxes in my area. The amount of fossil fuels burned during that time is further polluting the air, and the USPS should use electric vehicles to help mitigate this issue. Thank you.
- Daniel Reitz, Centennial, CO 80112 Please do what you can to save carbon emissions and my kids' future.
- Dan Nygaard, New Brighton, MN 55112 Please stop using fossil fuels in the USPS fleets. Their short daily routes would be ideal for an electric vehicle and there is no need for the continued pollution.
- Joel Elio, Shirley, NY 11967
- Denise Thomas, West St Paul, MN 55118
- Margaret Wuensch, New York, NY 10075 Importance of clean air for all!
- Sue Lepore, Tacoma, WA 98407
- Debra Mcnealy, Vancouver, WA 98661 This is important. We only have one earth!
- K Peterson, Chicago, IL 60625
- Corinne Silvert, Danbury, CT 6810 This will make a significant improvement in air quality
- Kate Williams, Leicester, VT 5733
- Susanne Varlese, Boulder, CO 80304
- Oskar Leuthold, Santa Cruz, CA 95062 make a bold step into zero-emission vehicles!
- S Patricia Keefe, Braintree, MA 2184
- Sharon Sewell, Fort Worth, TX 76140
- Michael Erickson, Minneapolis, MN 55406
- Raymond Majewski, New Castle, DE 19720
- Marystarshine Matlock, Saint Petersburg, FL 33734 This is a great opportunity to GET THE BALL ROLLING when it comes to addressing Climate Change by letting our national postal service provide a great example by driving a great number of electric vehicles. LET'S DO THIS!!!
- Karen Thiess, Cazenovia, NY 13035
- Charles Modjeski, Fremont, CA 94555
- Gabriel Graubner, San Jose, CA 95131
- Helen Hays, Oregon City, OR 97045
- David Miller, Wildwood, MO 63038
- Jeannette Bartelt, Frederick, MD 21702
- Cindy Kroll, S Milwaukee, WI 53172 Postmaster General DeJoy, Keep up! and electrify the federal fleet of postal vehicles. It's important to our climate, and important to me because I have beautiful grandchildren who I want to see grow up to live in a world with zero-emissions pollution. As a matter of fact - do us all a favor and resign.
- Mary Papp, Indian Land, SC 29707
- Lynn Le Mere, Minneapolis, MN 55407
- Daniel Gonzalez, San Diego, CA 92129
- Theodore Schroeder, Medford, OR 97504 Come on USPS! You have to transition to 100% electric vehicles. That's the way the world is going and must to help alleviate climate change. Lead the way!

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- deborah bushey, Clifton Park, NY 12065
- R F, FORT COLLINS, CO 80521
- Jack Simon, Phoenix, AZ 85042
- Jackie Carter, Medina, OH 44256
- Claudia Miranda, Lake Mary, FL 32746
- Barry Spielvogel, New York, NY 10075
- Nellie Medlin, Holly Springs, MS 38635
- Donald Chesebro, Port Angeles, WA 98362
- Sally and lew Tusken, Oshkosh, WI 54901 The US Postal Service needs to take care of efficient, timely mail delivery, and use cleaner energy. Upgrade to electric vehicles, become a public servant to our country. DeJoy has failed to develop a sustainable path forward in energy use and mail delivery. For the good of the country, DeJoy must resign.
- Roberta Feil, Convent Station, NJ 7961 This is a great opportunity for you to take the lead in stamping out air pollution from fossil fuel transportation. Please do what is morally right and just for ourselves and future generations. Go 100% ELECTRIC.
- Celia Wulff, Tualatin, OR 97062
- Susan Pernot, Cortez, CO 81321
- Denise Edelson, Woodstock, NY 12498
- Gail Troy, Shipman, VA 22971 Electricity from renewable non-nuclear is to be used.
- Dr Tandie Mitchell, Greeley, CO 80631 Because I breathe and I want my loved ones to be healthy and contribute to our environment.
- Linda Ford, Huntington Beach, CA 92648
- Ron Reinebach, Portland, OR 97225
- Anne Nelson, Woodstock, NY 12498 One more very important step. This would be wonderful!
- Frank Levey, Sarasota, FL 34240 We have seen how much damage fossil fuel use has done by effecting our climate. We need to take action before it is too late.
- Elinor Gibb, Westport, CT 6880
- Gary Warner, Fort Jones, CA 96032
- Eleanor Smithwick, Rome, GA 30161
- Jerry Schutte, Tempe, AZ 85282
- Adrienne Acoba, Vail, AZ 85641
- Doug Roaten, Matthews, NC 28105
- ROGER SCHMIDT, Sun Prairie, WI 53590
- Jo Ann Miola, Mineola, NY 11501
- Lisa Fenton, Palm Beach Gardens, FL 33410 E- vehicles are the future, don't bog us down in the past polluting for the next 30 years.
- Charlotte Gray, Hemet, CA 92544
- Donna Hoffman, Pittsburgh, PA 15217
- Mary Mischtschuk, Woodbridge, VA 22191
- Judy Arbic, Glen Burnie, MD 21060 It matters to me because it would help eliminate pollution and make our air cleaner and healthier for people to breathe. Green energy is the way of the future and other countries are already doing it. We can't let other

countries get ahead of us with Green Energy! We are supposed to be a leader of other countries not a follower.

- Philip Ritter, Surprise, AZ 85388
- David and Vicki Rosenstriech, Larchmont, NY 10538 Be a green model for the country!
- Anne Swanson, Campbell, CA 95008
- Diane Difante, Martinsburg, WV 25403
- Rebecca Straw, Saint Petersburg, FL 33712
- Deborah Lee, Chicago, IL 60640
- Marlene Broemer, Ontonagon, MI 49953 Every step away from fossil fuels is a step toward freedom.
- Patricia Garcia, Glendale, AZ 85308 Take the lead. Be one of the first largest companies to go to 100% electric vehicles. Help us to breathe clean air.
- Sally Nelson, Berkeley, CA 94703
- Mark & Susan Glasser, Los Angeles, CA 90066
- Judith Fenley, Graton, CA 95444
- Fred Herrera, Sun Valley, CA 91352
- Harrison Bertram, Schaumburg, IL 60193
- Susan Falcon, Sacramento, CA 95816 Time is NOW to invest in our planet's future. Electric vehicles make ene.
- John Glebs, Saint Louis, MO 63116
- Michael Morgan, Valencia, CA 91355
- Mary Findlay, Abington, PA 19001
- Rex Grove, Bettendorf, IA 52722 Electrics or at least hybrids for local deliveries makes very practical sense. A Prius truck... YES!
- Jo Kilburn, North Berwick, ME 3906
- Eric Vermeulen, Grandville, MI 49418
- Judy Fairless, Warren, NJ 7059 Postal trucks are on the road every day. Making them electric would help combat climate change.
- norma cortez, Austin, TX 78745
- Cj Truesdale, Wheaton, IL 60187
- Mary Ann Ihm, West Bend, WI 53090
- Penny Mcginty, Bellingham, WA 98227 Get Dejoy out!!
- Virginia Arnold, Lombard, IL 60148
- Mary Ann Kelly, Sioux City, IA 51104
- Cynthia Sadler, Cortez, CO 81321
- Christopher Dean, Houston, TX 77006
- Ardith Blank, Tigard, OR 97224 We must do all we can to get rid of the gas guzzlers. Also get rid of Dejoy who is trying to destroy our postal service.
- Thomas Beck, Woodstock, VT 55105 Climate Change is an existential threat to humanity. We must do everything we can to reduce carbon emissions. There is NO PLANET B!
- David Ramos, Mishawaka, IN 46544
- Jo Reisdorfer, Minneapolis, MN 55409 We need to protect our planet. Fossil fuels need to be replaced with clean energy.

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- Stephanie Reynolds, Brookings, OR 97415 Can't use the USPS, if I cannot afford it.
- Judy Epstein, Minneapolis, MN 55408 Electric vehicles do NOT contribute to climate change!
- Melissa Epple, Santa Fe, NM 87505 Electrifying the US Postal Service bldgs and entire fleet is necessary for all life to continue to thrive on this planet for at least the next 7 generations.
- Karen O'Rourke, Canoga Park, CA 91304
- Barbara Foster, Bellingham, WA 98226
- Tim Snider, Branford, CT 6405
- Christina Dyson, Redmond, WA 98052
- Sidney Ellison, San Jose, CA 95133
- Gladys Bransford, Little River, CA 95456 While you are still Postmaster, you need to protect people's lungs, including your postal employees, as well as the public they serve by providing the electrified fleet that is necessary for the health of all concerned. No new fossil fuel vehicles should be purchased or used.
- Christine Denning, Wilton, CT 6897
- Al Mendelsohn, Kennebunk, ME 4043
- Marissa Guardascione, Tamaqua, PA 18252
- Elizabeth Kramarck, Townsend, DE 19734
- Robert Coon, Chicago, IL 60618
- Elizabeth Draper, Portland, OR 97219
- Elaine Halay, Ossining, NY 10562
- Kimberly McReavy, Chanhassen, MN 55317
- Ern Parrott, Campbell, CA 22630
- Candice Petrides, Grand Rapids, MI 49534 Take a stand and be something others look to as a bright spot. Be the good example!
- Jeff Schreiber, Ridgewood, NJ 7451
- Virginia Turner, Woodland Hills, CA 91367
- Alan Linville Sr., Louisville, KY 40214
- Barbara Hargrove, Hammond, IN 46324
- Patricia Foschi, Santa Fe, NM 87505
- Alexis Gilman, McLean, VA 22101
- Christina Case, Phoenix, AZ 85015
- diana koeck, Costa Mesa, CA 92626
- Jessica Adams, Colville, WA 99114
- A D, Burbank, CA 91506
- Mary J Wood, San Luis Obispo, CA 93401
- Martha Holmes, Charleston, SC 29412
- Kris Peckman, Roanoke, VA 24019 Postal delivery vehicles stop and start constantly, using extra fuel and creating additional pollution. Electric vehicles stop and start smoothly without the extra emissions.
- Art Hanson, Lansing, MI 48917
- Marney Richards, Tallahassee, FL 32301
- Pat Bulla, Austin, TX 78750

- Margaret Croner, Saint Louis, MO 63146
- Lea Gina White, West Hartford, CT 06110 Postal trucks are everywhere daily. Electrify them NOW to curb greenhouse gases.
- Fred And Carol Decrescentis, Essex, CT 06426
- Janet Mroczek, Chicago, IL 60618
- Theodore C. Snyder, Theodore C., CA 91344
- Bonnie Helmer, Indialantic, FL 32903
- Rollin Odell, Kingston, WA 98346
- Terri Saurs, Decatur, IL 62521
- Barbara Scavezze, Woodinville, WA 98072
- Trina Aurin, Foothill Ranch, CA 92610 We need to move forward and buy what we need to buy for the PS to keep American clean
- Richard Rollins, Berkeley, CA 94702
- Audrey Lasse, Oconomowoc, WI 53066
- Rebecca Glass, Shoreline, WA 98133
- Scott Meyer, Louisville, KY 40213
- Helen Findley, Madison, WI 53705
- Nancy Robinson, Plymouth, MN 55446
- Barbara Berger, Princeton, NJ 8540
- J.W. Oman, Oakland, CA 94618
- Alan M Jasper, Delray Beach, FL 33484
- George Karas, Phoenix, AZ 85050
- Clarence Krygsheld, Bolingbrook, IL 60440
- Darlene Messer, Austin, TX 78745
- Susan Ryan, Trent Woods, NC 28562 Electrifying the USPS fleet seems like a total no brainer. They drive short distances on a daily basis with a home base for charging overnight. Let's do it.
- Roberta Nixon, Midlothian, VA 23112 There is way too much pollution due to dangerous emissions from vehicles. I am horrified and ashamed that the poorly run USPS has planned yet another bad decision - to buy fossil-fuel-burning trucks for 90 % of your fleet! The Earth needs "clean and green" measures to try to halt climate change.
- Patrick Knight, Silver Spring, MD 20904
- Hiasaura Rubenstein, Nashville, TN 37205
- Maureen Cleveland, Deming, WA 98244
- Becky Crompton, Des Moines, WA 98198
- Claudette Selph, Rio Rancho, NM 87144
- Pat Fojtik, Palos Hills, IL 60465
- Phillip Wochner, Shaker Heights, OH 44122
- Mark Neitenbach, Berthoud, CO 80513
- Lanny Reddick, Winter Garden, FL 34787
- Pablo Ruiz, Green Valley, AZ 85614
- Kent Taylor, Olathe, KS 66061
- Mary Margaret Kaden, Pacifica, CA 94044
- Pam Doran, Waldport, OR 97394

- Patrick Green, Owasso, OK 74055
- Georgia Locker, Ft. Collins, CO 80525
- Derek Smith, Boise, ID 83716
- Katherine Yvinskas, Hackettstown, NJ 7840 The postal service is an important part of our life. Go for the green with electric vehicles.
- Laurel Abreu, Hattiesburg, MS 39402 It would be wonderful to see the Postal Service lead in this way.
- Steve Kahn, Fort Lauderdale, FL 33301
- Angela Hessenius, Montvale, NJ 7645
- Katherine Quarton, Oakland, CA 94611 Our government has the purchasing power and the ability to accelerate adoption of EV, an important strategy for reducing carbon emissions and slowing climate change. Our reliance on oil and other fossil fuels is damaging our environment and putting the health of our communities at risk. The time for decisive action is NOW. Don't kick the can down the road, because we are past the point of incredulity and deniability. Let's lead the way with innovation and responsibility, seize the opportunity to create green jobs for Americans, and protect our environment for generations to come.
- Rebecca Morgan, Las Vegas, NV 89129 When making a cake, you need the oven to bake it so we can enjoy it. Americans are the oven, so let's get started baking.
- Karen Richardsonhenley, Milford, NY 13807 The USPS transports so many essential items. Using fossil fuel powered vehicles to achieve this is a large source of pollution. I don't know if any responsible changes can be made while another of trumps corrupt cronies (De Joy) remains, but I do know that we are past the point of being able to take ineffectual baby steps. This a war to save the life of every creature on earth, we must be very bold and gear up and experience meaningful changes before it's all lost!
- Krystal Watson, Garland, TX 75041 This would help the air quality so I feel that it is important so should you!
- Itala Rutter, Laredo, TX 78043
- Inge Knudson, Concord, MA 1742 Electric vehicles are the future. Upgrade the postal fleet now!
- Julie Hermann, Dubuque, IA 52001
- Stanton Kaye, Oxnard, CA 93033 Keep me in mind for a large donation next year
- Gladys Bray, Somerset, KY 42503
- Cece Paltep, Seattle, WA 98118
- Ernest Brewster, New York, NY 10128 With climate crisis bearing down on us and climate-related disasters to cost our children and grandchildren untold sums of $, the least we can do is start to transition the postal fleet to EV.
- Stephen Okada, New York, NY 10025
- Carlos Landabazo, Phoenix, AZ 85017 Federal government entities need to demonstrate the capability of American engineering and become a leader in Renewable energy with a sustainable model for other governments and countries around the world. The first step includes prioritizing the transition to electric vehicles. Progress is forward the technology is available and more affordable. The time for delay is over and the excuses are moot.

- Martin Cole, Salt Lake City, UT 84109
- Kathleen Rogers, Ranchos De Taos, NM 87557 Not only are electric vehicles good for the world, they are also cheaper to run and have less moving parts to need repair. This is a no brainer, an electric fleet is only a plus for our health, our future and the bottom line.
- Tomas Daly, Eugene, OR 97402 Make America Green!
- Sharyn Calahan, Huntsville, AL 35802 This is one place that we can make a large impact for the environment.
- Craig Reardon, Agoura Hills, CA 91301 It would make SUCH a strong public statement if all USPS vehicles were 100% clean EV's. I'm for it 1,000%.
- W Keene, Winslow, ME 4901
- Cliff Bahlinger, Cordova, TN 38016 Be a leader!
- Louis Cumings, Rosenberg, TX 77471
- Erin Willetts, Las Vegas, NV 89128
- Sherry Robertson, Casa Grande, AZ 85122 Making changes to our postal fleets will make a difference.
- John Bour, Tiffin, OH 44883
- Kimberly Presley, Springfield, MO 65802
- Linda Heaset, Charlotte, NC 28270 US governmental agencies should be a world leader in responsible energy options. Don't pretend to be upgrading our ancient postal fleet. Go electric now. don't kick the responsible thing to do down the road. NOW IS THE time to go electric!
- Anne Seaberg, Epping, NH 3042
- Paul Foster, Jenner, CA 95450 Seriously, what are you waiting for?
- Carole Huelsberg, Port Townsend, WA 98368
- Rhea Osland, Laurel, IA 50141 Electric vehicles is absolutely the way to go. Make this a better world for the next generations.
- Lesli Lee, Santa Rosa, CA 95409 The International Panel on Climate Change of top scientists from around the world tell us we only have about 10 years to act boldly, to avoid catastrophic consequences of continuing to add carbon to the atmosphere. We must do everything we can, as soon as we can, to reduce more human and other life forms from suffering as we destroy our only home planet. Please wake up, see the writing on the wall, be brave and do the right thing!
- Susan Gonzales, Rockwall, TX 75032
- William Squires, Bethpage, NY 11714
- Oron Bass, High Springs, FL 32643
- Susan Saenger, DURHAM, NC 27705
- James Rodell, Corvallis, OR 97330 Quieter and more earth-friendly
- Margaret Jamieson-Moxley, Dayton, NV 89403
- Lynn Smith, Capistrano Beach, CA 92624
- Mary Maher, Davenport, IA 52804
- Michael Sheidler, Dayton, OH 45403
- Janet Tyler, Pasco, WA 99301 Please support the transition of the postal fleet to 100% electric vehicles! This is very important to our future!

- Thanks for your consideration.
- Diane Stotler, Del Rey Oaks, CA 93940
- Sebastian Kreitschitz, Park City, UT 84098
- David Michaels, Sonora, CA 95370
- Robert Smythe, Chevy Chase, MD 20815
- Richard Robinson, Fresno, CA 93710 And while we're at it, let's put solar panels on every Post Office building, where it's feasible.
- Meredith Stewart, Shreveport, LA 71104 Please take note.
- Christopher Hoffman, Raritan, NJ 8869
- Stephanie Ragusa, Clearwater, FL 33760
- Martha Turner-Borek, Chelmsford, MA 1824
- Vincent Bracy, Bronx, NY 10469
- Beverly Phillips, Munster, IN 46321
- Kelsie Jacob, Birdseye, IN 47513
- Jeffery Termini, Tonawanda, NY 14223
- Wade Wheeler, Fort Worth, TX 76131
- Mitra Shams, Prospect, KY 40059
- Jamie Kelly, Williamstown, MA 1267
- Madalina Diaz, Brooklyn, NY 11213 Instead of using gas using electric is better for the environment
- Dianne Vais, Fountain Hills, AZ 85268 It's time Postmaster DeJoy!! Make all postal driving vehicles electric!!!!
- Diane Van Horn, Rutledge, TN 37861 I drive a Prius but would love a Tesla! I like electric vehicles
- Jolene Robertson, Ponca City, OK 74604
- Sherry Emanuel, Raleigh, NC 27614
- Abbe Alpert, Denver, CO 80223
- Chris s Retro Finds, Oak Creek, WI 53154
- Robin Olander, Oklahoma City, OK 73118
- Colleen Barlow, Bel Air, MD 21015 USPS needs Electric vehicle fleet & solar panels or rainfall capture devices & native gardens on buildings.
- J Fisher, Bayville, NY 11709
- Jessica Pak, Pittsburgh, PA 15218
- Gregory Ashley, Suisun City, CA 94585 Come on Joe, You know this is the right thing to do economically and environmentally. Please no excuses.
- Holly Green, Keene, TX 76059
- Elizabeth Rublev, Durham, NC 27705
- Wayne Osick, Henderson, NV 89014 Fire Dejoy!!!! And switch to an electric fleet now!!
- John Mckee, Reseda, CA 91335
- Thomas Rogers, Eagle, ID 83616
- Elijah Van Wormer, Salinas, CA 93906 Please
- Lloyd Williams, Albrightsvlle, PA 18210

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- June Parsons, Rio Rancho, NM 87124 USPS needs to protect public health while serving the public, by electrifying their fleet and stopping their contribution to air pollution and our climate crisis.
- Millicent Thapa, Oxford, MS 38655
- Clarice Arakawa, Port Angeles, WA 98362
- Joanne Bolduc, Dedham, ME 4429
- Linda Nelssen, Eden Prairie, MN 55344 You should not be picked on alone! All government vehicles must change to clean sustainable solar and wind driven electrical energy. Stop evil oil from further destruction of our entire planet. End their sick arrogant we-own-everything attitude.
- Nicholas Mccormick, Olivebridge, NY 12461 10% isn't enough we need more EV. Also the USPS is a mess, priority from NY to Tx took 10 days, ridiculous
- Laura Haider, Fresno, CA 93727 The use of gasoline is causing governments to let more oil wells be drilled using harmful chemicals near poor people's homes & schools to get out the last drops. Eventually, these wells will leak unhealthy gasses that contribute to climate change as many others leaked before. It will cost much money to seal all these idle or abandoned oil wells and clean up the polluted water, soil and damage to the environment. Asthma, this heart disease, dementia, birth defects and developmental problems in babies is hard to reverse.
- Margaret Wuensch, New York, NY 10075 I care about mail delivery. And I care about the environment.
- diana koeck, Costa Mesa, CA 92626
- Janet Tyler, Pasco, WA 99301 Our population is using more and more electric powered vehicles. It's time for the Postal Dept to do the same to help our country! This is so important, please move as quickly as possible!

From:	Shayne, Jesse
To:	NEPA
Cc:	Aguilar, Josue
Subject:	[EXTERNAL] Public Comments Re: Draft Environmental Impact Statement for Purchase of Next Generation Delivery
Date:	Monday, October 18, 2021 7:20:25 PM
Attachments:	NRDC USPS Member Comments.zip

CAUTION: This email originated from outside USPS. **STOP and CONSIDER** before responding, clicking on links, or opening attachments.

Mr. Davon Collins,
Environmental Counsel
United States Postal Service
475 L'Enfant Plaza SW, Office 6606
Washington, DC 20260-6201

Re: Draft Environmental Impact Statement for Purchase of Next Generation Delivery Vehicles

Dear Mr. Collins & Administration Officials:

Please accept these 20,434 public comments from members and online activists of the Natural Resources Defense Council (NRDC), calling on Postmaster General DeJoy and the USPS to heed our growing calls for major climate action by making a plan to transition the USPS to 100% electric vehicles as part of its proposal for purchase of next generation delivery vehicles.

Thank you for everything the U.S. Postal Service (USPS) does to keep the U.S. economy moving and to bring essential services to people across the country.

I'm writing you because I'm worried that the USPS's current proposal for the purchase of next generation delivery vehicles does NOT go nearly far enough in investing in clean electric vehicles (EVs) and reducing the agency's carbon emissions.

In addition to drastically reducing dangerous carbon emissions, investing in EVs would save your agency significant funds in fuel costs -- a financial boon given that USPS has lost $69 billion over the last 11 years.

As the U.S. government agency with the largest fleet of vehicles, the USPS has a responsibility to face the climate crisis head-on and set an example for the rest of the country -- and the world -- by transitioning to 100% EVs as quickly as possible.

Your agency claims that it would be too expensive to transition to 100% EVs, but Congress has indicated that it will cover the additional costs needed to make it happen.

For the sake of our climate and clean air, USPS workers, and communities facing disproportionate impacts from climate change -- predominantly BIPOC and low-income communities -- and to ensure the continued financial stability of the agency, I urge you to commit USPS to transitioning to 100% EVs in the near future.

Thank you.

FCHEA
Fuel Cell & Hydrogen Energy Association

October 12, 2021

Mr. Davon Collins
Environmental Counsel
United States Postal Service
475 L'Enfant Plaza SW, Office 6606
Washington, DC 20260-6201

RE: Notice of Availability of Draft Environmental Impact Statement for Purchase of Next Generation Delivery Vehicles

Dear Mr. Collins,

On behalf of the Fuel Cell and Hydrogen Energy Association (FCHEA), we appreciate the opportunity to provide comment on the U.S. Postal Service's (USPS) Draft Environmental Impact Statement for Purchase of Next Generation Delivery Vehicles.

FCHEA is the national trade association representing more than 65 leading companies and organizations that are advancing innovative, clean, safe, and reliable energy technologies. FCHEA's members represent the full global supply chain of the fuel cell and hydrogen industry including automakers, aerospace, industrial gas suppliers, fuel cell and electrolyzer stack and system manufacturers, component suppliers, utilities, and more. Collectively, our members are located across the country and employ hundreds of thousands of people.

Fuel cell technologies and hydrogen energy are being increasingly viewed as essential decarbonization options across the United States and around the world for a wide range of sectors, including transportation of goods and people. Fuel cell electric vehicles use fuel cells to generate electricity onboard through an electrochemical reaction of hydrogen, not combustion. These light-duty zero-emission vehicles are capable of traveling 300 to 400 miles on a tank of fuel, with refueling in just three to five minutes. Fuel cell electric vehicle transportation is showing great promise for the medium-duty and delivery van market in particular due to their long-range, fast refueling, and scalability – allowing for smooth operations for fleets using an efficient centralized fueling capability.

In just the last few years, there has been much commercial development in fuel cell transportation and hydrogen fueling. Today, there are over 10,000 light-duty fuel cell electric consumer vehicles on the road in California, accompanied by dozens of fuel cell electric buses in revenue service, tens of thousands of fuel cell-powered forklifts in operation across the country, and a growing deployment of medium- and heavy-duty vehicles for long-haul transport and delivery services, including customers like DHL, UPS, and FedEx. In fact, the USPS currently has a fleet of fuel cell material handling equipment in operation at its Washington National Distribution Center in southern Maryland.

www.fchea.org | 1211 Connecticut Avenue NW, Suite 650 | Washington, D.C. 20036 | (202)-261-1331

There are a wide range of fuel cell manufacturers and automakers advancing activities in this space, including General Motors, Toyota, Hyundai, Plug Power, Cummins, Ballard Power, Nikola Motors, and many more. Many FCHEA members are also focused on building out the hydrogen production and fueling ecosystem that will result in publicly accessible hydrogen fueling networks across the country supporting not just light-duty consumer vehicles, but also fleets of medium-and heavy-duty FCEVs.

Hydrogen transportation also has great potential for emissions reduction. On a well-to-wheels basis, no matter the source of hydrogen, fuel cell electric vehicles dramatically reduce CO_2 emissions by at least 50% compared to combustion vehicles and are on par or better than reductions with battery electric vehicles (BEVs). When hydrogen is generated from renewable or low-carbon sources – such as wind, solar, biomethane, or natural gas with carbon capture and sequestration – carbon emissions are greatly reduced or can be eliminated entirely. Medium- and heavy-duty vehicles are especially important from an environmental justice standpoint, helping to reduce emissions, improve local air quality, and protect public health on congested highway routes and from industrial warehouses for the last-mile delivery market.

A recent report by McKinsey and Company, *Road Map to a US Hydrogen Economy*, found that the hydrogen sector has tremendous potential to bolster the US economy through the creation of investment opportunities and skilled energy jobs, while providing significant reductions in emissions. The report finds that by 2050, the hydrogen sector could provide 16% reductions of CO_2 emissions, 36% reduction in NO_x emissions, and account for 14% of US energy demand.

We understand that the USPS has already provided a contract for the development of next generation delivery vehicles that will include both internal combustion engine (ICE) and BEV drivetrain options. We request that FCEVs and adaptation of fuel cell drivetrains be considered for this environmental impact assessment, as well as in this or future procurement and project demonstration efforts by the USPS. We believe that fuel cell transportation is well-aligned for the USPS in both meeting its delivery and service needs, as well as providing the environmental benefits that are sought by the agency.

We would like to offer a briefing for you and your leadership with our top member executives operating in this space to elaborate on these points further. We look forward to greater coordination and collaboration between our industry and the Postal Service. Should you wish to contact me in the meantime, I can be reached by email at fwolak@fchea.org or by phone at (202) 261-1333.

Sincerely,

Frank Wolak

Frank Wolak
President & CEO
Fuel Cell and Hydrogen Energy Association

www.fchea.org | 1211 Connecticut Avenue NW, Suite 650 | Washington, D.C. 20036 | (202)-261-1331

The following organizations have signed on in support of this letter:

California Hydrogen Business Council

Colorado Hydrogen Network

The National Fuel Cell Research Center

Renewable Hydrogen Alliance

Western States Hydrogen Alliance

RUTGERS

David McDermott Hughes
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6 October 2021

David M. Hughes
Professor of Anthropology

Mr. Davon Collins
Environmental Counsel
United States Postal Service
475 L'Enfant Plaza SW, Office 6606
Washington, DC 202601
nepa@usps.gov

Dear Mr. Collins:

I write to submit public comments on the USPS's draft environmental impact statement regarding "Next generation delivery vehicle acquisitions." I am an environmental anthropologist – on the faculty of Rutgers University for 21 years – and carry out research on the energy transition from fossil fuels to renewables. My recent work has appeared in the magazine *Boston Review* and in the just-published book, *Who Owns the Wind? Climate Crisis and the Hope of Renewable Energy* (New York, Verso Press).

Overall, electrification of even a segment of the USPS fleet will contribute to climate stabilization. Electrification will reduce the fleet's contribution to ground-level pollution, and it will save money. All that is worthy of support.

Let me, however, propose three means by which the vehicles and charging stations might be put to even better use (possibly through pilot programs).

1. In the design specifications, equip the battery electric vehicles (BEV) with outgoing charging ports. In case of an emergency – when the grid goes down and postal service is suspended – the BEVs could serve as mobile resilience hubs. If deployed in vulnerable neighborhoods, their batteries could charge residents' medical and communication devices, helping reduce disruption and death.

2. Broaden access to the charging stations and parking lots. The document specifies that vehicles will charge in dedicated lots during evening, night, and early morning hours (Section 4-4.3.1 on page 4-11). Presumably, that lot and those charging stations will lie unused during the day. The USPS is missing opportunity here. Why not install more charging stations, including in publicly accessible lots? In that way, members of the public – say, people who have commuted to the same area for work – may charge their cars at the Level 2 stations during the day.

RUTGERS

3. Finally, USPS-owned parking lots and roofs have the potential to generate electricity from the sun. As the energy transition proceeds, the USPS will probably install solar panels. In so doing, you will certainly save money on utilities. Why not take these steps now, in tandem with the fleet conversion? In fact, it is cost-effective to include chargers in the uprights of a solar canopy above a parking lot. Furthermore, one can wire the panels to charge vehicles directly during the day. And, with what is known as "black-start capability," the panels would operate when the grid goes down, providing resilience for the USPS buildings and fleet. USPS could even install charging ports for medical and communication devices, making each post office a local resilience hub. (See #1.)

These additions would cost little or nothing. (Solar panels would reduce costs, in fact.) They are ambitious in that they imply a broader role for the Post Office in American society. That role is increasingly necessary. The impacts of climate change – from hurricanes to fires – cut people off from electricity, medicine, and essential services. More so than any public entity, the USPS has the presence, coverage, equipment, and coordination necessary to reach every community in its hour of need. In Puerto Rico, Hurricane Maria killed more people through power outages than by wind and rain. Untold numbers of those people died because they could not obtain small amounts of electricity: enough to charge a nebulizer or refrigerate insulin. The USPS – if equipped with mobile batteries and solar-powered post office hubs – can address and alleviate that lethal vulnerability in the near term. I urge you to initiate projects that move the USPS in this direction.

Thank you very much for your attention to my comments. Please do not hesitate to contact me for further information or for the names of relevant experts.

Sincerely,

David M. Hughes

October 12, 2021

Attention: Mr. Davon Collins, Environmental Counsel
United States Postal Service,
475 L'Enfant Plaza SW, Office 6606,
Washington, DC 20260-6201

VIA E-mail to NEPA@usps.gov

Re: Draft Environmental Impact Statement (EIS) USPS Next Generation Delivery Vehicles

Dear Mr. Collins:

In August 2021, the United States Postal Service issued a Draft Environmental Impact Statement on the replacement of 50,000 to 165,000 delivery vehicles. The proposed action would purchase at least ten per cent battery electric vehicles and the remainder would be powered by internal combustion engines.

I refer to the April 2, 2021, letter from Robert Tomiak of the United States Environmental Protection Agency to the United States Postal Service and specifically to the following:

> *Strategic locations for all-electric fleets should consider designated National Ambient Air Quality Standard nonattainment and maintenance areas, and communities with environmental justice characteristics that are already burdened with high levels of traffic-related pollutants... The EIS should also discuss why the Postal Service selected internal combustion engines in certain case (or areas) over-all.*

Despite this recommendation from the US Environmental Protection Agency the Draft EIS offers only a generic response that:

> *The Postal Service would evaluate ICE and BEV NGDV deployment based on existing nationwide delivery route characteristics and other established factors to prioritize potential placement of the two power trains. Route characteristics for placement of BEV NGDV would include routes located in mild temperature ranges, routes with frequent and numerous curb-line stops as they best recapture the vehicle's motion (kinetic) energy via regenerative braking to recharge the battery, and routes in locations with compromised air quality and/or states with proactive BEV policies and regulations.*

Further the USPS Draft EIS response to environmental justice concerns is dismissive:

> *Both the Proposed Action and Alternatives would result in negligible beneficial impacts on air quality due to higher emission controls and better gas mileage of the newly purchased vehicles as compared to the high maintenance and end-of-life delivery vehicles being replaced. Such beneficial impacts would occur regardless of race or socioeconomic status.*

As a resident of California I find the Draft EIS unresponsive to the concerns raised by the US EPA as well as the circumstances of my state and other regions similarly impacted by unhealthy levels of pollution.

I refer to the American Lung Association State of Air 2020:

- *The "State of the Air" 2020 found that, in 2016-2018, millions more Americans were living in communities impacted by unhealthy levels of pollution in the form of more unhealthy ozone days, more particle pollution days and higher annual particle levels than was found in previous reports.*

- *Nearly five in ten people—150 million Americans or approximately 45.8 percent of the population—live in counties with unhealthy ozone or particle pollution (with at least one F)...*

- *More than 20.8 million people, or 6.4 percent of the population, live in the 14 counties that failed all three measures.*

- *Los Angeles remains the city with the worst ozone pollution in the nation, as it has been for 20 years of the 21-year* history *of the report. Bakersfield, CA, returned to the most-polluted slot for year-round particle pollution, while Fresno-Madera-Hanford, CA, returned to its rank as the city with the worst short-term particle pollution.*

- *Cities in the West and the Southwest continue to dominate the most-ozone-polluted list.*

- *California retains its historic distinction, as it is home to 10 of the 25 most polluted cities.*

Recognizing that the United States faces a "profound climate crisis," on January 27, 2021, President Joseph Biden issued Executive Order 14008 mandating a government wide approach to the climate crisis calling for the deployment of clean energy technologies and infrastructures.

Is it the position of the United States Postal Service that compliance with an Executive Order of the President of the United States is optional?

At this moment Congress has appropriated supplemental and sufficient funding in the Build Back Better (Reconciliation) bill to the USPS to acquire an all BEV fleet. Whether that funding will remain in the final bill is unknown.

The Draft EIS does not contain a plan or provide substantive criteria for a plan to address pollution in those cities and regions that suffer from the worst air pollution. The USPS must commit to work with state and local agencies to develop specific plans and schedules that prioritize the deployment of non-polluting vehicles in the worst affected regions.

Respectfully,

Michael D. Lonergan
Berkeley, CA 94708

Carl E. Nash, Ph.D.
[redacted]
Washington, D.C. 20003
[redacted]

September 20, 2021

Mr. Davon Collins, Environmental Counsel
United States Postal Service
475 L'Enfant Plaza SW, Office 6606
Washington, DC 20260-6201

Comment on the Draft Environmental Impact Statement:

USPS Procurement of Next Generation Delivery Vehicles

The purpose of this comment is to raise serious questions about the limited information provided and choices analyzed for the Next Generation Delivery Vehicles (NGDV) Environmental Impact Statement (EIS). These comments also concern the serious deficiencies in the USPS procurement program itself.

The most serious and fundamental flaw in the USPS procurement process and the draft EIS prepared for it is that the process has been conducted in reverse: i.e., the proverbial cart has been put before the horse. The purpose of an EIS as described in the CEQ's NEPA Regulations is to provide, early in the agency's decision-making process, "full and fair discussion of significant environmental impacts and shall inform decision makers and the public of the reasonable alternatives" to the proposed action. *"Environmental impact statements shall serve as the means of assessing the environmental impact of proposed agency actions, rather than justifying decisions already made.* (40 CFR 1502.1, emphasis added)

The EIS stated, "On February 23, 2021, the Postal Service announced a contract award, contingent on the satisfactory completion of the NEPA process, to Oshkosh Defense, LLC (Oshkosh) for the future production of the NGDV. This decision preceded the issuance of this draft EIS by approximately six months. There is no indication that the range of alternatives presented in the EIS was determined in response to public input during the scoping process. Thus, the critical decisions in this process were made months <u>before</u> the draft EIS was released for agency and public comment, thereby precluding meaningful and timely input into the decision process and defeating the primary purpose of the draft EIS.

Following is a discussion some of the obvious specific deficiencies in the procurement and of the EIS prepared for it.

1. ***Information.*** Information about the design and specifications of the NGDV is inadequate making it difficult to assess the validity of this EIS.

The totality of NGDV specifications shown in the EIS is repeated below.

ICE NGDV Specifications

Design Specification	Estimated Value
Curb Weight (pounds [lbs.])	5,560
Gross Vehicle Weight Rating (GVWR) (lbs.)	8,501
Payload (lbs.)	2,941
Engine Size	2.0 liter, 4 cylinder
Mileage	14.7 miles per gallon (mpg) (without air conditioning) 8.6 mpg (with air conditioning)

The EIS provides very little information about the design and specifications of the NGDV. For example, it provides an estimated curb weight of 5,560 pounds, but no information on the material of the vehicle body and frame or whether it will be a unit body. This is important because it affects the vehicles' corrosion resistance, weight, and fuel economy. It is surprising that these vehicles would be twice as heavy as the Grumman LLV vehicles they will replace. The excessive weight suggests that the frame and body would both be steel, but that is not shown. The EIS also does not indicate whether the frame will be from a current production vehicle (as was the LLV frame) and if so, on what make/model will it be based.

The EIS states the NGDV would be powered by a 2-liter, 4-cylinder engine but does not indicate its horsepower or whether it will be turbocharged. An independent source indicated that the engines and transmissions would be obtained from the Ford Motor Co. Ford makes a variety of 2-liter, 4-cylinder engines, both conventional and turbocharged. Ford also built several hybrid vehicles in recent years (with a combination of 4-cylinder gasoline engines and electric motor/generators with batteries). It is not clear whether the USPS or Oshkosh even considered using a hybrid power train for the NGDV, probably because they were not specified as alternatives in the bidding process.

2. ***Powertrain.*** The choice of power for the NGDV is much too limited.

The only two options seriously considered were a conventional gasoline internal combustion engine or an electric motor with batteries. The procurement indicates that most of these vehicles would be the former.

The service of postal service delivery vehicles is substantially stop-and-go operation (equivalent to city driving in the EPA cycle). This type of operation is ideal for hybrid technologies because a significant part of the vehicle's kinetic energy is recovered when it is slowed. In city driving, the average hybrid vehicle uses about 60 percent of the amount of fuel used by a non-hybrid.

The retail prices of the hybrid vehicles are typically $3,000 to $4,000 more than the prices of an equivalent non-hybrid version. However, prices reflect consumer demand more than costs (buyers are willing to pay a premium for hybrids because of their superior fuel economy). The difference in cost to build a hybrid is almost certainly less than retail price differences.

According to the EIS, the NGDV would use 6.8 to 14.7 gallons of gasoline to travel 100 miles. Assuming that air conditioning would be used a quarter of the time, the average fuel consumption would be 12.7 gallons per 100 miles. If the ratio of hybrid to non-hybrid fuel economy in the expected stop-and-go driving is typical, the hybrid postal vehicle would use 7.6 gallons of fuel per 100 miles. The difference, 5.1 gallons/100 miles over 20,000 miles (less than two years of operation) would be over 1000 gallons of fuel which, at a cost of $3 per gallon would be $3,000. This saving in two years would more than justify the extra cost of the hybrid. Of course, there are major environmental advantages as well.

An advantage of the hybrid over an all-electric vehicle, beyond its lower cost, is that it would require no special charging infrastructure. If they used plug-in hybrid technology, the vehicles could be recharged overnight using 110-volt AC current. This option is not discussed in the EIS. The omission of serious consideration of hybrid or plug-in hybrid vehicles, especially for use in the many urban and suburban areas of the country, is a serious and unjustified omission in the presentation and analysis of alternatives. It reflects a biased, predetermined, excessively narrow selection of alternatives set forth in this EIS. This omission is in itself a fatal flaw in the decision process.

3. ***Air Conditioning.*** The justification for air conditioning is weak.

Nothing is said in the EIS about the substantially lower fuel economy of the NGDV with air conditioning. The first question is whether air conditioning makes practical sense. The doors and windows of these vehicles are regularly opened so that that much of the cooled air is lost. The Grumman LLVs do not have air conditioning, so it's obvious that letter carriers can function without it.

Air conditioning probably adds $500 or more to the cost of these vehicles (no cost data are provided), not to mention maintenance costs that would probably be at least that amount over the life of the NGDV. Air conditioning dramatically reduces fuel economy and the range of an electric vehicle. Deleting air conditioning would help to offset the extra cost of hybrid power.

Letter carriers who deliver mail on foot work without air conditioning as do drivers of many of the current postal delivery trucks today. They sometimes are in and out of their trucks which means that on a hot day they would be regularly subjected to dramatic changes in temperature when using air conditioning which may not be healthy. Would a combination of insulation in the vehicle body and fans directed at the drivers along with summer clothing provide adequate comfort? Even if air conditioning is deemed desirable, are there alternatives that are significantly more efficient than what is contemplated here? If air conditioning in vehicles is an issue with the National Association of Letter Carriers, it could probably be negotiated (hazard pay for summer driving!).

4. ***Procurement Cycle.*** What is the appropriate, realistic lifetime of the proposed NGDV?

This EIS has no discussion of alternatives for the planned lifetime of the NGDV. The high maintenance costs of the current Grumman LLV and their poor fuel economy by today's standards suggest that planning for an expected life of 10 to 15 years may be more realistic. Advancements in automotive technologies would likely permit more timely adoption of improved vehicle performance and might help to respond to changes in delivery programs. For example, the Grumman LLV, which has a curb weight of 2,700 pounds, is rated at 17 miles per gallon, but probably does not achieve that. A 2,700-pound vehicle today would get twice the fuel mileage: a major improvement. It is anticipated that within a decade, automotive fuel economy will make a further, substantial increase.

The dramatic increase in the payload capability of the NGDV, which is apparently to accommodate the increased use of the Postal Service to deliver goods for various retail companies, indicates the speed with which the principal job of the USPS can change in just a decade. The reduction in first class mail is another. Furthermore, will the post continue to be a major deliverer of advertising material given the cheaper alternative of internet delivery?

The time that has been spent on this procurement, nearly ten years between initiation and delivery of the first vehicles, means that the NGDV will be obsolete by the time the first vehicles are delivered. An alternative development and procurement strategy should have been considered. An evolutionary change in postal vehicles would very likely be more efficient than the revolutionary change occurring every 30 years with the LLV and the NGDV. The major differences between the LLV and the NGDV suggests that the 30 year life cycle is far from optimal. This issue should be specifically discussed in the EIS. The CEQ NEPA Regulations state that the section on Environmental Consequences should include "Energy requirements and conservation potential of various alternatives and mitigation measures." (1502.16)

An additional factor concerns whether the NGDC to be built by Oshkosh will last more than twenty years without major maintenance. It was noted that the corrosion resistance of the Grumman LLV aluminum was a factor in the thirty plus years many of these vehicles have lasted. If the NGDV has a steel frame and body, will it have sufficient corrosion resistance to survive the salted winter road conditions of much of the northern U.S.?

5. ***Coordinated Procurement.*** The Postal Service should have considered a coordinated procurement with other delivery companies.

The service provided by USPS is similar to that provided by FedEx, UPS, Amazon and other companies. There is no reason that the USPS needs a unique delivery vehicle (they can be distinguished by paint color). The EIS did consider some alternative, existing delivery vans, but it has no discussion of the alternative of a joint vehicle development program with these other companies. It could provide the efficiencies of a larger vehicle market, lower cost, and perhaps a superior delivery vehicle.

If having a right-hand drive is important, some manufacturers are used to building both right and left hand drive vehicle for various international markets. Did the USPS consider procuring commercial-off-the-shelf vehicles built for use in Britain, Australia, or Japan where right hand drive vehicles are the norm?

6. ***Safety.*** The EIS does not discuss the safety implications of the design and features of the NGDV.

The USPS announcement of the NGDV contract award noted various safety features: air bags, anti-lock brakes, back-up cameras, blind-spot warning systems, daytime running lights, and seat belt use reminders. The EIS does not clearly state that these features will be part of the NGDV. It also does not analyze any impacts on injuries and fatalities to postal employees, other vehicle occupants, or pedestrians that would be expected with these newer vehicles. The fact that these newer vehicles should have fewer fires and breakdowns should have a positive impact on traffic and potentially on employee safety. On the other hand, the extreme height of the Oshkosh vehicle could increase rollover crashes.

The advantage of improved ergonomics of the NGDV, such as the fact that drivers can stand in the rear of the vehicle and need not exit the vehicle to access the cargo area, should also have health benefits. The USPS should present casualty and health statistics associated with the current vehicles that would support an analysis of the NGDV improvements.

The EIS also does not discuss whether self-driving technology might be desirable in postal vehicles at some time in the future. This is, of course, could be an issue with the length of the procurement cycle discussed in item 4 above.

Conclusions

While the USPS could attempt to revise the EIS to address the criticisms in this and other comments, this author strongly recommends that it abandon the procurement as described therein because of its serious flaws and restart the process with a new public scoping process and EIS. Because of the nature of the USPS, it is not necessarily bound by the procurement rules and regulations of the U.S. government. In the short run, while it develops an improved strategy for vehicle procurement, it can continue to repair the Grumman LLVs and purchase existing commercial vans for use as delivery vehicles.

Sincerely,

Carl E. Nash, Ph.D.

Note: the author of this comment is a retired Senior Executive of the National Highway Traffic Safety Administration and a concerned citizen.

Copies sent to:

Cindy Barger Director, NEPA Compliance Division
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, NW Ariel Rios Building, Mail Code 2251A Washington DC 20460-0003

Jayni Hein Senior Director for NEPA
Council on Environmental Quality
730 Jackson Place, NW
Washington, DC 20503-1659

Jon Ossoff, Chairman
The Permanent Subcommittee on Investigations
Senate Homeland Security and Governmental Affairs Committee
340 Dirksen Senate Office Building

Washington, DC, 20510

Gerry Connolly, *Chair*
The Subcommittee on Government Operations
House Committee on Oversight and Reform
2157 Rayburn House Office Building
Washington, D.C. 20515

From: [redacted]@everyactioncustom.com>	Tue, 19 Oct 2021 01:14:32 +0000
To: NEPA <NEPA@usps.gov>	
Subject: [EXTERNAL] Please transition the postal fleet to 100% electric ve	

Dear Environmental Counsel Davon Collins,

With the largest civilian fleet in the world, the United States Postal Service has an opportunity — and a responsibility — to lead the way in our transition to 100% zero-emissions vehicles. Transportation is the largest source of climate pollution in the U.S. and air pollution from fossil fuel vehicles harms people's health, especially in low-income communities and communities of color. By upgrading to electric vehicles, USPS can bring cleaner air to almost every community in the country.

That's why I am deeply disappointed that the Postal Service plans to purchase tens of thousands of new fossil fuel vehicles to add to its fleet. These vehicles will be on the road for decades, and we can't afford to lock in more dangerous air pollution. Your preferred approach of committing to purchase only 10% electric vehicles is woefully inadequate to rise to the challenge of climate change and protect public health. Our lungs and our planet deserve better.

President Biden has committed to take bold action to cut climate pollution in half by 2030 and advance environmental justice. The Postal Service must make decisions today that put the U.S. on a path to an all-electric, zero-emissions transportation future. I urge you to commit to purchasing 100% battery electric vehicles for the postal fleet.

We are counting on you to make the right choice to protect our health and the planet.

Sincerely,
[redacted] New York, NY 10028-6450

From: [redacted]@everyactioncustom.com>	on, 18 Oct 2021 23:31:52 +0000
To: NEPA <NEPA@usps.gov>	
Subject: [EXTERNAL] Please transition the postal fleet to 100% electric vehicles	

Dear Environmental Counsel Davon Collins,

With the largest civilian fleet in the world, the United States Postal Service has an opportunity — and a responsibility — to lead the way in our transition to 100% zero-emissions vehicles. Transportation is the largest source of climate pollution in the U.S. and air pollution from fossil fuel vehicles harms people's health, especially in low-income communities and communities of color. By upgrading to electric vehicles, USPS can bring cleaner air to almost every community in the country.

That's why I am deeply disappointed that the Postal Service plans to purchase tens of thousands of new fossil fuel vehicles to add to its fleet. These vehicles will be on the road for decades, and we can't afford to lock in more dangerous air pollution. Your preferred approach of committing to purchase only 10% electric vehicles is woefully inadequate to rise to the challenge of climate change and protect public health. Our lungs and our planet deserve better.

President Biden has committed to take bold action to cut climate pollution in half by 2030 and advance environmental justice. The Postal Service must make decisions today that put the U.S. on a path to an all-electric, zero-emissions transportation future. I urge you to commit to purchasing 100% battery electric vehicles for the postal fleet.

We are counting on you to make the right choice to protect our health and the planet.

Sincerely,
[redacted] Port Orchard, WA 98367-7560

From:	[redacted]@yahoo.com>	Tue, 7 Sep 2021 17:16:22 +0000
To:	NEPA <NEPA@usps.gov>	
Subject:	[EXTERNAL] Environmental Impact Statements; Availability, etc.: Purchase of Next Generation Delivery Vehicles	

My vote is for USPS Electric Vehicles. Phase in EVs for shorters routes leaving existing long route vehicles as is until the EV technologies can replace them.

From:	[redacted]@outlook.com>	Tue, 7 Sep 2021 16:47:23 +0000
To:	NEPA <NEPA@usps.gov>	
Subject:	[EXTERNAL] Postal service vehicles	

I understand that you are tasked with deciding whether EV's are the solution for most Postal vehicles. I own A Tesla Model 3 and have found it to be the most reliable vehicle I own. I charge it at night when it's cheapest and drive over 300 miles a day. Work for the US Census Bureau and I have no idea where I'll be going. But I believe the infrastructure will allow for all postal vehicles except very rural routes to be serviced this way also.

Please inform

Mr. Davon Collins, Environmental Counsel,

United States Postal Service, 475 L'Enfant Plaza SW, Office 6606, Washington, DC 20260-6201

That accelerating the use of these vehicles might give us the one chance we have to stop the destruction of Trillions of dollars in properties and Billions of lives. We can no longer squander time.

Thank you
[redacted]

From:	[redacted]@gmail.com>	Tue, 7 Sep 2021 17:30:49 +0000
To:	NEPA <NEPA@usps.gov>	
Subject:	[EXTERNAL] USPS NG vehicle statement	

I am incensed that the USPS would continue to push for gasoline powered vehicles when it is clear battery power is the clear public choice. BEVs are quiet and clean, and can be built with sufficient range to meet any requirements.

I wish to object to this proposed decision in the strongest terms. Battery power the fleet at 100%!

[redacted]

Table B1-2
Summary of EPA, Other Agency, and Public Comments Timely Received in Response to the NOA of the DEIS, and Postal Service Responses

#	**SECTION 1: ENVIRONMENTAL PROTECTION AGENCY (EPA) COMMENTS** **Comment (first row)** **USPS RESPONSE** (in subsequent row)
1	**Pursuant to 40 CFR 1502.9(b), EPA finds that the draft EIS is inadequate and precludes meaningful consideration of the proposed action and alternatives. The draft EIS should be revised and made available for public comment in a supplemental draft EIS.**
	For the reasons set forth in response to EPA's detailed comments below, the Postal Service disagrees with EPA's opinion that the Draft EIS is inadequate and precludes meaningful consideration of the proposed action and alternatives. The Postal Service therefore declines to prepare a Supplemental Draft EIS or to make revisions beyond those incorporated into this Final EIS.
2	**EPA recognizes the reason the Postal Service defined the proposed action as two "hypothetical maximum scenarios" is to allow the decision maker to evaluate environmental impacts of the proposed action within a broad range, with the lowest bound for Battery Electric Vehicle (BEV) deployment as 10 percent and the highest bound for BEV deployment as 100 percent. The preferred alternative is the purchase and deployment of up to 90 percent internal combustion engine (ICE) Next Generation Delivery Vehicle (NGDV) and at least 10 percent BEV NGDV (page 4-36). This statement and the analysis as presented treats the bounds of the proposed action as two different alternatives, rather than as a range.**
	The Postal Service disagrees that the statement and analysis present the Proposed Action as two different alternatives, rather than as a range. The inclusion of the phrases "at least" and "up to" clearly indicate that the ultimate vehicle mix will be a number in between 10% BEVs and 100% BEVs. The hypothetical maximum scenarios were provided so the Postal Service and DEIS reader would understand the reasonable maximum environmental emissions at both ends of the possible spectrum, with the final environmental impact likely falling at a point between those two points.
3	**In addition, EPA found substantial inadequacies in the economic analysis of alternatives (see comments below). It is also unclear how the preferred alternative of the lower range of 10 percent BEV NGDV would be consistent with both announced market trends and recent federal policies for federal procurement of clean cars and trucks in accordance with Executive Orders (EO) 14008 and 14037.**
	Neither Executive Order 14008, *Tackling the Climate Crisis at Home and Abroad*, nor 14037, *Strengthening American Leadership in Clean Cars and Trucks*, includes a mandate that the Postal Service acquire any percentage of BEVs. While the Postal Service acknowledges EPA's opinion that the Proposed Action is not consistent with recent federal policies, the Postal Service disagrees that the adequacy of the EIS's economic analysis is contingent on the Postal Service's perceived consistency with executive policies neither directed to nor binding upon the Postal Service. The Postal Service also notes that, as demonstrated in its TCO calculations, on a strictly financial basis, acquiring an all-ICE fleet would have been the superior course of action. However, the Postal Service has committed in the Proposed Action to acquire at least 10 percent BEVs and will acquire more BEVs should additional funding become available, which is why the Proposed Action includes a 100% BEV Hypothetical Maximum. Therefore,

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	given the Postal Service's financial condition and competing financial obligations, the Postal Service also disagrees that the Proposed Action is inconsistent with the goals of Executive Orders 14008 and 14037. The Postal Service has also considered the Executive Order on Catalyzing Clean Energy Industries and Jobs through Federal Sustainability, dated December 8, 2021, and its accompanying implementation memorandum issued by the Office of Management and Budget (M-22-06, dated December 8, 2021). The implementation memorandum states on page 11: "The U.S. Postal Service, which has historically voluntarily complied with executive policies related to sustainability, energy, and environmental performance, is strongly encouraged to meet the goals of the E.O., and continue reporting on progress and performance." As with Executive Orders 14008 and 14037, while the Postal Service is not subject to the Catalyzing Clean Energy Executive Order, the Postal Service believes, for the reasons stated above, that the Proposed Action is consistent with the goal of the Executive Order to transition to a zero-emission federal fleet. With respect to consistency with "announced market trends," the Proposed Action is the result of a multi-year extensive prototype evaluation, involving an estimated 450,000 manhours dedicated to purpose-built prototypes, twelve testing protocols (e.g., field testing, durability testing, component testing, carrier testing, fuel economy, and efficiency testing) at a total cost of more than $50 million. The Postal Service also regularly acquires commercial off-the-shelf (COTS) vehicles and has spent over 25,000 manhours testing those vehicles over multiple protocols including efficiency, fuel economy, and carrier testing. The Postal Service therefore disagrees that the adequacy of the economic analysis of the EIS's alternatives is contingent on perceived consistency with hypothetical or speculative "announced market trends" as opposed to the alternatives obtained after a competitive open-market procurement for the NGDV, years of Postal Service experience acquiring vehicles, and 450,000 manhours rigorously testing purpose-built prototypes and an additional 25,000 manhours testing COTS vehicles.
4	**The draft EIS assumes conditions today will continue decades into the future. For example, the analysis assumes that the carbon intensity of the power sector does not change from today when environmental trends and forecasts show otherwise. This leads to over-estimating greenhouse gas emissions associated with BEVs. Further, by locking in the costs of BEV technologies based on data from previous years, the analysis overestimates the costs of BEV NGDV, since reasonably foreseeable reductions in these costs are excluded. The draft EIS, therefore, presents biased cost and emission estimates to the public and to decision makers.**
	See response to Comment 27 for discussion regarding incorporating assumptions about decarbonization into EIS analysis. With respect to the "locking in the costs of BEV technologies" point, under the Proposed Action, the cost of BEV technologies and the cost of ICE technologies are treated the same. After engaging in a competitive Request for Proposals ("RFP") process in the open market for NGDV, the Postal Service negotiated vehicle unit prices for ICE NGDV and BEV NGDV for the duration of the ten-year contract. Thus, the only "lock-in" cost is the contract price. To the extent EPA is recommending that the Postal Service not negotiate and secure contract prices for large vehicle procurements in favor of a non-locked approach where the Postal Service might be able to secure a potentially lower future cost for BEV technologies, the Postal Service declines to do so as it deems that approach not commercially viable and not suited to long-term financial planning.

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	See also Comment 16 for discussion of timing of vehicle delivery order and factors that might influence the competitively-negotiated contract price.
5	**EPA recommends that Postal Service update the economic analysis to correct these biases and provide a clear discussion of how the preferred alternative aligns with national policies, and reconsider whether reasonable alternatives may be available to decision makers to support meeting the national goals to completely electrify its fleet by 2035. Specifically, EPA recommends that the Postal Service evaluate a mid-range alternative, such as 75 percent ICE NGDV and 25 percent BEV NGDV, and as high a percentage of BEV NGDV as is economically feasible.**
	See answer to Comment 3 regarding the comment about bias in the economic analysis. With respect to other possible mixes, the final mix of ICE and BEV NGDV will be determined by the needs of the Postal Service, including the availability of vehicle funding. The hypothetical maximums were provided so that the Postal Service and the public would understand the full potential environmental impacts at either end of the Proposed Action's range of possible vehicle mixes. Thus, the environmental impacts for ICE/BEV mixes within the Proposed Action's range will fall within the range of the two hypothetical maximums. The Postal Service therefore declines to expand the EIS by adding calculations for various potential mixes within the set range. For clarification, in response to this Comment, a statement has been added to Section 3-1.3 of the FEIS to indicate that the environmental impacts for ICE/BEV mixes within the Proposed Action's range would fall within the range of the two hypothetical maximums.
6	**EPA recommends as the preferred alternative the greatest percentage of deployment of BEV NGDV as is economically feasible. In addition, consideration of an alternative outside the current appropriations and funding stream for the Postal Service in the supplemental EIS may serve as a basis for the decision maker to seek or modify Congressional approval or funding in light of national policy and NEPA's goals and policies.**
	See answer to Comment 2. The Postal Service has the statutory mandate to reliably deliver the nation's mail. The Proposed Alternative was carefully drafted to preserve the Postal Service's flexibility to alter the vehicle mix, within an expressly-defined range, over the course of the ten-year contract in order to optimize delivery operations as it balances multiple and competing financial priorities, including labor, facility and equipment costs. The Postal Service therefore declines to revise the Proposed Action. The Postal Service also states for the record that, given its financial condition and the TCO differential between BEV NGDV and ICE NGDV, the 10 percent BEV NGDV minimum is the only economically feasible commitment the Postal Service can make absent additional funding.
7	**The draft EIS states several assumptions in the assessment of Alternative 1.2 Purchase and Deployment of 100% left-hand-drive (LHD) commercial-off-the-shelf (COTS) BEV, including:** ***[there are]"no commercially available right-hand-drive (RHD) COTS BEV. The COTS BEV market and technology is rapidly evolving. These vehicles are still in development and currently available only in small quantities. There is no RHD COTS BEV currently available or otherwise marketed by commercial manufacturers for future development. "***

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	This assumption does not reflect the state of the COTS delivery BEV vehicles and therefore may not present full consideration of this alternative to the decision maker. For example, it is widely reported that Rivian is making RHD BEV delivery vans for Amazon and other manufacturers are developing product for this commercial sector.
	As noted in response to Comment 3, the Postal Service has spent over 25,000 manhours testing COTS vehicles. Moreover, as noted in response to Comments 18 and 20 below, the Postal Service has unique operating requirements that differentiate its needs from private competitors such as Amazon. For these reasons, the assumptions provided in the EIS are based on extensive Postal Service expertise. The Postal Service therefore concludes that news reports about possible vehicles in development are not a creditable source for altering the EIS or changing its assessment of the COTS BEV market. Finally, the Postal Service notes that the cited manufacturer, Rivian, did not submit a proposal in response to the Postal Service's NGDV Production RFP. See also Section 3-2, which discusses how RHD COTS do not provide the same operational or ergonomic benefits as the purpose-built NGDV.
8	**The draft EIS sets several parameters for BEV vehicles that needlessly raise costs or overly constrain the potential deployment of BEV. The draft EIS states:** ***"Operational limitations and certain Postal Service delivery environments would limit the use of electric-only vehicles. These limitations include a lack of available infrastructure, and at least 12,500 delivery routes where route length, environmental conditions, or facility constraints make electric vehicles unfeasible or impractical."***
	As noted in response to Comment 3, the Postal Service has invested an estimated 450,000 manhours to complete comprehensive testing protocols on NGDV prototype vehicles, including both BEV and ICE. Protocols included Efficiency Testing, Durability Testing, Simulated Testing, Post Office Field Testing, Carrier Efficiency Testing, Winter Testing, and Fuel Economy Testing. Based on these tests and known route characteristics, the BEV NGDV battery is specified to support a daily 70-mile route at the end of its ten-year battery life. As stated in the FEIS, approximately 12,500 delivery routes cover distances that will exceed the designed battery capacity. Additionally, with respect to infrastructure, the Postal Service estimates, based on its assessment of the age and state of its infrastructure, that Postal Service facilities with more than four to five BEV NGDV will likely require additional power and electrical upgrades (e.g., circuit breaker panel, transformer and utility upgrades) to support the electrical demand, which will constrain, at least initially, BEV deployment in large carrier offices with a significant number of routes. Thus, the parameters set in the EIS are the result of this extensive analysis and designed to ensure that the Postal Service can reliably deliver the nation's mail in multiple and varied operating environments. The Postal Service therefore disagrees that the BEV parameters "needlessly raise costs" or "overly constrain the potential deployment of BEV." Please note that the approximate 12,500 delivery routes that are not suitable for BEV NGDV based on route length equate to approximately 5% of current routes. The Postal Service recognizes that advances in battery technology may occur over the next several years and if the range concerns can be overcome, the Postal Service may be able to consider these routes to be served by BEV NGDV.

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	The EIS has been revised to clarify that the 12,500 number refers solely to routes unsuitable for BEVs on account of route length, not environmental factors or other operational constraints.
9	**As this is a 10-year plan, it should not be based on current availability of charging infrastructure. Charging infrastructure will be built out substantially and quickly in the next few years.**
	The Postal Service BEVs will need to be charged at Postal Service facilities in order to account for the mail delivery cycle. Therefore, the TCO for BEV NGDV accounts for the cost of Postal Service-built charging infrastructure and not the potential availability of third-party charging stations. The Postal Service also notes that NGDV will not be configured for Level 3 fast charging, which is another reason why BEV NGDV will need to be charged at Postal Service facilities.
10	**The draft EIS also states:** ***"The BEV NGDV would be expected to discharge around 20 percent of battery capacity under average conditions because of the low average delivery route mileage. This would limit battery degradation and may not require charging every day. The BEV NGDV could fully recharge during non-business hours."* and *"The Postal Service's COTS BEV charging and range requirements will be assumed to be the same as the BEV NGDV requirements (i.e., the ability to charge to a minimum driving range of 70 miles within eight hours on a single charge with all vehicle accessories operating)."* (p. 3-2)** **The claim that "BEV NGDV on routes that exceed 70 miles might not have sufficient power to complete the route" disregards advances in battery technology. COTS BEV vehicles today have a much larger range than assumed. For example, it is reported that the Mustang Mach-e is estimated to have a range of 211 to 300 miles for the Sport Utility Vehicle (SUV) (not counting the weight of packages in a delivery van version) and the Ford Transit Passenger Van electric vehicle is estimated for a range of 140 to 170 miles. This higher range is likely to be more compatible for the delivery routes that have been ruled out due to route length. Consideration of ranges more accurate with the current trends in BEV technology would both allow the decision maker a fair comparison among alternatives and consider deployment in areas currently ruled out based on the BEV NGDV range constraints.**
	See responses to Comments 3 and 8 for details regarding the Postal Service's extensive testing of both COTS vehicles and NGDV. Additionally, passenger vehicle ranges, such as those noted in EPA's comment, are not representative of the Postal Service duty cycle. For example, a passenger vehicle could have three to four times the vehicle range compared to Postal Service delivery vehicles, which have stand-up headroom in the cargo area (4 mi/kWh vs. ~1 mi/kWh), have a GVWR of 8,500 lbs., operate at slow overall speeds, stop and start, and utilize HVAC for long durations of time. Based on this extensive testing, the Postal Service expects that only 40% of the daily battery usage will be used for traveling the mileage on the route. The Postal Service drive cycle requires constant stopping, starting, and idling while carriers open mailboxes, complete scanning, and complete mail deliveries. As the Postal Service operates across the nation in all climates, over 40% of the battery usage will be leveraged for HVAC (heat, ventilation, AC, defrosting) for conditioning only the cabin of the vehicle, which has doors and windows opening and closing repeatedly throughout the operational day. Another 20% of the battery will be used to power electronics and vehicle accessories (lights, strobes/flashers used throughout the day). All of these parameters are significantly different than passenger vehicle usage conditions and must power not only the

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	range for miles driven, but for all the other demanding operational conditions on the street, up to 12 hours per day during peak seasons. The constraint on mileage limits at 70 miles per day must also consider the additional 60% of battery usage needed to support daily operational requirements. The Postal Service also notes that during NGDV prototype testing, the vehicles with a range-extender powertrain were unable to meet a minimum range of 50 miles. As more than 95% of Postal Service routes are under 70 miles, the Postal Service established a minimum range of 70 miles for BEVs. Additionally, all vehicles must be prepared to deliver up to 70 miles to account for transfers to different routes and the need to conduct second trips should circumstances (e.g., accidents, employee availability, peak volumes, and weather) require it. Finally, with respect to battery charging, the NGDV Statement of Work required that the battery be able to be recharged with a Level 2 charger in 8 hours for 70 miles in order to meet the operational requirements noted above. Thus, the Postal Service finds that the BEV ranges provided in the EIS are sound and based on extensive testing and Postal Service expertise, and concludes that the consideration of untested ranges for vehicles not suited to delivering the mail would not aid it in making a fair comparison among alternatives.
11	**In addition, industry standards have batteries that would be sized more appropriately for the "low average delivery route mileage" that would reduce the overall cost of procurement and allow for an increase in the percentage of BEVs. For example, the inclusion of two or more options of battery range in the specifications (one less than 70 miles) could allow for meeting the majority of routes with a shorter range and less expensive battery option and for meeting the range needs of areas with longer routes with an extended range battery option. EPA recommends that the assumptions on the COTS BEV alternatives be updated to reflect a more accurate depiction of the current available technology that meets the Postal Service's vehicle replacement needs.**
	Postmasters and Station Managers are responsible for ensuring that mail is delivered to every address in the United States, six, and often seven, days per week. In order to accomplish this, they must make daily decisions regarding how to deliver to routes in which the carrier is absent or if a route exceeds its capacity on that day. The need to be flexible in assigning work to carriers on a daily basis requires the Postal Service to ensure that it has a fleet of delivery vehicles that offer a consistent range of operation. Additionally, as vehicles are brought in for preventative maintenance or in case of a vehicle being operationally unavailable, the Postal Service must be able to ensure that all flexible operational needs are able to be met with reserve vehicles, which must also be capable of meeting a consistent minimum range of operation. Acquiring BEVs with shorter or longer ranges than the 70-mile requirement would negatively impact the Postal Service's ability to be flexible with its delivery and vehicle structure, would erode operational efficiency, and, in many cases, lead to additional costs and additional miles driven. Additionally, maintenance support would be adversely impacted by the need to stock different capacity battery packs to meet different vehicle battery needs, increasing shop inventory costs and operational complexity. For these reasons, the Postal Service concludes that the assumptions used in its alternatives are technically sound and based on extensive Postal Service testing and expertise in delivery vehicles and logistics. The Postal Service therefore declines to revise the assumptions in the COTS BEV Alternative.

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12	**EPA recommends that the Postal Service consider a diversified procurement and deployment strategy to accommodate both BEVs that may have a shorter range and be more cost-effective and BEVs that may have longer battery range(s) to address longer routes.**
	See response to Comments 10 and 11 for explanation as to why the Postal Service declines to revise the alternatives to include options that would negatively affect Postal Service operations and therefore not satisfy the Postal Service's Purpose and Need. See also Section 1-2 for discussion showing that the Postal Service already implements a diversified vehicle procurement strategy, including purpose-built and multiple types of COTS vehicles. While this EIS assesses the potential environmental impacts from replacing the LLV/FFV fleet, the Postal Service will consider available BEV and other drivetrain options when procuring replacements for non-LLV/FFV vehicles.
13	**The economic analysis presented in the draft EIS for the proposed action and alternatives (Appendix C) does not adequately meet the requirements of 40 CFR 1502.23 Methodology and Scientific Accuracy or reflect sound estimates for total cost of ownership (TCO) including life-cycle costs and benefits of BEVs. Further, it does not provide key data necessary to evaluate and replicate the results. The Postal Service should provide all the data and the methodology for developing the TCO estimates within the draft EIS or as an appendix. The draft EIS provides the present value of the TCO but not the parameters (fuel costs, discount rates, cost of capital, cost of acquisition, cost of plug-in chargers, etc.). Consistent with 40 CFR 1502.23, draft EIS analysis should identify any methodologies used and shall make explicit reference to the scientific and other sources relied upon for conclusions in the EIS.**
	In its TCO calculations, the Postal Service has sought to balance NEPA's requirement that it take a "hard look" at the environmental impacts of its Proposed Action and reasonable alternatives with the need to protect commercially-sensitive information that is protected under other applicable laws, such as the Freedom of Information Act. The Postal Service has provided its TCO methodology in full compliance with 40 C.F.R. § 1502.23 and disagrees that NEPA requires that it provide granular data such as the cost of acquisition for vehicles that would disadvantage the Postal Service in negotiating future contracts and unit costs. While the Postal Service therefore declines to disclose commercially-sensitive data such as its vehicle unit prices, to be as responsive as possible to EPA's request for more information, the Postal Service provides the following additional details regarding its TCO methodology: 1. **Fuel Prices:** Annual fuel costs were calculated based on the following assumptions derived from the Postal Service's experience delivering the mail and extensive vehicle testing program (see response to Comment 3 for details regarding testing program): a. 302 days of delivery per year b. 17.3 miles driven per day c. ICE NGDV fuel efficiency d. BEV NGDV fuel efficiency e. Cost of fuel: i. Gasoline: national average of $2.19/gal as of October 12, 2020 (https://gasprices.aaa.com/). ii. Electricity: national average of $0.109 kWh BY2020$ in July 2020 (Electricity Monthly Update - U.S. Energy Information Administration (EIA)).

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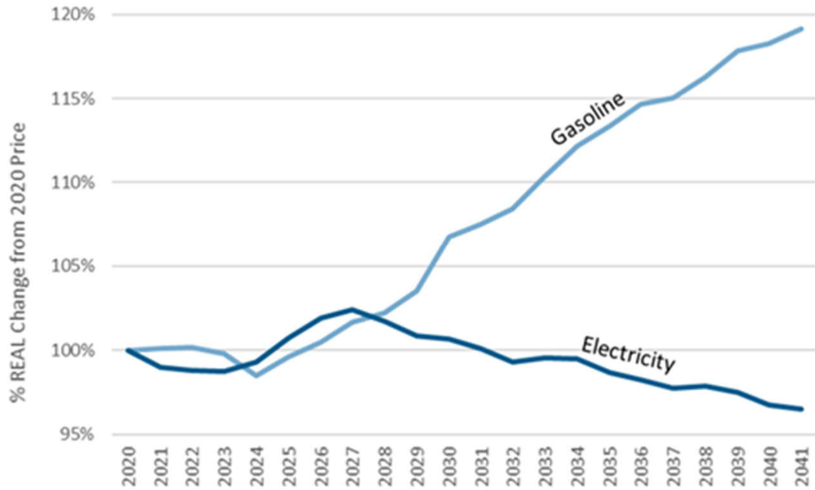
f. REAL Cost projections: The table and graph below are based on the U.S. Energy Information Administration (IA), “Annual Energy Outlook 2020”, Table 3. Energy Prices by Sector and Source:
   i. Gasoline Index (BY=2020) is calculated using the “Motor Gasoline (2019$/MMBtu), Sales weighted-average price for all grades. Includes Federal, State, and local taxes”
   ii. The Electricity Index (BY=2020) is calculated using “Electricity (2019$/MMBtu), Sales weighted-average price for all grades. Includes Federal, State, and local taxes”

Note: Because of the need to calculate hypothetical maxima involving the replacement of multiple types of vehicles (LLVs, FFVs & COTs) for a fleet of 165,000, deployed on routes of increasing length, the air emission and gasoline/electricity consumption values in the EIS were calculated using a longer, more conservative, average route length of 21.05 miles.

The Annual Energy Outlook is published annually by USEIA. The following table shows the USEIS data and accompanying calculations. The Gasoline and Electricity Indices used escalate (in REAL$) the 2020 price of fuel for each future year of analysis.

Year	Gasoline $/MMBtu	Electricity $/MMBtu	Gasoline Index BY=2020	Electricity Index BY=2020
2020	21.9409	30.2240	100.0%	100.0%
2021	21.9689	29.9230	100.1%	99.0%
2022	21.9782	29.8681	100.2%	98.8%
2023	21.8943	29.8436	99.8%	98.7%
2024	21.608	30.0067	98.5%	99.3%
2025	21.8575	30.4410	99.6%	100.7%
2026	22.0431	30.8053	100.5%	101.9%
2027	22.3123	30.9449	101.7%	102.4%
2028	22.425	30.7525	102.2%	101.7%
2029	22.7208	30.4916	103.6%	100.9%
2030	23.4244	30.4346	106.8%	100.7%
2031	23.588	30.2533	107.5%	100.1%
2032	23.797	30.0050	108.5%	99.3%
2033	24.2206	30.0910	110.4%	99.6%
2034	24.6087	30.0685	112.2%	99.5%
2035	24.8657	29.8348	113.3%	98.7%
2036	25.1629	29.6984	114.7%	98.3%
2037	25.2406	29.5422	115.0%	97.7%
2038	25.5171	29.5892	116.3%	97.9%
2039	25.859	29.4620	117.9%	97.5%
2040	25.9514	29.2403	118.3%	96.7%

20-Year Gasoline and Electricity Price REAL Indices



The following is the resulting cost per unit of fuel derived by combining 2020 prices with the 20-year forecast.

Year	Gas Price (BY$/Gal)	kWh Price (BY$/kWh)
2021	2.145	0.108
2022	2.137	0.108
2023	2.109	0.108
2024	2.133	0.110
2025	2.151	0.111
2026	2.178	0.111
2027	2.189	0.111
2028	2.217	0.110
2029	2.286	0.110
2030	2.302	0.109
2031	2.323	0.108
2032	2.364	0.108
2033	2.402	0.108
2034	2.427	0.107
2035	2.456	0.107
2036	2.463	0.106
2037	2.490	0.107
2038	2.524	0.106
2039	2.533	0.105
2040	2.551	0.015

2. **Maintenance:** The 20-year maintenance costs for the ICE NGDV and BEV NGDV were estimated using vehicle-specific cost ratios representing the projected relative cost of maintenance and repair as compared to the LLV.
3. **Cost of Acquisition:** For the reasons provided above, this data is commercially sensitive information, of which disclosure would negatively impact the Postal Service’s ability to negotiate and obtain competitive prices, and so shall not be disclosed.
4. **Cost of EV Charging Infrastructure:** Based on multiple cost estimates for site surveys, design work, trenching, electrical upgrades, commercial-grade equipment including

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	overhead steel gantries to accommodate retractable charger cables, and all electric vehicle supply equipment, developed for three Postal Service locations representing a small, medium and large facility, each at 25%, 50%, 75% and 100% deployment levels, average per-facility BEV charging infrastructure costs ranged from $18,740 (assuming 10% BEV) to $20,970 (assuming 100% BEV). The Postal Service notes that, due to factors such as age and site configuration, certain Postal Service facilities would require extensive trenching and other facility upgrades to allow for BEV charging. 5. **Calculation of Present Value:** 20-year cashflows were discounted and summed using a standard Postal Service investment rate for a sustaining project at medium risk levels.
14	**The uncertainties associated with the cost calculations for the alternatives are too great to draw informed conclusions. Appendix C of the draft EIS acknowledges that the data on vehicle acquisition costs are only *"rough order of magnitude costs"* (p. C-3.). This is not an acceptable level of accuracy to draw such firm conclusions about the relative TCO. In identifying the methodology, the quality and accuracy of the data should be discussed and explicit reference to the scientific or other sources relied upon for conclusions should be disclosed.**
	See response to Comment 13 above. The Postal Service also disagrees with the EPA's characterizations as "too great" of cost uncertainties that would attend any program of this scale. Moreover, while certain costs such as contractually-negotiated vehicle unit prices may be known with great specificity, other costs, such as the cost of upgrading electrical infrastructure in a nationwide portfolio of over 17,000 carrier facilities from which vehicles originate, must be based on reasonable assumptions and estimates made by Postal Service management after reviewing internal, commercially-sensitive assessments.
15	**EPA recommends Postal Service review the following TCO calculators and analysis and supplement the analysis accordingly.** • **North American Council for Freight Efficiency, Medium-Duty Electric Trucks: Cost of Ownership (*https://nacfe.org/emerging-technology/medium-duty-electric-trucks- cost-of-ownership/*)** • **Global Commercial Vehicle Drive to Zero Total Cost of Ownership Estimator (*https://globaldrivetozero.org/tools/calculator /*)** • **National Renewable Energy Laboratory, Spatial and Temporal Analysis of Total Cost of Ownership for Class 8 Tractors and Class 4 Parcel Delivery Trucks (*https://www.nrel.gov/docs/fy21osti/71796.pdf*)**
	The Postal Service's TCO analysis is based on competitively-negotiated contract prices and its expert internal assessment of other costs, such as deferred maintenance. The Postal Service disagrees that adding third-party cost calculators that do not reflect cost considerations unique to the Postal Service would meaningfully add to the EIS's economic analysis. See also Comment 18. For example, existing models do not account for the rigors of Postal Service drive cycles, which incur 500-600 short-range stops and starts that cause significantly increased wear and tear on the vehicle and significantly increased maintenance costs.
16	**The costs as represented do not account for the rapidly reducing costs of batteries - the most expensive component in a BEV. Appendix C states that rough order of magnitude costs are based in part on the offerors estimated NGDV Production proposals and pricing from July 2020. There are a number of available studies highlighting progress being made in this area. For example, work done by a Carnegie Mellon University team developed a model where costs for each**

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	component of EV batteries are calculated and an estimated change over time is predicted based on the trends in component costs and other factors. One of the authors was quoted by BloombergNEF as stating by around the 2025-time frame "There will definitely be cars, passenger vehicles, in multiple segments where the EV option is the cheaper option." Additionally, according to BloombergNEF, analysts and researchers over the years have stated that a battery price of $100 per kilowatt-hour is the point at which EVs become cost-competitive with gasoline vehicles. Last year, the global average price was down to $156 per kilowatt-hour. BloombergNEF estimates that electric vehicles "will be cheaper to produce than fossil fuel vehicles by 2027."
	The Postal Service disagrees that academic studies, news reports and forecasts form a superior basis for an economic analysis of the cost of BEV batteries than a competitively-negotiated contract in the open market as occurred with the Proposed Action. To the extent BEV battery costs decline, the Postal Service has incorporated appropriate cost savings clauses in the Proposed Action's contract. However, the Postal Service concludes that it cannot be assumed that changes in battery technology over the ten-year life of the Proposed Action would necessarily be cost effective or practicable as the cost impacts on multiple other factors, including manufacturing scheduling and vehicle design, along with necessary site-level upgrades to accommodate charging, would need to be considered. While it is true that the battery cost is the single largest component price in the electric vehicle, the Bloomberg NEF estimates are based on passenger-sized vehicles, which are produced in quantities of millions, versus in the thousands. The Postal Service determined that it is unrealistic to assume these projections apply to a medium/heavy duty battery purchased in dramatically smaller quantities. Even the DOE's pricing projection curves note that it is unclear what production processes will be applied to actually achieve the projected reductions in price per kilowatt hour. The other factor that the EPA's assertion fails to consider is that the same components used to produce EV batteries will similarly be used to produce energy storage solutions which are projected to rise dramatically through the end of the decade. As sourcing for EV battery components heats up in the marketplace, competition for these same resources will likely increase as commercial entities seek to store energy and balance demands and charging operations. The global competition for these resources will likely expand significantly, and the raw materials are controlled almost entirely by overseas markets. It is also important to note that the Postal Service will lock in vehicle (and by extension, battery) pricing upon placement of delivery orders for BEV vehicles. The Postal Service will leverage appropriate supply chain management techniques to ensure the best possible pricing as orders are placed – but note that other component-level pricing may also change (for example, steel prices are increasing significantly). As the Postal Service purchases vehicles, improvements in one vehicle component may not translate to more favorable vehicle pricing as other commodities/components change over time.
17	**EPA recommends that the Postal Service update the economic analysis and draft EIS to incorporate the assumptions of falling costs of battery technology as recommended by academics and industry experts. A range of forecasts of battery prices should be used, based on forecasts from government and private sector institutions. All forecasts should be clearly presented and cost implications for the TOC disclosed.**
	See response to Comment 16 for why the Postal Service declines to credit cost forecasts over competitively-negotiated prices in the open market.

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18	**Important data on the costs of components of ICE NGDV and BEV NGDV are not provided. The cost of gasoline, the cost of electricity, and the cost of maintenance are not provided in the economic analysis. It is well-documented that the costs of ownership, including maintenance and fuel costs, are considerably lower for BEVs. The lower costs include not only repair cost savings but also spending less time in the shop and more on the road.**
	See response to Comment 13 as to why the Postal Service does not believe that NEPA requires the disclosure of commercially-sensitive information protected under other federal statutes, such as the Freedom of Information Act and Postal Reorganization Act. Also see response to Comment 13 for discussion of TCO components and methodology. Additionally, the Postal Service disagrees with the EPA's opinion that "the costs of ownership, including maintenance and fuel costs, are considerably lower for BEVs." Many commonly available and referenced COTS vehicle platforms use the Urban Dynamometer Driving Schedule (UDDS) Drive Cycle (Federal Test Procedure [FTP]-75) to estimate vehicle maintenance requirements and costs. However, the Postal Service has a unique slow speed, stop and start operating environment that is much more severe than the commonly-used UDDS drive cycle. The Postal Service's curb-line delivery operations include hundreds of daily hard accelerations and decelerations for curbside delivery. This level of wear and maintenance is not experienced by light-duty vehicles operated on UDDS type driving cycles and has historically required the Postal Service to require engine and transmission replacements in fewer than 100,000 miles. For these reasons, Postal Service maintenance projections are based on actual historical LLV curb-line delivery vehicle maintenance costs, with vehicles driven to support Postal Service delivery operations. The Postal Service has developed maintenance cost ratios for each vehicle system based on Postal Service and industry subject matter expert consensus. The ratios for each vehicle were developed based on part costs and labor hours provided by the supplier. Panel members then reviewed and discussed supplier data to determine reasonableness of the data and gain agreement on the ratio of the NGDV relative to the Postal Service LLV delivery platform. This ratio represents the relative cost of each type of repair based on the LLV historical maintenance cost data. Both BEV and ICE maintenance requirements were calculated, and the systems analyzed for the anticipated 20-year useful life of the vehicles. Due to the anticipated extended life of the vehicles, powertrain requirements and BEV battery replacements were included in the maintenance cost calculations. Due to the significantly increased feature set (e.g., air conditioning and camera systems), both BEV NGDV and ICE NGDV vehicles had greater projected lifetime maintenance costs than the 30-year old baseline LLV, while ICE had higher projected maintenance costs than the BEV variant, which relative differences are incorporated into the TCO calculations. Additional detail has been added to the TCO explanation in Appendix C of the FEIS.
19	**It appears that the draft EIS has assumed that fuel costs for gasoline will remain at today' s prices as part of the TCO. Similarly, the analyses seem to ignore that the cost of low-carbon electricity is decreasing. As stated above, a shifting baseline that incorporates the reasonably foreseeable trends and annualized costs over time is more appropriate for this analysis and consistent with scientific standards, given well-documented projected changes related to the proposed action. Without consideration of rising oil prices and future costs of electric power, the analysis results in a tremendous bias in the draft EIS estimation of the TCO. Forecasts from U.S.**

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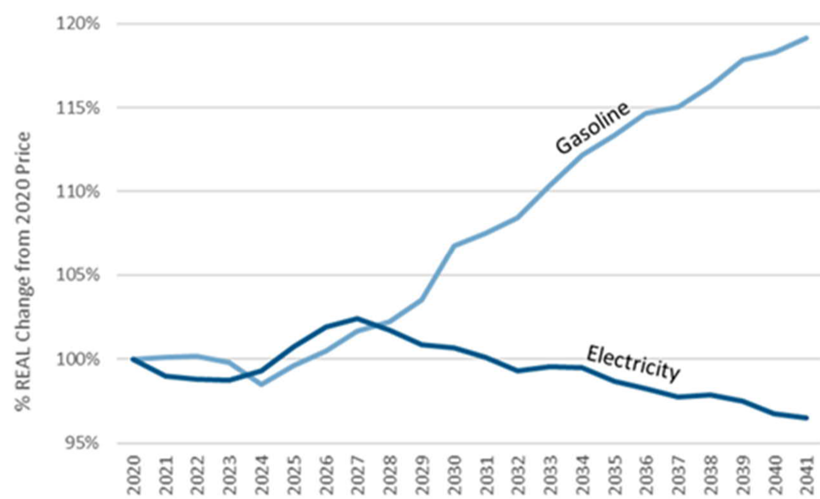
	Energy Information Administration and other energy forecasts should be incorporated in the analysis.
	This is not correct. The TCO did not assume constant prices for gasoline or electricity. See response to Comment 13 for details regarding fuel price forecasts. TCO projected future fuel costs were based on the EIA's Real Fuel Price Forecasts and the calculated indices, as illustrated below. **20-Year Gasoline and Electricity Price REAL Indices**  As additional clarification, reference to the TCO using the EIA's Real Fuel Price Indices for project future costs for gasoline and electricity has been added to Appendix C of the FEIS.
20	**Conclusions based on TCO analysis in Appendix C conflict with the results offered by other delivery companies (FedEx, UPS, Amazon). Delivery companies have concluded that BEVs will lower costs in the future and have aggressively pursued acquisition of BEVs. For example, UPS has placed an order for l 0,000 BEV delivery vehicles. Amazon is buying l 00,000 BEV delivery vans from Rivian. DHL says zero-emission vehicles make up a fifth of its fleet, with more to come. FedEx just pledged to replace 100 percent of its pickup and delivery fleet with battery-powered vehicles by 2040.**
	See Response to Comment 18 for information regarding how, due to its Universal Service Obligation (39 USC§ 101) and curb-line delivery requirements, the Postal Service's vehicle usage, maintenance requirements, and financial condition differ from those of for-profit delivery companies. Additionally, as the EPA has not provided data regarding those delivery companies' vehicle unit prices, financing costs, or costs to upgrade electrical infrastructure, the Postal Service disagrees that the EPA has a reasoned basis for opining that there is any "conflict" between the public relations announcements of private sector competitors and Postal Service TCO calculations which are based on negotiated contract prices and expert internal assessment of the Postal Service's unique infrastructure, labor and maintenance requirements.
21	**The Postal Service should revise or provide an explanation for itsdetermination that ICE NGDV are more cost effective than the BEV NGDV or BEV COTS.**
	As noted in the responses to Comments 18 and 19, the Postal Service has revised the TCO analysis description in Appendix C of the FEIS to clarify the maintenance cost factors and

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	assumed real fuel price changes. As this additional information does not change the relative TCO differential between ICE NGDV and BEV NGDV, as discussed in Section 4-11.2 (Selection of Preferred Alternative), the Postal Service finds that additional revisions to the EIS are not warranted.
22	**As currently described in the draft EIS, the proposed action creates a "technology lock-in" that is not discussed and is inconsistent with the future direction of the industry along with the national goals in EO 14008 and 14037. New NGDV are anticipated to have a life cycle of a decade or more. While the draft EIS discusses how there is the potential to adjust for changing conditions, once purchased, the USPS loses the ability to change the acquisition decision. Given the crudeness of the cost estimation and the academic and industry expectations that BEV costs are lower (and falling further soon), the analysis should examine multiple scenarios and disclose financial risks where the Postal Service is "stuck" with an ICE fleet that is more expensive and far more polluting if the preferred alternative (10 percent BEV and 90 percent ICE) is selected.**
	See responses to Comments 16 and 17 above for reasons why the Postal Service finds comparisons to “academic and industry expectations” to be not credible when compared to its rigorous and exhaustive testing of multiple vehicle types and a years-long competitive solicitation in the open market for a vehicle capable of meeting the Postal Service’s unique operational requirements. Furthermore, to the extent that “technology lock-in” is a financial risk, the Postal Service disagrees that it is a risk specific or unique to any particular drivetrain. It might be argued that the acquisition of BEVs or any other technology would “lock” the Postal Service in should “multiple scenarios” arise, such as the power crisis that occurred in Texas in February 2021. The Postal Service therefore disagrees that the EIS’s environmental analysis or the Postal Service’s ability to meaningfully compare reasonable alternatives would be enhanced by expanding the EIS to include “lock-in” costs that might be incurred due to speculative scenarios.
23	**EPA recommends the incorporation of forecasts of future variables into the TCO analysis consistent with economic standards of practice to understand the potential future changes more clearly in operations costs between BEV and ICE (incorporating the recent academic and industry analyses projecting lower BEV costs), risks of the acquisition strategy, and the potential effects of those future variables. This more meaningful and transparent analysis will better inform the public and provide for better-informed decision making.**
	See responses to Comments 16,17, and 22 above for why the Postal Service disagrees that “academic and industry analyses” are superior to competitively-negotiated contract prices in an open market and cost estimate projections made by Postal Service experts regarding operational and facility costs specific to the Postal Service. The Postal Service therefore declines to expand the EIS to include inferior forecasts.
24	**Because of the low mileage in an average USPS vehicle delivery route, the draft EIS indicates, on average, BEVs would discharge only 20 percent of the stored battery power per day. The extra stored battery power for a typical vehicle/route would offer the potential for additional benefits associated with vehicle to grid technology, demand response services, peak shaving, and providing emergency power during an outage.** **These opportunities for cost savings and resilience benefits should be considered in the analysis as well.**

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	See response to Comment 10 for discussion of factors that increase BEV battery usage. As noted in Section 3-1.1 of the EIS, the 20 percent battery discharge assumes normal driving conditions. The Postal Service also notes that it is investigating charging infrastructure design possibilities for operational resiliency and cost reduction opportunities that do not degrade vehicle battery life or undermine mission readiness. While such technologies are promising, they are outside the scope of this EIS to replace the Postal Service fleet.
25	**EPA recommends incorporating the potential value added of "vehicle to grid" systems into the economic analysis when considering the costs and benefits of the BEV deployment.**
	See response to Comment 24. The Postal Service currently has no current plans to provide “vehicle to grid” services, nor are such services part of the Postal Service’s mission or Universal Service Obligation (39 USC § 101). Thus, the capacity to provide such services is not a factor in the Postal Service’s Purpose and Need. The Postal Service therefore declines to expand the EIS to include the potential value of services it does not provide. In addition, not all states and utilities have provisions for purchasing power supplied from customers. For these reasons, the Postal Service concludes that this nascent technology, while promising, is not yet evolved or standardized enough to incorporate into specifications for a vehicle fleet of this size. The Postal Service is assessing the potential for energy storage devices to support operational resiliency. However, such work is outside the scope of this EIS to replace the Postal Service fleet.
26	**In Appendix F, Table F-3.a provides emission estimates for ICE NGDV or alternative I.I COTS ICE vehicles. The table documents that the total mileage for these cars will be 1,048,921,500 per year. And carbon dioxide equivalent (CO2e) emissions are 311,739 metric tons (MT) per year. At 11 miles per gallon (the average between mileage of using air conditioning and not using air conditioning) the gasoline used will be (miles driven/11) = gallons of gasoline or 95,356,500 gallons. Carbon dioxide per gallon of gasoline is about 19 pounds. Multiplying by 19 and then dividing by 2204.62 pounds per metric ton yields 821,807.6 MT. This is over 2.5 times the estimate in the draft EIS.**
	The analysis used the MOVES model to calculate the direct emissions associated with the existing and proposed new vehicles. The MOVES model is an EPA-recommended regulatory model for mobile source emission modeling, and the MOVES provides emission factors in grams/mile. Therefore, the air analyses used vehicle miles in order to calculate the emissions, rather than the information associated with gallons or miles per gallon. The emissions estimates are based on the average miles of the Postal Service vehicle and the conservative emission factors calculated from the MOVES model (g/mile): emission factors of winter months for CO, PM2.5, PM10, and SO2 and the emission factors of summer months for VOC, NOx, CO2, CO2e, CH4, N2O. Air conditioning factors were already incorporated by using summer emission factors for GHG. See descriptions in the FEIS Section 4-6.3.1 and Appendix F Table F-3a, that the emission estimates for ICE NGDV or Alternative 1.1 COTS ICE Vehicles are based on average miles of the Postal Service vehicle and the conservative emission factors calculated from the MOVES model (g/mile).

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27	**Use of the eGRID data to calculate emissions decades into the future is misleading. The U.S. Energy Information Administration and every energy modeling/forecasting operation estimate much lower carbon intensity in the power sector. Coal retirements are accelerating, and many states are placing strict limits on new power sources. At the same time, the cost of renewable energy is falling dramatically. The analysis needs to be redone with more realistic assumptions about future carbon (and other emissions) from the power sector.**
	EPA's submitted scoping comments, dated April 2, 2021, recommended use of eGRID data, which includes the latest publicly available EPA data. Therefore, the Postal Service followed EPA's recommendation and used eGRID in the DEIS. The Postal Service recognizes that eGRID data do not calculate emissions decades into the future, as eGRID was originally developed based on the currently available power sector data and not future data. The EIS calculation to estimate the emissions associated with the upstream power source is based on the most current, publicly available data (2019). Therefore, the FEIS presents the same values that were calculated and presented in the DEIS. That said, the Postal Service acknowledges the future trend of coal retirement noted in EPA's comment. While this is a complex topic with multiple scenarios regarding possible future changes in power generation that directly affect fuels and emissions, the Postal Service has researched and identified varying and widely ranging opinions on timescales for implementation of solar and wind power in the U.S. For example, the Department of Energy (DOE)'s Solar Futures Study (2021)[1] developed and evaluated a "reference" scenario which outlines a business-as-usual future, which includes existing state and federal clean energy policies but assumes there is no comprehensive effort to decarbonize the grid. Under this reference scenario, installed solar capacity increases by a factor of 7 by 2050, and grid emissions decline by 45% by 2035 and 61% by 2050, relative to 2005 levels. Relative to 2020 levels, this reference scenario predicts that grid emissions will decline by approximately 5% by 2035 and approximately 30% by 2050 (based on graph reading). In addition to the reference scenario, DOE's Solar Futures Study evaluated two hypothetical what-if scenarios: "Decarbonization (Decarb)" and "Decarbonization with Electrification (Decarb+E)," both of which assume more target-driven deep decarbonization of the grid (*e.g.*, 95% reduction from 2005 levels in the grid's carbon dioxide emissions by 2035 and 100% reduction by 2050 for the Decarb scenario and an even more target-driven deep decarbonization of the grid for Decarb+E scenario). Both Decarb and Decarb+E models are hypothetical what-if study scenarios which model a decarbonized grid and solar's role in it, but these are, of course, only models, not certainties.

[1] USDOE (U.S. Department of Energy). 2021. Solar Futures Study, September 2021. available at https://www.energy.gov/sites/default/files/2021-09/Solar%20Futures%20Study.pdf.

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	In contrast, the International Energy Agency (IEA)'s Net Zero by 2050[2] study offers two different scenarios: Stated Policies Scenario (STEPS), which takes into account only specific policies that are in place or have been announced by government. Under STEPS, annual energy-related and industrial process CO_2 emissions rise from 34 gigatonnes (Gt) in 2020 to 36 Gt in 2030, and remain around this level until 2050. Renewables provide almost 55% of global electricity generation in 2050 (up from 29% in 2020), but clean energy transitions lag in other sectors. Global coal use falls by 15% between 2020 and 2050, oil use in 2050 is higher than in 2020, and natural gas use is almost 50% higher. The number of governments pledging to reduce greenhouse gas emissions to net zero has rapidly increased over the last year. While currently fewer than a quarter of announced net zero pledges are fixed in domestic legislation and few are yet underpinned, IEA's Net Zero by 2050 study also evaluated a hypothetical what-if scenario, called Announced Pledges Case (APC), which assumes that all announced national net zero pledges are achieved in full and on time, whether or not they are currently underpinned by specific policies. Under the APC scenario, global energy-related and industrial process CO_2 emissions fall to 30Gt in 2030 and 22Gt in 2050. The share of renewables in electricity generation is predicted to rise to nearly 70% in 2050. Finally, under another hypothetical what-if scenario called Net-Zero Emissions by 2050 (NZE), IEA models what is needed for the global energy sector to achieve net-zero CO_2 emissions by 2050. Under this NZE scenario, solar, wind, hydropower, and other renewable energy combined is increased from the current 29% in 2020 to 60% in 2030 and to 88% in 2050. While the IEA's STEPS and APC are models from a global perspective, the Postal Service includes it as a potential reference point given that the Biden administration is proposing Net Zero by 2050, that it is anticipated the U.S. would likely achieve this goal under current U.S. policy, and that the document was reviewed or engaged by the U.S. Department of Energy. U.S. Energy Information Administration (EIA) (February 8, 2021)[3] projects that the share of renewables in the U.S. electricity generation mix will increase from 21% in 2020 to 42% in 2050. Total U.S. electricity generation will increase from 4,000 billion kwh to 5,500 billion kwh. For the increased electricity demand, the renewable share is projected to increase with wind and solar generation responsible for most of that growth. Because the total electricity demand will increase and the increased electricity demand will be supplied by renewable energy, according to these projections, the amount of fossil-fuel generated electricity would stay at approximately the same level between 2020 and 2050. Therefore, emissions per unit of electricity will be diluted and reduced, while the total emission quantity would stay at a similar level. Nuclear and coal-fired generation would decrease and the natural gas-fired generation share remain relatively constant. By 2030, renewables would collectively surpass natural gas

[2] IEA (International Energy Agency). Net Zero by 2050. October 2021. Available at https://iea.blob.core.windows.net/assets/deebef5d-0c34-4539-9d0c-10b13d840027/NetZeroby2050-ARoadmapfortheGlobalEnergySector_CORR.pdf.

[3] USEIA (U.S. Energy Information Administration). 2021. EIA projects renewables share of U.S. electricity generation mix will double by 2050 (February 8, 2021). https://www.eia.gov/todayinenergy/detail.php?id=46676. Accessed October 2021

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	to be the predominant source of generation in the United States. Solar electric generation would surpass wind energy by 2040 as the largest source of renewable generation in the United States. National Renewable Energy Laboratory (NREL)'s Electricity Generation Baseline Report (2017)[4] predicts that in the U.S. the generation mix is projected to be 60% fossil generation in 2040, with 23% renewable energy in 2040. The prediction indicates that the total electricity generation will be increased by approximately 13% (based on graph reading); however, the total fossil generated power is likely to stay the same or slightly increase while the majority of the renewable energy generated power will increase to satisfy the total increased power consumption. Therefore, it is expected that the emissions generated per unit electricity will be decreased based on the increased amount of the renewable energy generated power. These various ranges of the future trend of coal retirement would depend on economics, governmental policies, and speed of construction of new generating and distribution infrastructure. Because of the multiple inconsistent scenarios and uncertainty of economic forecasts and political forces, it is difficult to predict what level of emissions or decarbonization would be achieved. Therefore, the Postal Service estimated the upstream emissions based on the currently publicly available eGRID database as presented in the FEIS. However, in response to EPA's request that the Postal Service consider the potential environmental impacts from accelerated decarbonization, the Postal Service has calculated the net aggregated air emissions for the 100% BEV hypothetical maximum using an assumption (*e.g.*, the grid CO_2e emission will decline by approximately 5% by 2035 and approximately 30% by 2050) from the DEO's reference scenario described above (see table below). In addition, the Postal Service has calculated the SCC for the 100% BEV hypothetical maximum using the same assumption of a 30% emission decrease by 2050.

Net Aggregated (Direct and Indirect) GHG Emission Changes (100% BEV NGDV)

Vehicle Description	Vehicle Action	CO_2e (MT) from Table 4-6.5	CO_2e (MT) based on DOE's reference scenario by 2050
New 100% BEV NGDV (eGRID)	New	467,485	327,240
Replaced Vehicles (LLVs/FFVs/Metris) (GREET + MOVES)	Removed	-1,332,698	-1,332,698
Net (Total)	N/A	**-865,213**	**-1,005,459**

N/A = not applicable

[4] NREL (National Renewable Energy Laboratory). 2017. Electricity Generation Baseline Report. January 2017. Available at https://www.nrel.gov/docs/fy17osti/67645.pdf

Net Aggregated (Direct and Indirect) GHG Emission Changes (100% BEV NGDV)

Vehicle Description	Vehicle Action	CO_2e (MT) from Table 4-6.5	CO_2e (MT) based on DOE's reference scenario by 2050
New 100% BEV NGDV (eGRID)	New	467,485	327,240
Replaced Vehicles (LLVs/FFVs/Metris) (GREET + MOVES)	Removed	-1,332,698	-1,332,698
Net (Total)	N/A	**-865,213**	**-1,005,459**

N/A = not applicable

Calculated Social Cost of Carbon (100% BEV NGDV)

Operational Year	5% Discount Rate from Table 4-6.6 ($, US Dollars)	3% Discount Rate from Table 4-6.6 ($, US Dollars)	2.5% Discount Rate from Table 4-6.6 ($, US Dollars)	3% 95th Percentile Discount Rate from Table 4-6.6 ($, US Dollars)
2030	-16,063,638	-49,867,888	-71,065,575	-145,142,810
2035	-18,602,106	-54,006,677	-76,975,339	-160,661,817
2040	-21,107,907	-59,319,603	-82,885,104	-176,042,837
2045	-24,053,019	-64,193,218	-88,932,855	-190,368,167
2050	-27,155,659	-69,506,143	-94,245,781	-205,152,349
Operational Year	**5% Discount Rate based on DOE's reference scenario by 2050** ($, US Dollars)	**3% Discount Rate based on DOE's reference scenario by 2050** ($, US Dollars)	**2.5% Discount Rate based on DOE's reference scenario by 2050** ($, US Dollars)	**3% 95th Percentile Discount Rate based on DOE's reference scenario by 2050** ($, US Dollars)
2030	-20,882,729	-64,828,254	-92,385,248	-188,685,653
2035	-24,182,738	-70,208,680	-100,067,941	-208,860,362
2040	-27,440,280	-77,115,484	-107,750,635	-228,855,689
2045	-31,268,925	-83,451,183	-115,612,712	-247,478,617
2050	-35,302,357	-90,357,987	-122,519,515	-266,698,053

The Postal Service notes that it provides these calculations incorporating assumptions more favorable to the BEV at the request of EPA. Considering these more BEV favorable assumptions about future emissions from the U.S. energy grid, net carbon emissions are reduced by approximately 140,000 metric tons and the social cost of carbon estimates are reduced by $8 million to $61 million, depending on the discount rate. As these additional reductions would not make a significant difference between the environmental impacts of the ICE NGDV Preferred Alternative and the BEV NGDV Preferred Alternative, given the $2.3 billion TCO differential (for an order of 75,000 BEV NGDVs; a maximum order of 165,000 BEVs would require more than $1 billion dollars in additional investment as compared with ICE), the Postal Service has considered EPA's suggestion but declines to revise the EIS to include the above assumptions about future decarbonization of the U.S. energy grid.

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	Additionally, for the multiple factors described above, the Postal Service states for the record that it makes no judgment as to whether the assumptions in the DOE's reference model are likely or more probable than any other model.
28	**As part of disclosing the methodology and assumptions for the GHG emissions analysis, the conversion factors used in the calculations should be identified.**
	The GHG emission analysis sections of the EIS have been updated to specifically list conversion factors used in the DEIS. For example, in the Appendix F tables, footnotes of conversion factors such as English ton to metric ton (MT) have been added (e.g., 1.102 English short tons = 1 metric ton).
29	**In Table F-3.i, the source of estimates is unclear. Consistent with 40 CFR 1506.23, agencies shall make explicit reference to the scientific and other sources relied upon. If the numbers are based on the numbers calculated later in the section, this should be referenced, or the Table moved to make the source more explicit.**
	In the EIS, Table F-3.i (Appendix F) is the summary table of many of the individual tables presented. (For example, EIS Tables 4-6.2 and Table F-7a indicate net aggregated air emission changes [90% ICE NGDV and 10% BEV NGDV]) calculated based on MOVES, eGRID, and GREET models. Table 4-6.5 and Table F-7.b show detail values for net aggregated air emission changes [100% BEV NGDV]. Table 4-6.8 and Table F-7.c show detail values for net aggregated air emission change for Alternative 1.1., and Table 4-6.11 and Table F-7.d show detail values for Alternative 1.2. The EIS (each table as appropriate) has been updated to include explicit references.
30	**A footnote or description should be added to explain how the GREET Emissions Factors for WTP (Table F-6.t) were identified (e.g., specify which factors are from which GREET tab).**
	See Table F-6.f (Appendix F) of the FEIS for an additional footnote and description to explain how the GREET emissions factors for WTP (wheel-to-pump) were identified. The GREET model was run for ICE vehicles with the LHD Vocational vehicle type and based on being flexible fuel gasoline vehicles. During the use of GREET appropriate simulation inputs (SIMULATION TAB) were included to define the scenarios which included the year of analysis to update inputs for each year of analysis, the vehicle technology parameter was set to one year to make sure the latest technology was applied for each year of analysis. While pathways can be selected in the WTW (well-to-wheels) and PTW (pump-to-wheels) tabs for specific fuels the default fuel mix from GREET was used. Additionally, no changes were made to the Data Editor Tab which requires exact information (e.g., heating values and specific percent of fuel use). When the WTW results were used for total, the full life-cycle impacts of the vehicle technology for vehicle construction, energy and emissions were reported. Also associated with this is the WTP tab that represents upstream processes of fuel production and distribution. The emission factors of VOC, CO, NOx, PM10, PM2.5, SO2, and CO2e for every project year (2023 through 2032) were obtained and reported on the WTP tab that represents upstream processes of fuel production and distribution.
31	**It appears that CO2e is measured in metric tons (MT) and other pollutants are reported in tons per year. We recommend the units be consistent or that clarifying language be added to explain why this is the case.**
	These units are consistent with regulatory air permitting and emission inventory guidance for GHG (in MT) and all other pollutants (tpy). The EIS has been revised for clarification in light of

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	this comment. See Section 4-6.3.1 of the FEIS for clarifying text that the EPA's GHG reporting and document is based on metric tons (MT) while other criteria pollutants such as CO, NOx, VOC, PM10, PM2.5, and SO2 are reported and regulated based on English short tons.
32	**The simplified methodology for the lifecycle analysis is a concern if scale of reductions is a factor. We recommend a more detailed screening approach to calculate emissions of BEVs to include the following steps and noting in the text that emissions would vary by region.** • **Estimate the emissions associated with the production and transport of feedstock used to generate electricity. The GREET model used in the draft EIS is a good source of emission factors associated with different feedstocks. However, since the mix of feedstocks used to generate electricity varies by region, it is important to consider and appropriately weight these 'upstream factors' by the resource mix (e.g., percentage of coal, natural gas, or other feedstocks used to generate power in that region).**
	Regional air emissions (including GHG) analyses would require extensive analyses with several parameters, including the Postal Service's deployment schedule of the new vehicles and type of new vehicles to be deployed at each location. The Postal Service requires the ability to be flexible with its delivery and vehicle structure in order to support its Universal Service Obligation (39 USC 101) and any such assignments at this time would be speculative. The DEIS thus provided a programmatic nationwide evaluation to preserve this flexibility and appropriately represent the Postal Service's national coverage. Regional differences related to BEVs would also depend on the power (fuel) source, for the powerplant(s) in the region, while regional differences for ICE would also depend on the geographic source of the gasoline (fuel) and emissions would differ based on season, weather, road conditions, etc. The Postal Service's vehicle miles traveled (VMT) contributions on a regional level compared to existing regional emissions inventory are and would continue to be negligible. The nationwide analyses in the DEIS demonstrated a net decrease in emissions, a positive benefit of the Proposed Action and alternatives. A by-regional analysis would likewise yield a net decrease in emissions and any difference from the nationwide analyses would be negligible. With respect to BEVs, eGRID also already provides the upstream emissions data from various fuel mixes (e.g., coal, oil, national gas, fossil) to generate electricity by different regions. The EIS analysis is a programmatic nationwide analysis based on the nationwide number of vehicles and nationwide miles of travel per vehicle rather than regional or local level of data. Regional impacts would be very small compared to the overall fleet in use for any region. Because the nationwide analyses demonstrated a net decrease in emissions, and a by-regional analysis would likewise yield a net decrease in emissions regardless of upstream fuel type for electricity, the analysis was performed based on a nationwide level using nationwide average upstream data from "all fuels" rather than separating individual fuel types using eGRID for BEV. (In order to compare the upstream life cycle analysis between BEV and ICE, the GREET model was additionally used to estimate the comparable upstream emissions for fuel production (e.g., gasoline) used for ICE.)) For these reasons, the Postal Service therefore concludes that emissions analyses on a regional basis would require extensive effort but result in little or no difference from the nationwide approach. As such, adding regional analyses would not comport with NEPA's requirement that EISs be analytic, not encyclopedic, and would not aid the Postal Service in informed decision-making. Section 4-6.3.1 of the EIS has been revised to include additional explanation of the above.

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33	**Estimate the power plant emissions rate for each region (e.g., using a tool such as eGRID). This rate should be adjusted by the upstream factor discussed above as well as grid losses due to transmission and distribution of power from the power plant to the end use (in this case, the charging unit), which typically have ranged from 5-6 percent.**
	eGRID provides the upstream emissions data by each region. However, since the EIS analysis is a programmatic nationwide study based on the nationwide number of vehicles and nationwide miles of travel per vehicle rather than regional or local level of data, the analysis was performed based on a national level using nationwide data with the “all fuel” selection (average of various fuels) rather than regional data with individual fuel selections. Section 4-6.3.1 of the EIS has been updated to incorporate additional descriptions regarding nationwide grid gross loss rate (e.g., 5.1 percent in continental U.S., based on eGrid).
34	**Finally, calculate vehicle-specific emissions using the fuel consumption rate for a specific vehicle. Multiply the total regional emissions factor by the chosen vehicle's fuel consumption rate for the lifecycle emissions impact by region.**
	See response to Comment 26, in that the calculations in the DEIS were performed using miles of travel data based on the EPA's MOVES model (designed to estimate mobile source emissions). Therefore, fuel consumption rate was not used in the analysis. The analysis was performed at a nationwide level, and not by region (see Response to Comment 32).
35	**The current method appears to combine MOVES (tailpipe or direct) estimates with those from eGRID or GREET (upstream or indirect).** **However, it is unclear to what extent important factors are aligned between these models. The analysis needs to articulate whether inputs to MOVES and/or GREET have been modified to better reflect the specific Postal Service vehicle(s) under consideration. Vehicle emissions are sensitive to vehicle efficiency, so the practice of using a representative "light commercial truck" in MOVES or "vocational vehicle" in GREET may over- or under-estimate emissions.**
	Section 4-6 and Appendix F of the EIS have been revised to include an additional description regarding how the emissions were calculated using emission factors from the MOVES, eGRID, and GREET models. MOVES predicts tailpipe, brake, and tire wear emissions from vehicles. See the footnote of Table F-4.a of the EIS, stating that the emission factors from the MOVES model were based on the following inputs/assumptions: (1) Fuel-Gasoline, (2) Urban Road Type - Urban Unrestricted/Arterial/Collector/Local (Westchester County, New York), (3) Vehicle Speed - 25 mph, (4) Weekday travel, (5) Winter months for CO, PM2.5 , PM10 and SO2, (6) Summer months for VOC, NOx, and CO_2. Other than the aforementioned, no modification was made in MOVES. eGRID was used to obtain the emission profiles associated with the U.S. power sectors. Nationwide average emission factor and all fuel mixture were selected as inputs. See Response to EPA Comment 30 regarding the GREET model. Other than the project-specific inputs (vehicle type, geography [nationwide], year of vehicle deployment, and fuel type), no other modifications to the GREET model were made. Using the GREET model, inputs were specified on wheel-to-pump by selecting correct paths for the analysis, on the SIMULATION Tab by input of each year of analysis individually, by selecting the time of innovation of the technology, and by selecting appropriate vehicle

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	parameters. No changes were made to the actual emission and characterization factors, as these are part of the GREET predictions in the DATA EDITOR tab. The vehicle types "light commercial truck" in MOVES and "vocational vehicles" in GREET are the most representative vehicles based on the size and weight of the Postal Service's vehicles, and the vehicle types between MOVES and GREET were matched as closely as possible in the EIS. Section 4-6.3.1 and Appendix F were revised accordingly.
36	**The draft EIS does not consider current regulations for GHG emissions or other regulations being developed at the state level.**
	The DEIS considered current regulations on GHG emissions in accordance with NEPA requirements. Furthermore, the Postal Service followed EPA's recommendation in its scoping comments and used their 2016 Final GHG Guidance. As a result, the DEIS provided comprehensive estimates of both direct and indirect GHG emissions that can be reasonably quantified using the most recent regulatory planning tools and addressed both the GHG emissions impact on climate change and the climate change impact on the proposed program. The DEIS discussed the programmatic impacts on a national level as compared to a project level impact on a local or state level. The programmatic nationwide evaluation used current federal regulations in the analysis of GHG emissions. Due to the programmatic nationwide nature of the action, state regulations were not considered. In addition, using state regulations under development would be speculative and thus were not used in the analysis. Section 4-6.3.1 has been updated accordingly.
37	**Based on the information presented in the draft EIS, it is unclear exactly how the calculations were performed to monetize the GHG emissions changes.** **For instance, based on the tables provided in Appendix F, it is unclear if the Postal Service applied the year-specific and gas-specific SC-GHG estimate to GHG emissions occurring in the same year (as recommended in the 2021 TSD), or instead took some 5-year averaging approach.**
	The DEIS presented the Social Cost of GHG based on ten-year total emissions in GHG after completion of the project as the basis to forecast lifespan Social Cost of GHG in five-year intervals, for each of the Proposed Actions and Alternatives. This approach likely provides higher Social Cost of GHG benefits than an approach using every intermediate year of emissions before completion of the project in year 2032. The Social Cost of GHG would be the same after completion of the project in 2033 and beyond under either approach. Section 4-6.3.1 has been updated accordingly.
38	**EPA recommends that in the supplemental EIS, the Postal Service provide clarity on how the SC-GHG estimates were applied to the estimated annual stream of emissions changes. We also recommend that the Appendix F provide the annual GHG emissions changes in a column alongside the monetized value of those GHG emissions in each year within the same table, for each alternative.**
	See Response to Comment 37. GHG emissions in intermediate years before completion of the project were not evaluated separately. See revised FEIS Section 4-6.3.1 for an explanation, and Appendix F tables showing the ten-year total GHG emissions due to the project alongside the monetized value of those GHG emissions.

#	**SECTION 1: ENVIRONMENTAL PROTECTION AGENCY (EPA) COMMENTS** **Comment (first row)** **USPS RESPONSE** (in subsequent row)
39	**The analysis should include the 95th Percentile estimates associated with the 3 percent discount rate case.**
	The EIS has been revised (Section 4-6 [Tables 4-6.3, 4-6.6, 4-6.9, 4-6.12, and 4-6.15] and Appendix F [Tables F-8.a - F-8.f]) to present additional 95th percentile estimates associated with the 3 percent discount rate case.
40	**E.O. 13990 refers to interim global values. We recommend adding the following text after the "Interagency Working Group 202I" reference: *"These SC-GHG estimates are interim values developed under Executive Order (E.O.) 13990 for use in benefit-cost analyses until updated estimates of the impacts of climate change can be developed based on the best available science and economics. The E.O. instructs the IWG to undertake a fuller update of the SC-GHG estimates by January 2022 that takes into consideration the advice of the National Academies and other recent scientific literature."***
	The EIS (Section 4-6.1.4) has been revised to incorporate the suggested text.
41	**Revise the following sentence "The SCC is an assigned marginal cost used to facilitate a policy and decision-making assessment of the costs and benefits of *a change in* GHG emissions." to *"The SCC is an assigned marginal cost used to facilitate a policy and decision-making assessment of the costs and benefits of increased GHG emissions."***
	The DEIS (Section 4-6.1.4, Social Cost of Greenhouse Gas (Carbon), second paragraph, first sentence) included the specified wording, and this wording was not used elsewhere in the DEIS. Therefore, no change has been made to this sentence in the FEIS.
42	**Replace the sentence "The SCC represents a monetization of the damages associated with the incremental changes in GHG (e.g., increased flood risk, disruption of energy systems, environmental damage) on society." with "'/'he SCC is the monetary value of the net harm to society associated with a marginal increase in emissions in a given year, or the benefit of avoiding that increase. In principle, SC-GHG includes the value of all climate change impacts, including (but not limited to) changes in net agricultural productivity, human health effects, property damage from increased flood risk and natural disasters, disruption of energy systems, risk of conflict, environmental migration, and the value of ecosystem services."**
	The EIS (Section 4-6.1.4) has been revised to replace the previous sentence with the suggested wording.
43	**In addition to considering discount rates of 2.5 to 5 percent, please include the 3 percent 95th percentile SC-GHG estimates by using this suggested text: "The estimates consider discount rates of 2.5 percent, 3 percent, and 5 percent plus a fourth value, selected as the 95th percentile of estimates based on a 3 percent discount rate. The fourth value was included to provide information on potentially higher-than-expected economic impacts from climate change, conditional on the 3 percent estimate of the discount rate."**
	See response to Comment 39. The EIS (last paragraph of Section 4-6.3.1) has been revised to show the 95th percentile estimates associated with the 3 percent discount rate case, and the suggested text has been added.
44	**Replace "social cost *on* the GHG emissions" with *"social cost of GHG emissions"* throughout.**
	The EIS (Section 4-6.3.1) has been revised in the two instances where this wording was used.

#	**SECTION 1: ENVIRONMENTAL PROTECTION AGENCY (EPA) COMMENTS** **Comment (first row)** **USPS RESPONSE** (in subsequent row)
45	**The draft EIS states that for the preferred alternative, "No effects of climate change are expected." (p. 4-20). The draft EIS makes the same conclusion for the other alternatives considered (p. 4-24 and p. 4- 26). However, sections 4.6.1.3 and 4.6.2.3 provide analysis to show that climate change is a reasonably foreseeable environmental trend that is influencing the affected environment. The finding, or rather assumption that "no effects of climate change are expected" is not consistent with the analysis on GHG emissions and climate change overall. EPA recommends that the Postal Service more specifically discuss the need for considering climate adaptation as part of the proposed action and alternatives in the supplemental EIS. For example, depending on the location of the deployment of future vehicles and updates needed to the Vehicle Maintenance Facilities, the tiered NEPA documents may need to evaluate specific actions that may be incorporated to adapt to changing climate conditions-e.g., increasing frequency of extreme weather events such as storms and floods. Such events will affect the USPS ability to deliver mail.**
	The Postal Service supports customers in every community across the country and is often one of the first services restored following a major disaster. To ensure the Postal Service can fulfill its duty to the nation, our national preparedness and continuity functions have plans (e.g., integrated emergency plans), procedures and protocols in place for Postal Service facilities. To support this process, the Postal Service develops, trains and runs drills on a host of emergency planning scenarios ranging from local, singular events to major disasters with wide impacts. To support new fleet capabilities, the Postal Service's national emergency preparedness team will assess capabilities required to support BEVs, draft emergency response plans, and support contracts to ensure consistent continuity of operations. The Postal Service's Climate Action Plan formalizes a commitment to integrate considerations of a changing climate into Postal Service policies, initiatives and actions. The Climate Action Plan is structured around five priority actions that together will increase the Postal Service's resilience. Priority actions are to enhance climate literacy in the Postal Service management workforce; identify key vulnerabilities within all Postal Service operations, facilities, systems and suppliers; develop and implement climate-ready adaptations for key vulnerabilities at Postal Service facilities and sites; develop and implement climate-ready adaptations for key vulnerabilities within the Postal Service supply chain; and integrate climate action planning into Postal Service policies, initiatives and actions. Finally, climate resiliency and adaptation with respect to individual Postal Service facilities will be addressed through NEPA reviews for new facilities actions (see, e.g., 39 C.F.R. 775.5(b)(8), requiring Environmental Assessments for the construction of new vehicle maintenance facilities) and other Postal Service environmental procedures such as those for new facilities construction in floodplains under 39 C.F.R. Part 776.
46	**Finally, increased temperatures will increase the demand for air conditioning in the vehicles, and based on the specifications in the EIS, fuel economy drops over 41 percent when the air conditioning is operating.**
	Air conditioning, not present in the LLVs, has been a key consideration of the Postal Service's labor stakeholders for reasons of carrier comfort and competitive workplace conditions. The Postal Service has therefore set a policy to provide air conditioning to meet this demand. The EIS incorporates the impact of air conditioning on ICE fuel efficiency and the impact of heating on BEV mileage (see Tables 3-1.2 and 3-1.3 in EIS Section 3-1.1).

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47	**EPA recommends that the conclusion be updated to better reflect the discussion in the draft EIS to articulate where there are beneficial or negative changes to the proposed action and alternatives related to impacts associated with GHG emissions.**
	Additional language has been added to the FEIS (Sections 4-6.3 and 6-4.5) on GHG emissions comparison between the Proposed Action and Alternatives.
48	**EPA recommends that the Postal Service specifically disclose how climate adaptation considerations are being addressed as part of this proposal in a supplemental EIS. Where climate adaptation considerations are more appropriately scaled to the local level - i.e., updates to the Vehicle Maintenance Facilities as needed-the supplemental draft EIS should include, at a minimum, identification of the key aspects of climate adaptation that may need to be addressed in tiered local NEPA documents (e.g., consideration of updated designs to allow for resilience and consistency of service with an increase in extreme storm events) and preferably articulate a strategy for climate adaptation for the purchase and deployment of any of the alternatives analyzed.**
	See response to Comment 45 for discussion of the Postal Service’s actions to increase climate resiliency. For the reasons provided in response to the EPA’s other questions, the Postal Service does not agree that a Supplement to the DEIS is required or warranted. Climate adaptation and resiliency considerations will be considered at the local level with respect to facility-specific Postal Service actions. As part of its Universal Service Obligation (39 USC § 101), the Postal Service deploys all of its vehicles according to factors that influence the vehicles’ maximum efficient and reliable performance, including climate. This is a dynamic process that reflects the shifting, and at times competing, needs of different parts of the nation for finite Postal Service resources.
49	**While the draft EIS measures GHG emissions as indirect effects, it does not identify the other indirect fossil fuel related effects of the preferred alternative (10 percent BEV and 90 percent ICE).** **EPA recommends that the Postal Service consider the potential indirect effects associated with supporting 90 percent ICE and the necessary infrastructure, including, but not limited to, potential for pipeline leaks, leaking underground storage tanks and associated liability effects from trucking liquid fuel.** **Depending on the setting and the degree of effect, these impacts of operating ICE NGDV could result in impacts to communities with environmental justice concerns.**
	Nationwide upstream emissions estimated based on eGRID and GREET models (models recommended for use in the EIS by EPA in their scoping comments) include upstream emissions of fuel cycle. However, no record indicates that the models capture fugitive emissions such as the potential for pipeline leaks or leaking underground storage tanks. Fugitive emissions from pipeline components and tank breathing loss should be already accounted for as a part of air permit or air emission inventory for upstream sources, the magnitude of these fugitive emissions are generally negligible relative to point sources. Therefore, the EIS considered the fugitive emissions as negligible and would not change the conclusion in this nationwide analysis. The EIS (Section 4-6) has been revised to discuss that these risks exist, but they are not quantifiable related to the Postal Service's action. No pipelines directly fuel Postal Service on-site fuel tanks, and the Postal Service's fueling tanks are managed per regulatory requirements. A small percentage of Postal Service delivery vehicles were fueled at Postal Service locations using on-site underground storage tanks (USTs) (using a total of 36 gasoline

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	USTs at 33 Postal Service facilities in FY2020), with the remainder being fueled by off-site commercial gasoline stations.
50	**The draft EIS states that because there is no change to the overall number of vehicles and delivery points, there would be no impact on communities with environmental justice concerns (p. 4-8). The draft EIS concludes that the proposed action with the ICE NGDV hypothetical maximum (90 percent ICE NGDV) is more fuel efficient than the no action and, thus, would be an improvement to communities with environmental justice concerns (p. 4-7). The draft EIS also states that no substantial updates to Vehicle Maintenance Facilities are anticipated and the Postal Service would conduct appropriate environmental review at the local level (p. 1-5). EPA believes this statement oversimplifies the potential for procurement and deployment decisions to affect communities with environmental justice concerns. There is a high probability that minority and low-income populations live near well-traveled and congested highways and mail distribution facilities. Hence, they would be exposed to disproportionate emissions from mail delivery vehicles.**
	For nearly 250 years, the Postal Service is proud to have provided secure, reliable, affordable, and universal delivery of mail and packages to America's homes and businesses. The NGDV acquisition will replace an aging delivery fleet with a purpose built, ergonomic, safer, more fuel efficient and more environmentally friendly vehicle, regardless of the drivetrain selected. Deployment of these new energy-efficient and environmentally friendly vehicles benefit any locality over the existing fleet of existing delivery vehicles. To support green initiatives, the Postal Service has committed to acquiring a delivery fleet of at least 10% BEV; acknowledging, at present, the vehicles are of a higher total cost of ownership to the organization. The Postal Service's assignment model is based on numerous factors including climatic conditions, fuel savings, and route length to maximize the benefits of BEV drivetrains to the organization and to all Americans. Regardless of deployment order, the Postal Service plans to utilize NGDV nationwide to meet our Universal Service Obligation (39 USC § 101).
51	**Socially vulnerable populations are also disproportionately affected by climate change. The draft EIS acknowledges that minority populations are rising (p. 4-7), and there is a rise in communities with environmental justice concerns. However, the analysis in the draft EIS does not clearly articulate as part of the environmental justice concerns, the reasonably foreseeable impacts to underserved communities already exposed to disproportionate risks from pollution, traffic, noise, and other stressors. As part of the discussion of the potential deployment of the proposed action, the draft EIS does state "Route characteristics for placement of BEV NGDV would include routes located in mild temperature ranges, routes with frequent and numerous curb-line stops as they better recapture the vehicle's motion (kinetic) energy via regenerative braking to recharge the battery, and *routes in locations with compromised air quality* and/or states with proactive BEV policies and regulations." (p. 3-2, emphasis added). There is a need for improved programmatic consideration of ways to address disproportionate impacts and equity considerations in the proposal and alternatives beyond the general statements provided in the description of the proposed action.**
	The Proposed Action would replace all existing LLVs and FFVs, on a nationwide one-to-one basis, with a new ICE or BEV NGDV and each new vehicle having updated technology and reduced emissions over the existing vehicles. While Environmental Justice is not an express BEV deployment factor under the Proposed Action, the Postal Service

#	**SECTION 1: ENVIRONMENTAL PROTECTION AGENCY (EPA) COMMENTS** **Comment (first row)** **USPS RESPONSE** (in subsequent row)
	expects that its BEV deployment criteria will still indirectly include many socially vulnerable and Environmental Justice communities (e.g., deployment factor for states with proactive BEV policies). The Postal Service disagrees that NEPA's hard look at the environmental impacts of replacing its delivery vehicle fleet requires the EIS be expanded to include programmatic considerations for Environmental Justice beyond the BEV deployment factors the Postal Service has already provided.
52	**EPA recommends that the Postal Service include a more detailed discussion of how the Postal Service may consider the timing and prioritization of deployment of vehicles to address disproportionate risks from pollution in communities with environmental justice concerns, including prioritization of the deployment of BEV NGDV or COTS BEVs to these communities.**
	See response to Comment 11 for discussion regarding need for deployment flexibility. As the Postal Service must retain flexibility to balance multiple factors to meet its Universal Service Obligation (39 USC § 101), the Postal Service cannot provide a more detailed discussion of its deployment strategies beyond the factors already provided.
53	**EPA recommends that the criteria for deployment of BEVs should include routes in neighborhoods that are suffering from accumulated environmental harms, noise, and heavy vehicle traffic, in addition to poor air quality. The clean vehicles should be going to the communities that would get the most benefit from them. These locations are likely to be more densely populated, thus likely to have frequent and more numerous curb stops as well.**
	See responses to Comments 51 and 52 above. The Postal Service also notes that densely-populated areas are not more likely to have frequent and more numerous curb line stops because they generally have centralized delivery methods (e.g., cluster box units and apartment buildings).
54	**EPA recommends the Postal Service identify more specific mitigation options within this EIS that would be considered as part of any tiered NEPA document for the deployment of vehicles and updates, as required, to vehicle maintenance facilities to reduce disproportionate accumulated risks faced by communities with environmental justice concerns. The Postal Service should incorporate measures to ensure that BEVs are deployed in an equitable manner that will allow over-burdened communities to be recipients of the local benefits (e.g., reduced noise, reduced emissions) of BEVs. This represents an opportunity to include vehicle placement in the agency-wide environmental justice strategy.**
	The Postal Service believes that its current BEV deployment factors could often overlap with Environmental Justice communities, resulting in environmental benefits for burdened communities. While the Postal Service agrees that the deployment of BEVs represents an opportunity to address Environmental Justice concerns, the Postal Service disagrees that expanding the EIS to explore specific Environmental Justice mitigation options is necessary or warranted given NEPA's requirement that EISs be analytic rather than encyclopedic. See also response to Comment 11 regarding Postal Service's need for deployment flexibility which prevents it from making additional mitigation commitments in the Proposed Action.
55	**In addition to the resources provided in our scoping letter, we recommend the Postal Service use air quality non-attainment data found in EJSCREEN at: https://ejscreen.epa.gov/mapper/ to determine which locations would benefit the most from having new electric vehicles placed in service.**

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	See response to Comment 51. The Postal Service uses various tools to assess feasible and optimal locations for deployment of BEVs and will consider states with proactive BEV policies.
56	**The Postal Service has a unique chance to exhibit large-scale deployment of a proven low-carbon technology and support the Administration's January 27, 2021, Executive Order 14008 on *Tackling the Climate Crisis at Home and Abroad,* which directs federal agencies to develop a plan to achieve or facilitate clean and zero-emissions vehicles for federal, state, local, and Tribal fleets.**
	The Proposed Action provides the Postal Service the flexibility to adopt a mix of BEV and ICE NGDV with the commitment that at least 10 percent of the NGDV will be BEV. While the Postal Service is not subject to Executive Order 14008, the Postal Service believes that, with sufficient public funding support, the majority of the Postal Service's fleet can be electric by the end of the decade. The Proposed Action was therefore drafted with that potential in mind.
57	**EPA encourages the Postal Service to explore opportunities and innovative ways to help support electric vehicle use by other federal agency fleets and state, local, and Tribal fleets. For example, making charging station infrastructure accessible to these agencies and possibly to the public as well.**
	The Postal Service agrees with EPA that there are opportunities for the Postal Service to partner with other federal, state, local and tribal entities to expand EV charging and is willing to explore such opportunities on a case-by-case basis. However, as the provision of EV charging services for non-Postal Service operations does not address the Postal Service's Purpose and Need, the Postal Service does not consider this EIS to be the appropriate vehicle for exploring such opportunities.

#	SECTION 2: SUMMARIES OF OTHER SUBSTANTIVE COMMENTS Comment (first row) USPS RESPONSE (in subsequent row)
58	**The Postal Service should acquire 100% electric vehicles to exercise leadership/combat climate change.**
	See response to Comment 56.
59	**The Postal Service has not considered significant time and cost savings from BEVs.**
	See response to Comment 18 for confirmation that Postal Service considered BEV maintenance costs in TCO analysis.
60	**The Postal Service has pre-decided the outcome by awarding to Oshkosh.**
	See Section 1-3.2.2 where it states that contract award to Oshkosh is expressly contingent on the Postal Service's satisfactory completion of NEPA. To comply with NEPA's pre-decisional requirements, the Postal Service may modify or cancel entirely the contract award should it change its preferred alternative on account of the NEPA process. NEPA does not require that agencies place themselves at a competitive disadvantage by publicly deciding a course of action prior to securing best possible prices in a contract.
61	**The Postal Service has not considered environmental impacts from relative higher emissions from ICE over BEVs.**
	See Section 4-6.3.3 (Proposed Action – 100% BEV NGDV) where the Postal Service states that an all-BEV fleet would have a greater reduction in direct operational emissions as compared to a 90% ICE fleet. The Postal Service has fully considered this relative benefit. However, NEPA requires agencies to make informed decisions. It does not require agencies to adopt the least environmentally impactful alternative.
62	**The BEVs are quieter than ICE vehicles.**
	See Section 4-5.3.1 (Proposed Action) where the Postal Service considered the fact that BEVs are expected to be 4 to 5 dB quieter than ICE vehicles at low speeds.
63	**BEVs have a lower lifecycle cost than ICE vehicles.**
	This is not correct with respect to the Postal Service. See Section 4-11.2 (Selection of Preferred Alternative) for the Postal Service's determination that BEV NGDV would be over $2 billion more expensive than ICE NGDV (for an order of 75,000 BEV NGDVs; a maximum order of 165,000 BEVs would require more than $1 billion dollars in additional investment as compared with ICE). See also response to Comment 18 for additional explanation regarding TCO factors.
64	**The Biden Administration committed a whole of government approach to tackle climate crisis in Executive Order 14008, Tackling the Climate Crisis at Home and Abroad.**
	See responses to Comments 3 and 56.
65	**The Postal Service should acquire hydrogen-fueled fuel cell vehicles, as hydrogen infrastructure and costs will be competitive within ten years.**

#	SECTION 2: SUMMARIES OF OTHER SUBSTANTIVE COMMENTS Comment (first row) USPS RESPONSE (in subsequent row)
	The Postal Service began the NGDV program with a prototype phase. The objective was to solicit the industry to provide robust vehicle designs for evaluation and testing in both a controlled environment and actual usage in delivery operations. There were no restrictions on possible drivetrains. No prototype hydrogen-fueled vehicles or proposals for hydrogen-fueled vehicles were submitted in response to the NGDV Prototype RFP. Moreover, the Postal Service's expert evaluation of the delivery vehicle market has determined that there are no hydrogen-fueled COTS vehicles currently available that are capable of meeting Postal Service operational requirements. For these reasons, the Postal Service did not include hydrogen-fueled vehicles as a reasonable alternative for consideration in the EIS. See also responses to Comments 7 and 16.
66	**The Postal Service should repair current vehicles rather than buy more ICE vehicles.**
	See Section 4-11.2 (Selection of Preferred Alternative) for explanation of why maintaining current vehicles would not meet the Postal Service's Purpose and Need as it would not provide new, more energy-efficient vehicles with updated technology, increased cargo capacity and improved loading characteristics, improved ergonomics and carrier safety, and reduced maintenance costs. Additionally, the Postal Service has been repairing the current vehicles for nearly 30 years, and the repair costs have escalated significantly as the vehicles have surpassed their intended useful life.
67	**The Postal Service should provide more information about specifications of the NGDV (for example, material to be used in its frame and horsepower of engine).**
	See Tables 3-1.2 and 3-1.3 of the EIS for the ICE NGDV and BEV NGDV specifications (e.g., gross vehicle weight rating and payload). In response to this request, the Postal Service also notes that the NGDV will have an aluminum unibody, the ICE model will have a 250 HP engine with 206-lb/ft torque and 8-speed transmission, and the BEV model will have a 94kWh battery of which 80.5kWh will be useable.
68	**The Postal Service should consider hybrid vehicles over all-electric vehicles.**
	See response to Comment 65 regarding NGDV Production RFP process. No proposal for a hybrid vehicle was submitted in response to the NGDV Production RFP, despite the RFP placing no restrictions on possible drivetrains.
69	**The NGDV should not have air conditioning since it adds to costs and reduces fuel economy. The Postal Service should use fans, vehicle insulation, summer clothing and summer hazard pay instead.**
	See response to Comment 46. For those reasons, the Postal Service declines to provide fans, vehicle insulation, summer clothing and summer hazard pay options in lieu of heating or air conditioning.
70	**The Postal Service should account for changes/improvements in 10-year procurement period of the NGDV.**
	See responses to Comments 16, 22 and 23 for discussion of cost savings clauses in the Proposed Action's contract as well as an acknowledgement that changes and improvements in technology cannot necessarily be cost-effectively incorporated into a competitively-negotiated contract.
71	**The Postal Service should coordinate its procurement with other major delivery companies such as FedEx, UPS and Amazon to achieve lower costs.**

#	SECTION 2: SUMMARIES OF OTHER SUBSTANTIVE COMMENTS Comment (first row) USPS RESPONSE (in subsequent row)
	See response to Comment 20 for discussion as to how the Postal Service operations differ from its private competitors which result in different vehicle usage and maintenance requirements. The Postal Service therefore declines to coordinate its vehicle procurements with private competitors at this point in time.
72	**The Postal Service should consider self-driving technology.**
	In pursuit of its statutory mission to reliably deliver the nation's mail and be self-supporting, the Postal Service continuously considers and tests new vehicle technologies, including self-driving technology. For example, in 2019, the Postal Service conducted a two-week pilot test transporting mail across three southwestern states using self-driving trucks. However, the Postal Service has determined that self-driving technology, while promising, is not yet evolved or standardized enough to incorporate into specifications for a vehicle fleet of this size.
73	**The Postal Service should discuss safety features of NGDV.**
	See Section 4-4.3.1 (Safety, Accessibility and Parking) for discussion of NGDV's safety features, including anti-lock brakes, air conditioning, back-up cameras, blind spot warning systems, daytime running lights and airbags.
74	**The Postal Service should equip BEVs with outgoing charging ports so, in emergencies, NGDV can serve as mobile resilience hubs.**
	See responses to Comments 24 and 25.
75	**The Postal Service should open BEV charging stations to the public.**
	See response to Comment 57.
76	**The Postal Service should install solar panels on its roofs to power BEVs in order to lower costs and improve resiliency during power outages.**
	The Postal Service is willing to explore opportunities for solar power on a case-by-case basis. For example, the Postal Service installed nearly 29,000 solar panels at its Los Angeles mail processing facility. However, as it does not address its urgent Purpose and Need to replace the end-of-life and high maintenance vehicles in its delivery fleet, the Postal Service declines to expand the scope of this EIS to consider programmatic solar upgrades to its facilities.
77	**The Postal Service should provide more information as to why BEVs would not be able to be used on 5% of routes.**
	See response to Comment 8 for discussion of the extensive and rigorous testing process which produced the Postal Service's battery range requirements and the number of routes that are estimated to currently exceed that range. See also response to Comment 11 for discussion of the importance of a consistent range of operations to maintaining the flexibility necessary to reliably deliver the mail. In the future, as battery technology evolves and battery density improves, these routes may become candidates for BEVs.
78	**The Postal Service should provide more data, including its discount rate, supporting its Total Cost of Ownership, so accurate comparisons to SCC estimates can be made. For example, why did USPS choose 75,000 as the number of vehicles when the order could be up to 165,000 and benefits were calculated using 165,000? What percentage of costs would go towards charging infrastructure?**

#	SECTION 2: SUMMARIES OF OTHER SUBSTANTIVE COMMENTS Comment (first row) USPS RESPONSE (in subsequent row)
	See response to Comment 13 for discussion of TCO components. The Postal Service chose 75,000 as its TCO comparison point, because, should the Proposed Action go forward, 75,000 was considered to represent a more realistic initial vehicle quantity. Even though the Postal Service is not certain whether it would acquire more NGDV beyond that initial order, the EIS calculates the full environmental impacts of the maximum quantity permitted under the contract.
79	**The Postal Service should consider partnerships with utilities to reduce BEV costs.**
	See response to Comment 57. Where partnerships or other cost-saving opportunities exist, the Postal Service is willing to explore such opportunities on a case-by-case basis. For example, the Postal Service is part of a team – San Joaquin Valley Air Pollution Control District, CALSTART, Motiv, EDI, Morgan Olson, and Black and Veatch – that submitted an application and was awarded a grant from the California Air Resources Board for the deployment of zero emission vehicles in disadvantaged communities in California. The grant includes deployment of 15 all-electric zero-emission step-van vehicles, and the associated infrastructure and installation at two Postal Service facilities in Fresno and Stockton, CA.
80	**The Postal Service should provide more support for claims that BEVs' battery capacity declines over time and that BEVs are unreliable in cold conditions.**
	See response to Comment 8 for discussion of the comprehensive testing the Postal Service conducted, including simulated testing and winter testing, which formed the basis for the Postal Service's assumptions and specifications regarding BEV battery capabilities and response to Comment 10 for a discussion on anticipated battery usage during the Postal Service operational drive cycle. The Postal Service does not claim that BEVs are unreliable in cold conditions; however, our extensive testing protocols have demonstrated that the range of BEVs will decrease in cold environments due to the operation of the vehicle heater in low ambient temperatures. Outside experts have also found, after testing several popular BEVs at 20 degrees F, that temperature alone could reduce vehicle range by ten to twelve percent and that the use of in-vehicle climate control can amplify this range loss to 40 percent. Additionally, as stated on the EPA website, EPA acknowledges that batteries degrade over time. EPA projects a ten-year useful life. (Source: Application of life cycle assessment to nano-scale technologies: Li-Ion batteries for electric vehicles). Cold weather temporarily reduces the EV battery range. Tests of several popular EVs at 20 degrees F showed that temperature alone could reduce range by 10-12 percent. The use of in-vehicle climate control can amplify this range loss to 40 percent (What does cold weather do to EV range? *https://www.recurrentauto.com/research/how-temperature-affects-ev-range#:~:text=Cold%20weather%20temporarily%20reduces%20EV,amplify%20range%20loss%20to%2040%25*.) That battery capacity declines over time is a fact and as shown in a study by the Department of Energy National Renewables Lab's report. The vehicle manufacturer (Oshkosh) has provided a battery that, after ten years of usage, will still be able to provide 70 miles of driving range. (*https://www.nrel.gov/transportation/battery-lifespan.html)*
81	**The DEIS does not consider that BEVs do not require fuel or emit tailpipe emissions.**
	See response to Comment 61.

#	SECTION 2: SUMMARIES OF OTHER SUBSTANTIVE COMMENTS Comment (first row) USPS RESPONSE (in subsequent row)
82	**The DEIS assumes that BEVs would use nickel manganese batteries, which are heavier and more expensive than lithium-ion batteries. This increases PS's TCO calculations for BEVs.**
	The actual battery used in the BEV NGDV is lithium ion with nickel manganese cobalt and such a battery was used in all of the Postal Service's TCO calculations. This typo has been corrected in the FEIS.
83	**The federal government plans to build hundreds of thousands of chargers (Biden's American Jobs Plan), so this should reduce Postal Service Total Cost of Ownership estimates.**
	Postal Service BEVs would need to be charged at Postal Service facilities to allow for the mail delivery cycle. As of the date of this EIS, no funding has been approved for the installation of charging stations at Postal Service facilities. Therefore, inclusion of cost reduction factors for such infrastructure would be speculative. The Proposed Action was drafted to permit the Postal Service the flexibility to increase the percentage of BEVs acquired should additional funding become available.
84	**There is a lack of analysis regarding the costs of retrofitting NGDV.**
	The potential to retrofit the NGDV is a feature that has been offered by the NGDV supplier. However, the Postal Service has no plans to retrofit any vehicles and therefore vehicle retrofits are not part of the Proposed Action.
85	**The Postal Service should commit to prioritize the deployment of non-polluting vehicles to regions with the worst air quality.**
	See Section 3-1.1 (Proposed Action) for statement that states with proactive policies is a factor the Postal Service will consider, among others, in evaluating ICE and BEV deployments.
86	**Air quality impacts from continued deployment of ICE vehicles will negatively impact communities already overburdened by air pollution – for example, West Oakland, California is impacted by high particulate matter pollution contributed to by the Postal Service facility at 675 7th Street.**
	See responses to Comments 51 and 85 for discussion of factors Postal Service will consider in deploying ICE and BEV vehicles.
87	**The Postal Service should prioritize placement of its BEVs in communities most impacted by air pollution and environmental injustices (for example by using EPA's EJSCREEN tool to identify environmentally-burdened local populations).**
	See response to Comment 86 for BEV deployment factors.
88	**The Postal Service should prioritize and frontload the deployment of 10% minimum of BEVs to position itself to be able to increase the percentage of BEVs as the net costs of BEVs decrease in the future.**
	Locations best suited to the immediate deployment of BEVs may not be evenly or proportionately distributed across the nation. Moreover, areas most in need of vehicle replacement might not be ideal initial candidates for BEV deployment. Therefore, because it must retain the flexibility to reliably deliver the mail for the entire nation and deploy its vehicles as cost-efficiently as possible, the Postal Service declines to commit to any prioritization or frontloading of BEVs.

#	SECTION 2: SUMMARIES OF OTHER SUBSTANTIVE COMMENTS Comment (first row) USPS RESPONSE (in subsequent row)
89	**The Postal Service should clarify how it intends to update its analyses and reevaluate its BEV procurement in future years if BEVs become cheaper or their environmental benefits are recognized to be greater than current monetized values indicate.**
	The Proposed Action is structured to permit the Postal Service the flexibility to acquire greater than 10 percent BEV NGDV should the Postal Service's financial condition permit. Future vehicle procurements after the Proposed Action's ten-year time frame will be evaluated separately from the Proposed Action under NEPA. See also responses to Comments 16 and 17 for discussion regarding assumptions that BEVs will become cheaper in future years.
90	**In order to avoid undervaluing environmental benefits of BEVs, the Postal Service should consider using discount rates below 2.5% (perhaps 2% or 1%) for social cost of carbon analyses because policies with strong intergenerational impacts, like climate change, require lower discount rates. The New York State Department of Environmental Conservation currently employs a 2% rate.**
	See responses to Comments 39 and 43 for addition in the FEIS of 95th percentile estimates to the 3 percent discount rate. The Postal Service declines to include an additional discount rate below 2.5 percent.
91	**The Postal Service should keep abreast of updated social cost of carbon estimates as it reassesses its energy mix over the procurement period.**
	Given that the most favorable SCC estimates for the 100% BEV NGDV option were a small fraction of the TCO differential with the 90% ICE NGDV hypothetical maximum (see Section 4-11.1), the Postal Service disagrees that repeated recalculation of the SCC during the ten-year Proposed Action period would produce relevant information for Postal Service decision-making. However, the Postal Service will consider the most current SCC methodologies in any future NEPA reviews.
92	**Postal Service should monetize the costs of other pollutants using valuations used by other agencies (for example, the costs per ton of local pollutants from trucks used by EPA in its Regulatory Impact Analysis, EPA-420-R-16-900).**
	While non-mandatory for assessing environmental impacts, the EIS estimated carbon costs. Specifically, the EIS uses the carbon cost indices established most recently in 2021 by the Interagency Working Group consisting of 14 federal agencies, including the CEQ and the EPA. Therefore, the Postal Service considers that the estimate of carbon costs has been responsibly performed. Furthermore, the referenced study the EPA conducted and published in 2016 is relevant to on-road heavy-duty vehicles including three categories: (1) combination tractors, (2) heavy-duty pickup trucks and vans, and (3) vocational vehicles. The studied heavy-duty vehicles specifically included trailer trucks, coach (intercity) buses, motor homes, school buses, refuse trucks, cement mixers, and emergency vehicles. Therefore, the cost data studied for these heavy-duty vehicles are not applicable to the Postal Service fleet mix under the Proposed Action, and the Postal Service declines to speculate using an untested methodology.
93	**The Postal Service should leverage its market power to correct market failures and stimulate the development of more efficient vehicles.**
	Correcting market failures and stimulating the development of more efficient vehicles are not included in the Postal Service's statutory mission. Moreover, neither action would meet the Postal Service's Purpose and Need. Therefore, the Postal Service declines to expand the scope of the EIS to include these recommendations.

#	SECTION 2: SUMMARIES OF OTHER SUBSTANTIVE COMMENTS Comment (first row) USPS RESPONSE (in subsequent row)
94	**The Postal Service should confirm that its 20-year timeframe for cost savings is accurate given that its current fleet has been in operation as long as 32 years.**
	The Postal Service confirms that the vehicles to be acquired under the Proposed Action have an anticipated lifespan of 20 years.
95	**The DEIS fails to examine any impacts or reasonable alternatives associated with the location and methods of production of the NGDV.**
	The only production-related requirement in the RFP for the NGDV is a domestic production requirement. Therefore, since the Postal Service has no control or responsibility over the location or manner of production, the EIS does not examine environmental impacts associated with the manufacture of any Alternative vehicles. In addition, the Postal Service does not agree that speculating about the relative environmental impacts related to the production methods of suppliers for the Proposed Action or Alternatives (i.e., Oshkosh Defense, Mercedes-Benz, or Fiat Chrysler), when the Postal Service has neither control nor access to detailed information relating to those suppliers' operations, would meaningfully inform its decision-making or aid it in distinguishing among alternatives. Finally, the Postal Service also clarifies that it is not funding the construction of any new facilities under the Proposed Action or any of the Alternatives. The Postal Service negotiates vehicle unit price, and otherwise will only pay the supplier for certain vehicle design and manufacturing tooling costs. The supplier, not the Postal Service, selects where and whether to manufacture the vehicles at existing or new domestic facilities, or some combination of the two. Under the Proposed Action, nothing in the NGDV award prevents interested parties from discussing different NGDV domestic manufacturing locations with Oshkosh.
96	**The Postal Service's expenditure of funds to allow Oshkosh to begin preparing to produce NGDV violates NEPA.**
	See response to Comment 60 for discussion of how the Postal Service carefully negotiated the contract for the Proposed Action to allow for full modification or termination to avoid limiting the Postal Service's choice of reasonable alternatives during the EIS process. Furthermore, NEPA does not forbid agencies from spending reasonable sums to secure purchase options or take preparatory steps for efficient agency action following issuance of a Record of Decision.
97	**Oshkosh's development of a new industrial facility in Spartanburg, South Carolina and Oshkosh's choice of where to construct the NGDV violates NEPA.**
	See response to Comment 95.
98	**The DEIS fails to take into account rapid developments in the BEV market and technology since initiation of its NGDV solicitation.**
	See responses to Comments 3 and 7 for discussion of the Postal Service's exhaustive testing of both BEV NGDV and COTS BEVs. The Postal Service therefore declines to credit reports of technological developments not proven in rigorous field-testing to satisfy unique Postal Service operational needs. See also responses to Comments 8, 9 and 10.
99	**The Postal Service's inclusion of 100% LHD COTS BEV and other COTS options are not legitimate alternatives and/or strawmen.**
	Because the Postal Service delivery fleet currently includes approximately 50,000 COTS LHD and RHD vehicles for certain routes, the Postal Service considered it a reasonable question to assess whether non-purpose-built vehicles could fully satisfy the Postal Service's Purpose and Need. Thus, COTS Alternatives were added to the EIS.

#	SECTION 2: SUMMARIES OF OTHER SUBSTANTIVE COMMENTS Comment (first row) USPS RESPONSE (in subsequent row)
100	**Since BEVs require less maintenance, the DEIS statement that deployment of new BEV NGDV would result in minimal to no changes to the total Postal Service vehicle maintenance workforce makes no sense.**
	The Postal Service maintains its vehicle fleet utilizing a mix of Postal Service-employed technicians and the use of commercial repair shops. Nearly 35% of vehicle maintenance activity is currently performed by third-party commercial repair shops. As BEVs require less maintenance, the Postal Service will be able to reduce its dependence on commercial repair shops for maintenance activities instead of reducing Postal Service-employed technicians. As noted in response to Comment 18, relative maintenance cost differences between ICE and BEV NGDV were incorporated into the TCO calculations. Section 4-3.3.1 of the DEIS discussed the anticipated decreased need for commercial garage maintenance as a result of the Proposed Action and Alternatives 1.1 and 1.2. Sections 3-1.2, 3-2.1, and 4-1.2 of the FEIS have been revised to reference the anticipated reduced dependence on commercial repair shops.
101	**The DEIS eGRID air emissions calculations do not reflect the greening of the U.S. power sector by more use of renewables.**
	See response to Comment 27.
102	**The DEIS provides no support for assumed procurement and deployment of number of vehicles of NGDV by year.**
	The assumed procurement and deployment numbers by year are based on the Postal Service's expert assessment of supplier hypothetical production maximums and the rate of the Postal Service to absorb new vehicles (e.g., retiring high-maintenance and end-of-life delivery vehicles, site-level infrastructure changes (if warranted), carrier trainings, etc.).
103	**The DEIS does not explain why Westchester County, NY is used as the reference for urban unrestricted road type.**
	In order to utilize the EPA's MOVES model (an advanced regulatory tool for estimating on-road vehicle emissions), a location (one county, one region) must be selected and used. Westchester County was selected as the default for this project and is consistent with the analysis in the Postal Service's Programmatic Environmental Assessment for COTS vehicle acquisitions. The FEIS Section 4-6.3.1 has been revised, and Appendix F Table F-3a footnote has been revised regarding this selection.
104	**The DEIS should explain why MOVES 2014b was used instead of MOVES3 (released in Jan. 2021).**
	MOVES 2014b is a valid model and the Postal Service's Programmatic Environmental Assessment for COTS vehicle acquisitions analyses used this same model. Federal Register 86 FR 1106, "Official Release of the MOVES3 Motor Vehicle Emissions Model for SIPs and Transportation Conformity" announces a two-year transportation conformity grace period that will end on January 9, 2023. Section 4-6.3.1 has been revised to add discussion regarding why the 2014b MOVES model was used. Additionally, the last footnote to Table F-3.a (Appendix F) of the EIS has been revised to further clarify that during the two-year grace period, the 2014b MOVES model can be used. The Federal Register citation and reference have also been added to the footnote.

#	SECTION 2: SUMMARIES OF OTHER SUBSTANTIVE COMMENTS Comment (first row) USPS RESPONSE (in subsequent row)
105	**The DEIS does not include air quality analysis for toxic or hazardous air pollutants from tailpipe of an ICE fleet.**
	According to the 2016 Interim Guidance issued by the FHWA in conjunction with EPA (FHWA. October 18, 2016, Updated interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents [https://www.fhwa.dot.gov/environment/air_quality/air_toxics/policy_and_guidance/msat/index.cfm]), FHWA documented three categories for analyzing mobile source air toxics (MSATs), depending on specific project circumstances (i.e., no analysis, qualitative or quantitative). A project that does not change traffic volume and mix is considered a project with no meaningful MSAT impact and no analysis is warranted. Since the Proposed Action would replace old vehicles with new and cleaner models without increasing traffic volumes, it would result in no meaningful MSAT impact and thus no analysis is warranted. Section 4-6 of the EIS has been revised to reference mobile source air toxics and that no analysis is warranted.
106	**The Postal Service uses different approximations for vehicles fleet size – "approximately 218,000," "over 206,000," and "more than 217,000."**
	Note that 'approximately,' 'over,' and 'more than' are not exact numbers and use depends upon the context of the statements in the EIS. The exact number of delivery vehicles is a dynamic number. However, to simplify for the reader and reflect the inventory as of December 2021, approximately 212,000 active delivery vehicles will be used consistently in the EIS.
107	**Because the Postal Service fleet must be replaced and cannot continue in service until 2050, the conclusion that either future alternative will be less than the current fleet is unreasonable**
	The Postal Service disagrees that the failure of the No Action Alternative to meet the Postal Service's Purpose and Need alters the environmental impacts analysis for either the Proposed Action or COTS Alternatives.
108	**The DEIS fails to estimate comparative impact of co-pollutants (nitrogen oxides, volatile organic gases, respirable particulate matter, and inhalable particulate matter) emitted from future fleet alternatives will have on ozone formation in urban nonattainment areas and public exposure to such co-pollutants.**
	See EIS Section 4-6.3.2, Table 4-6.1. "The calculated potential emissions decrease for all pollutants in any nonattainment or maintenance area would be below any de minimis threshold for all applicable criteria pollutants." This includes all areas, even the most extreme/serious nonattainment areas.
109	**The DEIS unreasonably relies exclusively on Social Cost of Carbon to estimate climate impacts because SCC fails to account for major climate impacts such as the effects of wildfires.**
	Replacing high-maintenance and end-of-life delivery vehicles with new fleet of ICE and BEV vehicles would result in a beneficial net reduction in air pollutant and GHG emissions, and therefore would be a positive beneficial impact on the Social Cost of Carbon emissions with no cumulative effect on major climate impacts such as wildfires. See EIS Section 6-4.5.
110	**The DEIS fails to analyze impact of future fleet emissions on human health, comparing future ICE fleets versus BEV fleets.**

#	**SECTION 2: SUMMARIES OF OTHER SUBSTANTIVE COMMENTS** **Comment (first row)** **USPS RESPONSE (in subsequent row)**
	Section 4-6.1.1 of the EIS has been revised to discuss hazardous air pollutants and mobile source air toxics, and 4-6.3.1 of the EIS has been revised to include additional discussion of potential impacts of fleet Criteria Pollutants and VOC emissions on human health.
111	**The DEIS fails to compare the different GHG emission impacts from ICE Alternative 1.1 versus BEV Alternative 1.2.**
	See EIS Tables 4-6.4 and 4-6.7 regarding GHG emission impacts for BEV and ICE vehicle emissions, respectively.
112	**The DEIS does not disclose or compare total cumulative CO2 emissions between ICE and BEV fleet alternatives.**
	See EIS Section 4-6 regarding CO2 emissions for ICE and BEV fleet alternatives, and Section 6-4 regarding cumulative impacts.
113	**12,500 delivery routes (5% of routes) cannot be used to justify purchase of 90% ICE vehicles.**
	See EIS Section 4-11.2 for the discussion regarding reasons for selection of Proposed Action. The characterization that the Postal Service is acquiring 90% ICE vehicles because BEVs are not currently suitable on 5% of routes is not correct. See also response to Comment 8, regarding the 12,500 number referring solely to routes unsuitable for BEVs on account of route length, not environmental factors or other operational constraints.
114	**The DEIS should have analyzed an alternative with a BEV fleet mix between 10% and 100%.**
	See response to Comment 5.
115	**The DEIS should consider projections from the latest Intergovernmental Report on Climate Change, including with respect to selection of reasonable alternatives.**
	Reasonable alternatives were selected based on their potential to meet the Purpose and Need, then those alternatives were analyzed for environmental impacts, including air quality. The Postal Service disagrees that reasonable alternatives should first be selected based on their anticipated or perceived environmental benefits.
116	**The fact that each of the Alternatives would result in less pollutants and GHG emissions than the current fleet does not mean that they will not have a significant effect on the environment (*Center for Biological Diversity v. NHTSA*, 538 F.3d 1172 (9th Cir. 2008)).**
	The Postal Service finds this comment and the case cited inapplicable to this EIS, as the significance issue went to the question of whether an agency should have revised its Environmental Assessment or conducted an Environmental Impact Statement. The Postal Service has conducted an EIS for the Proposed Action and even included such non-mandatory environmental assessment tools as Social Cost of Carbon calculations to fully inform its decision-making regarding the relative environmental impacts of each alternative.
117	**The DEIS fails to assess whether brake dust will be reduced due to BEVs' improved brake-pad use from regenerative breaking.**

#	SECTION 2: SUMMARIES OF OTHER SUBSTANTIVE COMMENTS Comment (first row) USPS RESPONSE (in subsequent row)
	The NGDV operates in a unique environment with vehicle payloads of 2,000 pounds and frequent stop and go delivery, which minimizes the opportunity to capture energy through regenerative braking due to the low-speed operations. Compared to ICE vehicles, BEVs do generate lower brake wear dust emissions as a result of regenerative braking as drivers do not need to use mechanical brakes as often as they would in an ICE vehicle. That said, the Postal Service has considered this comment and conducted a review of available literature on the subject. A recent study conducted by California Air Resources Board (CARB) staff (EMFAC2021 Volume III Technical Document, CARB, April 2021) working closely with the EPA and Caltrans, found that brake wear dust emissions could be reduced by 50% with regenerative braking for the same weight vehicle class. Vehicle weight could have potential impact on dust emissions such as tire wear, road surface resuspension, etc. as BEVs tend to be heavier than ICEs for the same vehicle class primarily due to the weight of battery packs. Given the limited research data that are currently publicly available and the likely small fraction of brake wear emissions in overall non-exhaust dust emissions, the difference on overall non-exhaust dust emissions between a BEV and an ICE with the inclusion of brake wear component cannot be reasonably quantified and therefore was not considered in the DEIS. While the Postal Service anticipates its BEV training will employ techniques such as “one-pedal driving,” low speed and precision stops required for delivery operations will minimize the opportunity to capture energy through regenerative braking. See Section 3-1.1 for clarification.
118	**If LLVs are auctioned or sold, they could be placed back into service and continue to emit pollutants; therefore, the claimed emission benefits from the Proposed Action would not be fully realized.**
	The Postal Service does not permit the reselling of LLVs and/or FFVs in the secondary market. These vehicles will be scrapped or sold for parts when no longer utilized by the Postal Service, similar to how those vehicles are disposed of today. Sections 3-1, 4-10, and 6-4.9 of the EIS have been revised to add clarification per the above.
119	**The likely concentration of BEV NGDV in certain locations such as California pose concerns for environmental justice communities located outside those areas.**
	See responses to Comments 50 through 55. While BEV deployments will be prioritized according to the factors described above (see, e.g., response to Comment 51), the Postal Service expects that, subject to the operational needs of the Postal Service, NGDV will be deployed proportionately across the nation. BEV deployments will be prioritized nationwide in accordance with the factors noted in response to Comment 51. Deployment of either or both NGDV powertrains in an area would result in lower air emissions from the vehicles as compared to air emissions from the replaced vehicles.
120	**The DEIS does not consider the beneficial cumulative impacts of increased BEV alternatives over ICE alternatives.**
	See Section 6-4.5 where the Postal Service compares the relative cumulative impacts of BEV alternatives vis-à-vis ICE alternatives.
121	**The DEIS fails to consider cumulative impacts on water quality such as from tire wear on stormwater.**

#	**SECTION 2: SUMMARIES OF OTHER SUBSTANTIVE COMMENTS** **Comment (first row)** **USPS RESPONSE (in subsequent row)**
	The Postal Service has considered this comment but found no authority for differences in tire wear between BEVs and ICE vehicles. Little is currently known about the environmental risks of tire wear particles (TWP) in runoff (Jacqueline Tamis et.al. (2021)). For example, Beate Baensch-Baltruschat, et. al. (2020) reviewed effects and determined that concentrations of TWP compiled from environmental monitoring studies show highly variable concentrations in road runoff, road dust, roadside soils, river sediments and river water, and consider that further research is needed with regard to emission factors, development of analytical methods for environmental matrices, long-period monitoring, fate in surface waters and soils, ecotoxicological impacts and degradation under realistic conditions. Katerine Peter, et. al., (2021) reported that TWP leachate was acutely lethal to coho salmon, but that chum salmon appeared to be insensitive at concentrations lethal to coho. Paula Redondo-Hasselerharm, et. al. (2018) found that car TWP, including chemicals associated with this material, did not negatively affect the survival, growth and feeding rates of four freshwater benthic invertebrates, even at concentrations of 10% sediment dry weight. Nor has the Postal Service found a significant difference in tire wear between BEVs and ICE vehicles in its exhaustive field testing. Further, the Postal Service expects that tire wear between ICE vehicles and BEVs would not be significantly different due to high parts commonality. Therefore, the Postal Service declines to speculate about the potential impacts raised in this comment. Also see response to Comment 117.
122	**The DEIS fails to consider cumulative impacts from further oil and gas extraction.**
	The life cycle costs of resource extraction and specific fuel sources (e.g., oil and gas extraction for ICE vehicles, and mineral mining for BEV batteries) are beyond the scope of this EIS.
123	**The DEIS fails to consider occupational exposure to air pollution from ICE vehicles.**
	Occupational exposure of Postal Service employees from future ICE vehicles would be similar to current exposures. The Postal Service adheres to Occupational Safety and Health Administration (OSHA) requirements and standards for the protection of personnel. Future work would continue to be performed in accordance with OSHA requirements and standards. Section 4-6 of the EIS has been revised to incorporate the above statements.
124	**The DEIS violates NEPA by failing to include any mitigation, for example by requiring that all vehicles being replaced are scrapped instead of resold into secondary market and providing a BEV deployment schedule prioritizing disadvantaged communities.**
	See response to Comment 118 for discussion regarding expected scrapping of vehicles to be replaced. See response to Comment 51 regarding factors Postal Service will consider with respect to prioritizing BEV deployments. To the extent the Postal Service has considered other possible mitigation measures (e.g., expanding or changing the BEV prioritization factors, or, as suggested in this Comment, requiring certain uses of replaced vehicles post-auction), the Postal Service declines to adopt these measures.
125	**The DEIS fails to analyze when the Postal Service might consider it advantageous to retrofit ICE to alternative EV powertrain technology – and whether such retrofitting would likely be a feasible option financially for the Postal Service.**
	See response to Comment 84.

#	**SECTION 2: SUMMARIES OF OTHER SUBSTANTIVE COMMENTS** **Comment (first row)** **USPS RESPONSE (in subsequent row)**
126	**The Postal Service should consider alternatives requiring the vehicle manufacturer to use an existing manufacturing facility and/or union labor.**
	As noted in response to Comment 97, aside from a domestic production requirement, the Postal Service cannot limit or otherwise control the NGDV supplier's manufacturing location or manner of operations. While the Postal Service could impose all manner of restrictions or operating conditions, such restrictions or operating conditions would come at a cost or reduce the number of potential suppliers. As noted in response to Comment 65, the Postal Service issued the NGDV RFP to be as broad as possible, including no restriction on possible drivetrains, in order to encourage the largest possible number of vehicle suppliers to participate. Adding location and other operational restrictions to the RFP would have directly undermined the Postal Service's objective of receiving the broadest range of potential vehicles to meet its Purpose and Need. The Postal Service therefore declines to supplement the EIS to add alternatives with supplier operational restrictions beyond the domestic production requirement. The Postal Service also notes that this recommendation was not submitted during the scoping period of the EIS and fails to constitute either new agency action or new information sufficient to warrant supplementing the EIS.

APPENDIX B2 - Notice of Availability of FEIS *(for publishing in the Federal Register)*

U.S. POSTAL SERVICE

Notice of Availability of Final Environmental Impact Statement for Purchase of Next Generation Delivery Vehicles

AGENCY: U.S. Postal Service

ACTION: Notice of Availability of Final Environmental Impact Statement

SUMMARY: Pursuant to the requirements of the National Environmental Policy Act of 1969 (NEPA), its implementing procedures at 39 CFR 775, and the President's Council on Environmental Quality Regulations (40 CFR parts 1500-1508), the U.S. Postal Service announces availability of the Final Environmental Impact Statement (FEIS) to purchase over ten years 50,000 to 165,000 purpose-built, right-hand-drive vehicles – the Next Generation Delivery Vehicle (NGDV) – to replace existing delivery vehicles nationwide that are approaching the end of their service life. While the Postal Service has not yet determined the precise mix of the powertrains in the new vehicles to be purchased, under the Proposed Action, at least ten percent of the NGDV would have battery electric (BEV) powertrains, with the remainder being internal combustion (ICE). The FEIS evaluates the environmental impacts of the Proposed Action, as well as two BEV and ICE commercial off-the-shelf (COTS) vehicle alternatives and the "no action" alternative.

The U.S. Environmental Protection Agency's publication of the FEIS in the Federal Register begins a 30-day waiting period. Following the waiting period, the U.S. Postal Service will make a final decision regarding the Proposed Action and complete a Record of Decision.

ADDRESSES: Interested parties may view the FEIS at *http://uspsngdveis.com/*

REFERENCES:

1. U.S. Postal Service, Notice of Intent to Prepare an Environmental Impact Statement for Purchase of Next Generation Delivery Vehicles (86 FR 12715; Mar. 4, 2021).
2. U.S. Postal Service, Notice of Availability of Draft Environmental Impact Statement for Purchase of Next Generation Delivery Vehicle (86 FR 47662; Aug. 26, 2021).
3. U.S. Environmental Protection Agency, Notice of Availability of EIS No. 20210129, Draft, USPS, DC, Next Generation Delivery Vehicle Acquisitions (86 FR 49531; Sept. 3, 2021).

Table B2-1
Notice of Availability of FEIS Stakeholder Distribution List

Contact Name Position	Mailing Address
Robert Tomiak Director, Office of Federal Activities, Office of Policy	U.S. Environmental Protection Agency 1200 Pennsylvania Avenue, NW WJC Building North, Mail Code 2251A Washington, DC 20460-0003
Victoria Arroyo Associate Administrator for Policy	U.S Environmental Protection Agency 1200 Pennsylvania Avenue NW Washington, DC 20460-0001
Cindy Barger Director, NEPA Compliance Division	U.S. Environmental Protection Agency 1200 Pennsylvania Avenue, NW WJC Building North, Mail Code 2251A Washington, DC 20460-0003
Jack P. Broadbent Executive Director/APCO	Bay Area Air Quality Management District 375 Beale Street, Suite 600 San Francisco, CA 94105-2097
Mr. Mark Dimondstein President	American Postal Workers Union 1300 L Street, NW Washington, DC 20005-4128
Ronnie W. Stutts President	National Rural Letter Carriers' Association 1630 Duke Street Alexandria, VA 22314-3467
Fredric V. Rolando President	National Association of Letter Carriers 100 Indiana Avenue, NW Washington, DC 20001-2144
Paul V. Hogrogian President	National Postal Mail Handlers Union 815 16th Street NW, Suite 5100 Washington, DC 20006-4101
Ivan Butts President	National Association of Postal Supervisors 1727 King Street, Suite 400 Alexandria, VA 22314-2753
Daniel M. Heins President	United Postmasters and Managers of America 8 Herbert Street Alexandria, VA 22305-2628
Tammy L. Whitcomb Inspector General	Office of Inspector General, United States Postal Service 1735 North Lynn Street Arlington, VA 22209-2020
Brian Costner Director	Office of NEPA Policy and Compliance (GC-54) U.S. Department of Energy 1000 Independence Avenue, SW Washington, DC 20585-0119
Steven Cliff Deputy Administrator	National Highway Traffic Safety Administration Department of Transportation 1200 New Jersey Avenue, SE, W41-113 Washington, DC 20590-0001

Contact Name Position	Mailing Address
Jayni Hein Senior Director for NEPA	Council on Environmental Quality U.S. Department of Energy 730 Jackson Place, NW Washington, DC 20503-1659
Iliana Paul, Senior Policy Analyst, Max Sarinsky, Senior Attorney, Jason A. Schwartz, Legal Director Andrew Stawasz, Legal Fellow	Institute for Policy Integrity at New York University School of Law 139 MacDougal Street, Third Floor New York, NY 10012-1076
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Eric J. Guter Vice President, Hydrogen Mobility Solutions	Air Products and Chemicals, Inc. 7201 Hamilton Boulevard Allentown, PA 18195-1501
(not provided)	The Center for Transportation and the Environment 730 Peachtree Street NE, Suite 450 Atlanta, GA 30308-1244
Robert Yuhnke Policy Committee	Elders Climate Action www.eldersclimateaction.org
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Katherine Garcia Acting Director of Sierra Club's Clean Transportation for All Campaign	Sierra Club 2101 Webster Street, Suite 1300 Oakland, CA 94612-3546
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David M. Hughes Professor of Anthropology	Rutgers, The State University of New Jersey 131 George Street New Brunswick, NJ 08901-1414

Example NOA of FEIS Letter

December 2021

Address

Re: Notice of Availability of Final Environmental Impact Statement for Purchase of Next Generation Delivery Vehicles

Dear Addressee:

The Postal Service has prepared a Final Environmental Impact Statement (FEIS) for the purchase of Next Generation Delivery Vehicles (NGDV) for delivery operations nationwide. The new vehicles would replace existing delivery vehicles that are approaching the end of their service life. Pursuant to the requirements of the National Environmental Policy Act (NEPA) of 1969, its implementing procedures at 39 CFR 775, and the President's Council on Environmental Quality Regulations (40 CFR parts 1500-1508), the Postal Service prepared this FEIS to evaluate the environmental impacts of the proposed action and alternatives, and carefully considered all agency and public comments timely received on the Draft EIS (DEIS). Additional information has been added to the EIS as appropriate.

A copy of the Notice of Availability of the FEIS is enclosed.

Interested parties may view the FEIS at *http://uspsngdveis.com/*

The U.S. Environmental Protection Agency's publication of the FEIS in the Federal Register begins a 30-day waiting period. Following the waiting period, the U.S. Postal Service will make a final decision regarding the Proposed Action and complete a Record of Decision.

Sincerely,

Jennifer Beiro-Réveillé

Enclosure

APPENDIX C

COST DATA BACKGROUND

LLV Maintenance Cost Background Data

NGDV Total Cost of Ownership Background Information

Estimated Costs of Purchasing Versus Leasing of Right-Hand Drive (RHD) Commercial-off-the-Shelf (COTS) Vehicles

Table C-1
Estimated Costs for RHD COTS Purchase and RHD COTS Lease

Appendix C References

LLV Maintenance Cost Background Data

Since their purchase in 1987, maintenance costs for LLVs have gradually increased, as illustrated in Figure 1 (Postal Service Office of Inspector General's Audit Report, Delivery Vehicle Acquisition Strategy [2020]).

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 (Office of Inspector General, 2020). Table 2 from this report presents relevant data.

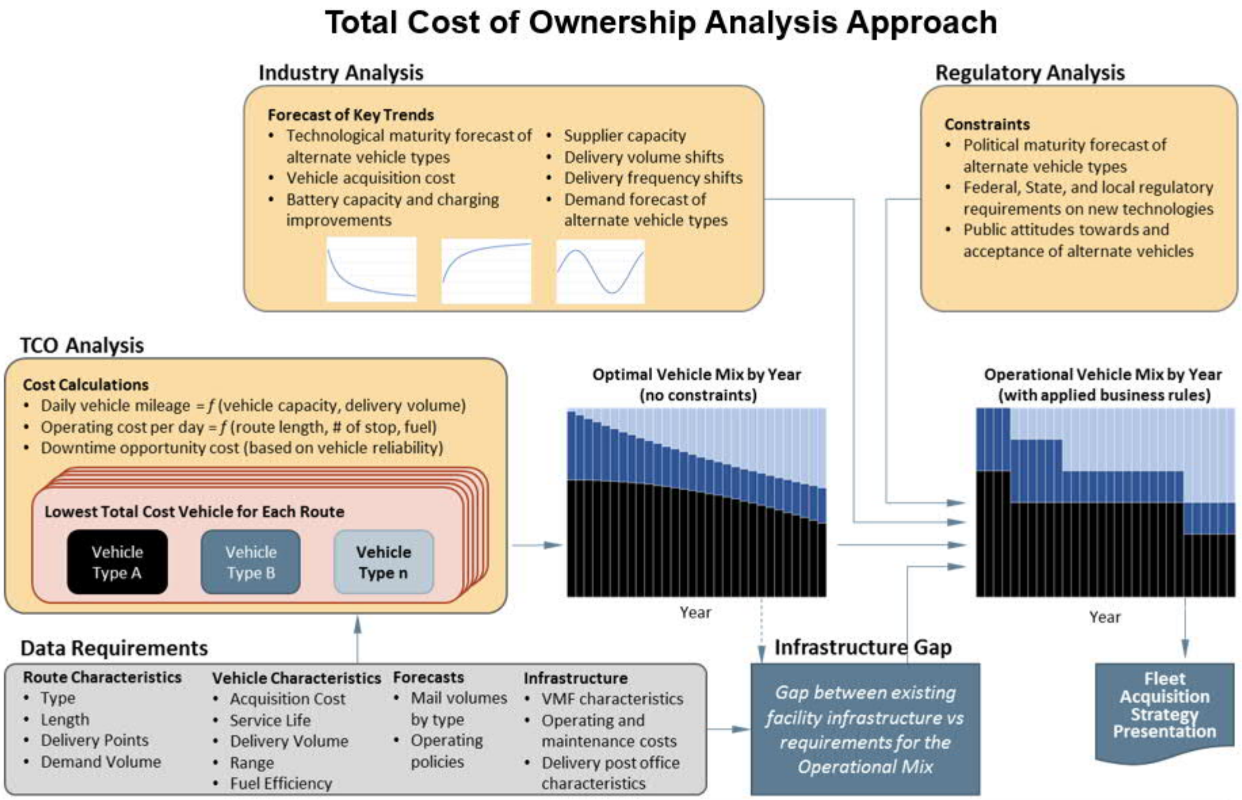
Table 2. FY 2019 LLV Maintenance Cost

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.

NGDV Total Cost of Ownership Background Information

The Postal Service considered several variables in a comparative life cycle cost analysis for future purchase and deployment of the NGDV.



Analysis considered acquisition costs (vehicle pricing, freight, other contract costs [training, manuals, technical data package, milestone payments], and estimated electric vehicle charging infrastructure costs. Estimated vehicle acquisition costs were based on NGDV supplier rough order of magnitude cost, COTS procurements, and evolving market conditions. The analysis also considered recurring costs (maintenance, fuel [gasoline for ICE vehicles, electricity for BEVs]). Projected future costs for gasoline and electricity were based on the EIA's Real Fuel Price Indices. Estimated operational savings were based on potential maintenance and fuel savings. The maintenance projections were based on actual historical LLV curb-line delivery vehicle maintenance costs. The Postal Service has developed maintenance cost ratios for each vehicle system based on Postal Service and industry subject matter expert consensus. The ratios for each vehicle were developed based on part costs and labor hours provided by the supplier. Panel members then reviewed and discussed supplier data to determine reasonableness of the data and gain agreement on the ratio of the NGDV relative to the Postal Service LLV delivery platform. This ratio represents the relative cost of each type of repair based on LLV historical maintenance cost data. Both BEV and ICE maintenance requirements were calculated, and the systems analyzed for the anticipated 20-year useful life of the vehicles. Due to the anticipated extended life of the vehicles, powertrain requirements and BEV battery replacements were included in the maintenance cost calculations.

Offerors provided NGDV Production proposals and pricing to the Postal Service in July 2020. The proposals included internal combustion engine (ICE) vehicles and battery electric vehicles (BEVs); the BEVs included use of lithium-ion batteries. The Postal Service then evaluated proposals to determine which offeror provided the Postal Service with the best value by weighing technical evaluation factors/risk and the Total Cost of Ownership (TCO). Cost estimates were derived for the acquisition of each vehicle (Year 0), plus 20 years of recurring costs (fuel and maintenance, Year 1 through Year 20). The cost estimates were converted to present value, including a nominal discount rate and inflation, to allow a comparable TCO. See also response to DEIS Comments 13 and 19 for more details regarding TCO methodology, including fuel cost estimates.

Due to the significantly increased feature set (e.g., air conditioning and camera systems), both BEV and ICE NGDV vehicles had greater projected maintenance costs than the baseline LLV, while ICE had higher projected maintenance costs than the BEV variant, with relative differences incorporated into the TCO calculations.

The estimated cost of BEV charging infrastructure was also factored into the TCO. The Postal Service considered multiple cost estimates for site surveys, design work, trenching, electrical upgrades, commercial-grade equipment including steel gantries to accommodate retractable charger cables, and all electric vehicle supply equipment, for three Postal Service locations representing a small, medium and large facility, each at 25 percent, 50 percent, 75 percent and 100 percent deployment levels. Average per-facility BEV charging infrastructure costs were estimated to be $18,740 (assuming 10 percent BEV) and $20,970 (assuming 100 percent BEV). Due to factors such as age and site configuration, certain Postal Service facilities would require extensive trenching and other facility upgrades to allow for BEV charging.

Estimated Costs of Purchasing Versus Leasing of Right-Hand Drive (RHD) Commercial-off-the-Shelf (COTS) Vehicles

The Postal Service evaluated the estimated costs of purchasing and leasing RHD COTS vehicles as part of its decision analysis for future vehicle delivery acquisition. The estimates were based on past RHD COTS delivery vehicle acquisition data, and compared purchasing and leasing of 24,470 RHD COTS vehicles over a 13-year period.

Purchasing RHD COTS vehicles was determined to be more than three times less costly than leasing RHD COTS vehicles.

Table C-1
Estimated Costs for RHD COTS Purchase and RHD COTS Lease

Purchase vs Lease	Total Estimated Cost[1]
RHD COTS Purchase	$1,567,512
RHD COTS Lease	$5,281,355

[1] Based on 2019 USPS analysis comparing 24,470 RHD COTS vehicles over 13-year period

Appendix C References

Office of Inspector General. 2020. *Audit Report, Delivery Vehicle Acquisition Strategy.* Report Number 19-002-R20. August 12.

U.S. EIA. 2021b. Assumed 20-Year Real Fuel Price Indices. Available on the internet at *https://www.eia.gov/*. Accessed November 2021.

APPENDIX D

HYPOTHETICAL TEN-YEAR PURCHASE/DEPLOYMENT

Table D-1 presents the hypothetical spread of new delivery vehicle purchase and deployment, and replacement of existing delivery vehicles, developed for the purpose of the EIS analyses. The actual purchase plan and timing would be based on operational needs.

Table D-1
Hypothetical Purchase/Deployment and Replacement of High-Maintenance and End-of-Life Delivery Vehicles Over a Ten-Year Period[1]

Year	Number of Vehicles Added[1]	Number of LLVs Replaced[1]	Number of FFVs Replaced[1]	Number of COTS Replaced[1]
Year 1	2,379	2,379	--	--
Year 2	7,250	7,250	--	--
Year 3	15,900	15,900	--	--
Year 4	20,000	20,000	--	--
Year 5	20,000	20,000	--	--
Year 6	20,000	20,000	--	--
Year 7	20,000	20,000	--	--
Year 8	20,000	20,000	--	--
Year 9	20,000	459	19,541	--
Year 10	19,471	--	1,529	17,942
Total	**165,000**	**125,988**	**21,070**	**17,942**

[1] For analytical purposes. The actual purchase plan and timing will be based on operational needs

LLV – Long-Life vehicle (hypothetically, 125,988, or 76% of replaced vehicles would be LLVs)
FFV – Flexible Fuel vehicle (hypothetically, 21,070, or 12.8% of replaced vehicles would be FFVs)
COTS – Metris (hypothetically, 17,942, or 10.9% of replaced vehicles would be Metris)

APPENDIX E

NOISE BACKGROUND INFORMATION

Sound and Human Perception of Noise - Background Information

Sound is a physical phenomenon consisting of vibrations that travel through a medium, such as air, and are sensed by the human ear. The perception and evaluation of sound involves three basic physical characteristics:

- Intensity – the acoustic energy, which is expressed in terms of sound pressure, in decibels (dB),
- Frequency – the number of cycles per second the air vibrates, in Hertz (Hz), and
- Duration – the length of time the sound presents.

The dB is a logarithmic unit used to that represents the intensity of a sound, also referred to as the sound level. All sounds have a spectral content, which means their magnitude or level changes with frequency. Environmental noise measurements are usually expressed on an “A-weighted” scale that filters out very low and very high frequencies in order to replicate human sensitivity. According to EPA (1974), changes in hearing level of less than 5 dBA generally are not considered noticeable to the human ear. There is no known evidence that a noise change of 5 dBA has any practical significance for the individual affected.

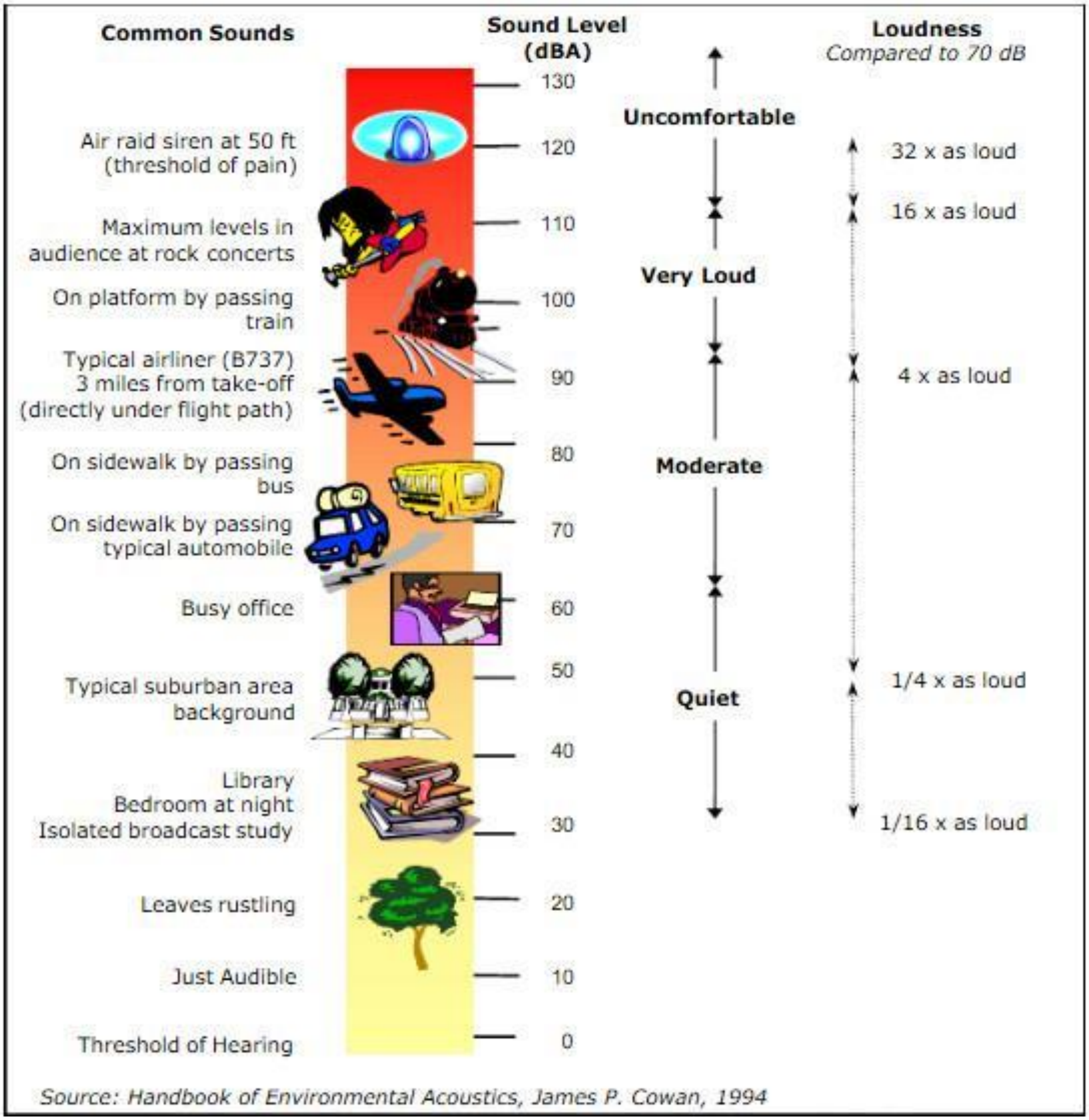
Table E-1 shows how humans perceive changes in the loudness of noise, and Figure E-1 shows A-weighted sound levels from typical noise sources. Changes in hearing level of less than 5 dBA generally are not considered noticeable (EPA 1974).

Table E-1
Subjective Responses to Changes in A-Weighted Decibels

Loudness	Perceived Loudness
3 dB	Barely perceptible
5 dB	Quite noticeable
10 dB	Dramatic
20 dB	Striking

Figure E-1 shows A-weighted sound levels from typical sound sources.

Figure E-1
A-Weighted Sound Levels from Typical Sources



Comparison of Noise from BEVs and ICE Vehicles

The Danish Road Directorate (2015) compared noise between BEVs and ICE vehicles for two comparably-equipped cargo vans and two comparably-equipped passenger cars under simulated urban driving conditions. BEVs were 4 to 5 dB less noisy than their ICE counterparts at low speed (6 to 12 miles per hour (mph [10 to 20 kilometers per hour (km/h)]) when driving steady. The difference in emitted noise from the two drivetrains was not significant at approximately 19 mph (30 km/h) when tire/road noise became dominant.

Appendix E References

Cowan, James P. 1994. *Handbook of Environmental Acoustics.*

Danish Road Directorate. 2015. Noise from Electric Vehicles – Measurements. March 25, 2015. Available on the internet at *https://www.vejdirektoratet.dk/api/drupal/sites/default/files/publications/noise_from_electric_vehicles_0.pdf*. Accessed June 2021.

EPA (United States Environmental Protection Agency). 1974. *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety*. March 1974.

APPENDIX F

AIR QUALITY BACKGROUND INFORMATION AND CALCULATIONS

Tables and Background Information

National Ambient Air Quality Standards

General Conformity *De Minimis* Thresholds

Summary of Delivery Vehicle Acquisitions and Replacement of Aged Vehicles, and Annual Mileage Calculation

Vehicle Emission Factors from MOVES (gram/mile)

Indirect Emissions from Electricity Consumption by BEVs using eGRID

Indirect Emissions from Energy Consumption by ICE using GREET

Aggregated Direct and Indirect Net Emission Calculation

Social Cost of Carbon

Effects of Climate Change on Proposed Action and Alternatives 1.1 and 1.2

Appendix F References

National Ambient Air Quality Standards

The CAA specifies two sets of NAAQS – primary and secondary – for each of the criteria pollutants as applicable, as shown in Table F-1. Primary standards define levels of air quality necessary to protect public health, including the health of sensitive populations such as people with asthma, children, and the elderly. Secondary standards define levels of air quality necessary to protect public welfare (including protection against decreased visibility and damage to animals, crops, vegetation, and buildings). Standards have been established using average exposure times, based on the health and welfare effects of each pollutant.

Table F-1
National Ambient Air Quality Standards

Pollutant	Average Time	Federal Primary NAAQS	Federal Secondary NAAQS	Violation Criteria
Carbon monoxide (CO)	8-hour average	9 ppm	None	If exceeded more than once per year
Carbon monoxide (CO)	1-hour average	35 ppm	None	If exceeded more than once per year
Lead (Pb)	Rolling 3 month	0.15 µg/m^3	Same as Primary Standard	If exceeded
Nitrogen dioxide (NO_2)	Annual average	0.053 ppm	Same as Primary Standard	If exceeded 98th percentile, averaged over 3 years
Nitrogen dioxide (NO_2)	1-hour average	0.10 ppm	None	If exceeded Annual Mean
Ozone (O_3)$^{(1)}$	8-hour average	0.070 ppm	Same as Primary Standard	If exceeded Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years
Particulate matter (PM_{10})	24-hour average	150 µg/m^3	Same as Primary Standard	If exceeded more than once per year on average over 3 years
Particulate matter ($PM_{2.5}$)	Annual arithmetic mean	12 µg/m^3	15 µg/m^3	If exceeded based on 3-year average on annual mean concentration
Particulate matter ($PM_{2.5}$)	24-hour	35 µg/m^3	Same as Primary Standard	If exceeded based on 3-year average of the 98th percentile of 24-hour concentrations
Sulfur dioxide (SO_2) $^{(2)}$	3-hour average	No standard	0.5 ppm	If exceeded on 3-year average of 99th percentile of 1-hour daily maximum concentrations
Sulfur dioxide (SO_2) $^{(2)}$	1-hour average	0.075 ppm	No standard	If exceeded more than once per year

µg/m^3 = micrograms per cubic meter
NAAQS = National Ambient Air Quality Standards
PM_{10} = particulate matter less than 10 micrometers
$PM_{2.5}$ = particulate matter less than 2.5 micrometers
ppm = parts per million
Notes:

(1) Final rule signed October 1, 2015, and effective December 28, 2015. The previous (2008) O_3 standards additionally remain in effect in some areas. Also, some areas may have certain continuing implementation obligations under the prior revoked 1-hour (1979) and 8-hour (1997) O_3 standards.

(2) The previous SO_2 standards (0.14 ppm 24-hour and 0.03 ppm annual) will additionally remain in effect in certain areas: (1) any area for which it is not yet one year since the effective date of designation under the current (2010) standards, and (2) any area for which an implementation plan providing for attainment of the current (2010) standard has not been submitted and approved and which is designated nonattainment under the previous SO_2 standards or is not meeting the requirements of a SIP call under the previous SO_2 standards (40 CFR 50.4(3)).

Source: EPA (2021b) online at: https://www.epa.gov/criteria-air-pollutants/naaqs-table

Table F-2
General Conformity *De Minimis* Thresholds

Criteria Pollutant	Designation Classification	***De Minimis*** **Threshold (tpy)**
Ozone (VOC or NO_x)	Serious nonattainment	50
Ozone (VOC or NO_x)	Severe nonattainment	25
Ozone (VOC or NO_x)	Extreme nonattainment	10
Ozone (VOC or NO_x)	Other areas outside an ozone transport region	100
Ozone (NO_x)	Marginal and moderate nonattainment inside an ozone transport region	100
Ozone (NO_x)	Maintenance	100
Ozone (VOC)	Marginal and moderate nonattainment inside an ozone transport region	50
Ozone (VOC)	Maintenance within an ozone transport region	50
Ozone (VOC)	Maintenance outside an ozone transport region	100
CO, SO_2 and NO_2	All nonattainment & maintenance	100
PM_{10}	Serious nonattainment	70
PM_{10}	Moderate nonattainment and maintenance	100
$PM_{2.5}$	Direct Emissions for nonattainment and maintenance	100
$PM_{2.5}$	SO_2 for nonattainment and maintenance	100
$PM_{2.5}$	NO_x (unless determined not to be a significant precursor) for nonattainment and maintenance	100
$PM_{2.5}$	VOC or ammonia (if determined to be significant precursors) for nonattainment	25
$PM_{2.5}$	VOC or ammonia (if determined to be significant precursors) for maintenance	100
Lead	All nonattainment area	25

tpy: tons per year
CO: Carbon monoxide
SO_2: Sulfur dioxide
NO_2: Nitrogen dioxide
NO_x: Nitrogen oxide
VOC: Volatile organic compound
PM: Particulate Matter
Source: EPA (2021c) online at: https://www.epa.gov/general-conformity/de-minimis-tables

F-3
Summary of Vehicle Acquisitions and Replacement of Aged Vehicles, and Annual Mileage Calculation

Table F-3.a
New Vehicles – ICE NGDV or Alternative 1.1 COTS ICE Vehicles - Emissions (tons per year)

Model Year	Number of Vehicles	Total Annual Mileage for All Vehicles	VOC	NO_X	CO	$PM_{2.5}$	PM_{10}	SO_2	CO_2e
2023	2,379	15,123,541	0.24	0.44	12.44	0.20	1.24	0.03	5,382
2024	7,250	46,088,975	0.60	0.91	32.30	0.60	3.77	0.10	15,690
2025	15,900	101,077,890	1.25	1.57	64.99	1.32	8.27	0.21	32,990
2026	20,000	127,142,000	1.39	1.65	70.34	1.63	10.36	0.26	41,498
2027	20,000	127,142,000	1.39	1.65	70.35	1.63	10.36	0.26	41,501
2028	20,000	127,142,000	1.14	1.08	37.57	1.51	10.24	0.26	41,525
2029	20,000	127,142,000	1.15	1.14	40.13	1.51	10.24	0.26	41,531
2030	20,000	127,142,000	1.18	1.14	40.14	1.51	10.24	0.26	41,537
2031	20,000	127,142,000	1.18	1.14	40.15	1.51	10.24	0.26	41,539
2032	19,471	123,779,094	1.15	1.11	39.08	1.47	9.97	0.26	40,440
Total	**165,000**	**1,048,921,500**	**10.67**	**11.83**	**447.49**	**12.89**	**84.92**	**2.19**	**343,633 (311,739 MT)**

Notes:

(1) The above represents a hypothetical spread of vehicles to be replaced per year, used only for the purpose of this EIS evaluation.

(2) This table shows the emissions from 165,000 ICE vehicles, consisting of 100% ICE NGDV or 100% COTS ICE vehicles.
Table F-3.b shows emissions from 165,000 BEVs (either NGDV or COTS).
To calculate the emissions for the Proposed Action Hypothetical Scenario involving 90% ICE NGDV and 10% BEV NGDV, 90% of the emissions from the Table F-3.a were calculated to establish the estimated emissions from 90% ICE NGDV, and 10% of the emissions from Table F-3.b were calculated to establish the estimated emissions from 10% BEV NGDV.
For the Alternative 1.1 scenario, 100% of the emissions from Table F-3.a were calculated to establish the estimated emissions from 165,000 COTS ICE vehicles.

(3) ICE NGDV: Gross Vehicle Weight Rating (GVWR) 8,501 pounds

(4) Alternative 1.1 COTS Vehicle: GVWR ranges from 6,393 lbs (Metris) – 8,550 lbs (ProMaster).

(5) The new NGDV model-years are 2023-2032 assuming that the vehicle years of manufacture are the same as the vehicle deployment years. Based on EPA’s MOVES model, the 165,000 NGDV are categorized as “light commercial truck” for the emissions calculations.

(6) Since both ICE NGDV and Alternative 1.1 COTS ICE vehicles are categorized as the same “light commercial truck” vehicle type in the MOVES model, the emission rates calculated in Table F-3.a. were utilized for the emissions analyses for both vehicle types.

(7) The Postal Service has estimated the average miles traveled per each new delivery vehicle to be 6,357 miles per year based on 21.05 miles per day of average travel route per vehicle (this represents an average across all city and rural routes currently using Postal Service Vehicles) and 302 working days per year. The estimated number of miles travelled annually by 165,000 new delivery vehicles on a nationwide basis is 1,048,921,500 miles per year.

(8) The emission factors derived from the MOVES model are based on an urban unrestricted road type in Westchester County, New York, and an average vehicle speed of 25 mph. Westchester County, New York was selected to be consistent with the Postal Service's 2017 Programmatic Environmental Assessment (e.g., area with the greatest number of highest maintenance-cost LLVs replacement). In order to utilize EPA’s MOVES model (an advanced regulatory tool for estimating on-road vehicle emissions), a location (one county, one region) must be selected and used. Westchester County was selected as the default for this

project and is consistent with the analysis in the Postal Service's Programmatic Environmental Assessment for COTS vehicle acquisitions. Based on several test runs for other counties in southeast, south, and mid-west in rural and or urban setting at a given travel speed and road type, the GHG emission factors used for the EIS were found to be slightly different by a range from 0 % to 6% but are still comparable. Therefore, using Westchester County, New York is representative for this nationwide programmatic analysis.

(9) EPA released MOVES3 in January 2021 (Federal Register 86 FR 1106); the release announcement started a two-year transportation conformity grace period that ends of January 9, 2023. EPA continues to update this new model with the most recent release of MOVES3.01 in March 2021, and states are still testing and developing inputs in adopting this new model version within the two-year grace period. Therefore, MOVES2014b, an earlier version, is still valid for use, and was used to estimate vehicular emission factors for this EIS.

Table F-3.b
New Vehicles – BEV NGDV or Alternative 1.2 COTS BEV - Emissions (tons per year)

Model Year	Number of Vehicles	Total Annual Mileage for All Vehicles	VOC	NO_X	CO	$PM_{2.5}$	PM_{10}	SO_2	CO_2e
2023	2,379	15,123,541	-	-	-	0.15	1.19	-	-
2024	7,250	46,088,975	-	-	-	0.47	3.62	-	-
2025	15,900	101,077,890	-	-	-	1.03	7.94	-	-
2026	20,000	127,142,000	-	-	-	1.29	9.99	-	-
2027	20,000	127,142,000	-	-	-	1.29	9.99	-	-
2028	20,000	127,142,000	-	-	-	1.29	9.99	-	-
2029	20,000	127,142,000	-	-	-	1.29	9.99	-	-
2030	20,000	127,142,000	-	-	-	1.29	9.99	-	-
2031	20,000	127,142,000	-	-	-	1.29	9.99	-	-
2032	19,471	123,779,094	-	-	-	1.26	9.72	-	-
Total	**165,000**	**1,048,921,500**	**-**	**-**	**-**	**10.65**	**82.38**	**-**	**-**

Notes:

(1) The above represents a hypothetical spread of vehicles to be replaced per year, used only for the purpose of this EIS evaluation.

(2) The table shows the emissions from 165,000 BEVs, consisting of either BEV NGDV or COTS BEV.
Therefore, to calculate the emissions for the Proposed Action Hypothetical Maximum consisting of 90% ICE NGDV and 10% BEV NGDV, in Table F-3.c, 10% of the emissions from Table F-3.b were calculated to establish the estimated emissions from 10% of BEV NGDV.
For the Proposed Action Hypothetical Maximum consisting of 100% BEV, 100% of the emissions from this table were calculated to establish the estimated emissions from 165,000 BEV NGDV.
For Alternative 1.2, 100% of the emissions from this table were calculated to establish the estimated emissions from 165,000 COTS BEVs.

(3) BEVs have no tailpipe or evaporative emissions and the brake and tire wear emissions are identical to conventional vehicles. Therefore, only particulate matter emissions associated with brake and tire wear result from BEV operation.

(4) BEV NGDV: GVWR 8,877 pounds

(5) Alternative 1.1 COTS BEV: GVWR 9,428 lbs

(6) The new NGDV model-years used in the analysis are 2023-2032 assuming that the vehicle years of manufacture are the same as the assumed vehicle deployment years. Based on EPA's MOVES model, the NGDV are categorized as "light commercial truck."

(7) Since both BEV NGDV and Alternative 1.2's COTS BEV are categorized as the same "light commercial truck" vehicle type in the MOVES model, the data in Table F-3.b. were utilized for the emissions analyses for both vehicle types.

(8) The Postal Service has estimated the average miles traveled annually per each new delivery vehicle to be 6,357 miles per year based on 21.05 miles per day of average travel route per vehicle and 302 working day per year. The estimated number of miles travelled annually by 165,000 new delivery vehicles on a nationwide basis is 1,048,921,500 miles per year.

(9) The emission factors were estimated based on an urban unrestricted road type in Westchester County, New York, and 25 mph of vehicle speed.

(10) EPA released MOVES3 in January 2021 (Federal Register 86 FR 1106); the release announcement started a two-year transportation conformity grace period that ends of January 9, 2023. EPA continues to update this new model with the most recent release of MOVES3.01 in March 2021, and states are still testing and developing inputs in adopting this new model version within the two-year grace period. Therefore, MOVES2014b, an earlier version, is still valid for use, and was used to estimate vehicular emission factors for this EIS.

(11) .

Table F-3.c

Summary of Emissions from New Vehicles for All Proposed Scenarios - Emissions (tons per year)

Alternative	VOC	NO_X	CO	$PM_{2.5}$	PM_{10}	SO_2	CO_2e
Proposed Action New vehicles: hypothetical maximum 165,000 vehicles consisting of 90% ICE NGDV + 10% BEV NGDV	9.60	10.65	402.74	12.67	84.67	1.97	309,270 (280,565 MT)
Proposed Action New vehicles: hypothetical maximum 165,000 BEV NGDV	-	-	-	10.65	82.38	-	-
Alternative 1.1 New vehicles: maximum 165,000 COTS ICE vehicles	10.67	11.83	447.49	12.89	84.92	2.19	343,633 (311,739 MT)
Alternative 1.2 New vehicles: maximum 165,000 COTS BEVs	-	-	-	10.65	82.38	-	-

MT = metric tons
1.102 English Short Tons (ton) = 1 Metric Ton (MT)

Table F-3.d

Summary of Emissions from Existing Vehicles for No-Action Scenario - Emissions (tons per year)

Alternative	VOC	NO_X	CO	$PM_{2.5}$	PM_{10}	SO_2	CO_2e
No-Action Alternative 165,000 existing LLVs/FFVs/Metris	935.99	2,264.31	11,496	59.14	136.72	3.72	592,398 (537,415 MT)

MT = metric tons
1.102 English Short Tons (ton) = 1 Metric Ton (MT)
Notes:

(1) The above represents emissions from existing vehicles for No Action scenario. This also represents the vehicles to be replaced when the emissions are represented as negative values (emission decrease for vehicle removal) when the net emissions are calculated for all Proposed Actions and Alternatives scenarios.
(2) The detailed emission calculation for the existing LLVs/FFVs/Metris are shown in Tables F-3.f, F-3.g, and F-3.h.

Table F-3.e

Summary of Net Emission Changes of Direct Emissions for All Proposed Scenarios Calculated Based on MOVES Model - Emissions (tons per year)

Alternative	VOC	NO_X	CO	$PM_{2.5}$	PM_{10}	SO_2	CO_2e
Proposed Action New vehicles: hypothetical maximum 165,000 vehicles consisting of 90% ICE NGDV + 10% BEV NGDV Replaced vehicles: 165,000 existing LLVs/FFVs/Metris	-926.39	-2,253.67	-11,093	-46.47	-52.06	-1.75	-256,850 MT
Proposed Action New vehicles: hypothetical maximum 165,000 BEV NGDV Replaced vehicles: 165,000 existing LLVs/FFVs/Metris	-935.99	-2,264.31	-11,496	-48.49	-54.34	-3.72	-537,415 MT
Alternative 1.1 New vehicles: maximum 165,000 COTS ICE vehicles Replaced vehicles: 165,000 existing LLVs/FFVs/Metris	-925.32	-2,252.48	-11,048	-46.25	-51.80	-1.54	-225,676 MT
Alternative 1.2 New vehicles: maximum 165,000 COTS BEVs Replaced vehicles: 165,000 existing LLVs/FFVs/Metris	-935.99	-2,264.31	-11,496	-48.49	-54.34	-3.72	-537,415 MT
No-Action Alternative 165,000 existing LLVs/FFVs/Metris	935.99	2,264.31	11,496	59.14	136.72	3.72	537,415 MT

MT = metric tons

1.102 English Short Tons (ton) = 1 Metric Ton (MT)

Table F-3.f

Aged LLVs (Model Years 1987 - 1994) to be Replaced

Year	Number of Vehicles Replaced	Total Annual Mileage for All Vehicles Replaced (reduction)
2023	-2,379	-15,123,541
2024	-7,250	-46,088,975
2025	-15,900	-101,077,890
2026	-20,000	-127,142,000
2027	-20,000	-127,142,000
2028	-20,000	-127,142,000
2029	-20,000	-127,142,000
2030	-20,000	-127,142,000
2031	-459	-2,917,909
Total	**-125,988**	**-800,918,315**

Notes:

(1) The above represents a hypothetical spread of vehicles to be replaced per year, used only for the purpose of this EIS evaluation.

Aged LLVs (Model Years 1987 - 1994) to be Replaced - Emissions (tons per year)

VOC	NO_X	CO	$PM_{2.5}$	PM_{10}	SO_2	CO_2e
-900.87	**-2,167.60**	**-10,439**	**-51.69**	**-111.73**	**-2.90**	**-462,511 (-419,583 MT)**

Notes:

(1) The table shows the emissions generated from the currently operated aged LLV vehicles to be replaced, which were considered as negative values (as emission decreases) in the net emission calculation for all proposed scenarios.

(2) Aged LLVs: GVWR 4,450 pounds

(3) Based on EPA's MOVES model, the estimated 125,988 aged LLVs were categorized as "passenger truck" using model-years of 1987-1994 (equivalent to vehicle years of manufacture). The worst-case (minimum value) emission factors among all modeled years (as shown in Table F-4.c) were used to calculate conservatively the net emission changes, since the minimum value emission factor for the aged LLVs represents the minimum emission decrease.

(4) Since the new delivery vehicles would be deployed on a one-to-one replacement basis, the average miles traveled annually for each vehicle would be the same. The Postal Service has estimated the average miles traveled per each vehicle to be 6,357 miles per year based on 21.05 miles per day of average travel route per vehicle and 302 working days per year. The estimated number of miles travelled annually by 125,988 LLVs on a nationwide basis is 800,918,315 miles per year.

(5) The emission factors were estimated based on an urban unrestricted road type in Westchester County, New York, and 25 mph of vehicle speed.

Table F-3.g
Aged FFVs (Model Years 2000 - 2001) to be Replaced

Year	Number of Vehicles Replaced	Total Annual Mileage for All Vehicles Replaced (reduction)
2031	-19,541	-124,224,091
2032	-1,529	-9,720,006
Total	**-21,070**	**-133,944,097**

Notes:
(1) The above represents a hypothetical spread of vehicles to be replaced per year, used only for the purpose of this EIS evaluation.

Aged FFVs (Model Years 2000 - 2001) to be Replaced - Emissions (tons per year)

VOC	NO_X	CO	$PM_{2.5}$	PM_{10}	SO_2	CO_2e
-33.90	**-94.21**	**-1,003.70**	**-6.09**	**-15.79**	**-0.54**	**-85,378 (-77,454 MT)**

Notes:
(1) The table shows the emissions from the currently operated aged FFV vehicles to be replaced, which were considered as negative values (as emission decreases) in the net emission calculation for all proposed scenarios.
(2) Aged FFV: GVWR 5,100 pounds
(3) Based on EPA's MOVES model, the estimated 21,070 aged FFVs were categorized as "passenger truck," using the model-years of 2000-2001 (equivalent to vehicle years of manufacture). The worst-case (minimum value) emission factors out of all modeled years (as shown in Table F-4.d) were used to calculate conservatively the net emission changes, since the minimum value emission factor for the aged FFVs represents the minimum emission decrease.
(4) Since the new vehicles would be deployed on a one-to-one replacement basis, the average miles traveled annually for each vehicle would be the same. The Postal Service has estimated the average miles traveled per each vehicle to be 6,357 miles per year based on 21.05 miles per day of average travel route per vehicle and 302 working days per year. The estimated number of miles traveled annually by 21,070 FFVs on a nationwide basis is 133,944,097 miles per year.
(5) The emission factors were estimated based on an urban unrestricted road type in Westchester County, New York, and 25 mph of vehicle speed.

Table F-3.h

Aged Metris (Model Years 2020 - 2022) to be Replaced - Emissions (tons per year)

Year	Number of Vehicles Replaced	Total Annual Mileage for All Vehicles Replaced (reduction)	Model Year	VOC	NO_X	CO	$PM_{2.5}$	PM_{10}	SO_2	CO_2e
2032	-5,980	-38,019,696	2020	-0.43	-1.01	-19.73	-0.46	-3.07	-0.10	-15,613
2032	-5,980	-38,019,696	2021	-0.42	-0.83	-17.71	-0.45	-3.06	-0.09	-14,752
2032	-5,980	-38,019,696	2022	-0.38	-0.66	-15.62	-0.45	-3.06	-0.09	-14,144
Total	**-17,942**	**-114,059,088**	**Total**	**-1.23**	**-2.50**	**-53.06**	**-1.37**	**-9.20**	**-0.28**	**-44,509 (-40,378 MT)**

Notes:

(1) The above represents a hypothetical spread of vehicles to be replaced per year, used only for the purpose of this EIS evaluation.

(2) The table shows the emissions from the current Metris vehicles to be replaced, which were considered as negative values (as emission decrease) in the net emission calculation for all proposed scenarios.

(3) Aged Metris: GVWR 6,614 pounds

(4) Based on EPA's MOVES model, the estimated 17,942 Metris were categorized as "light commercial truck," using the model-years of 2020-2022 (equivalent to vehicle years of manufacture).

(5) Since the new vehicles would be deployed on a one-to-one replacement basis, the average miles traveled annually for each vehicle would be the same. The Postal Service has estimated the average miles traveled per each vehicle to be 6,357 miles per year based on 21.05 miles per day. The estimated number of miles travelled annually by 17,942 Metris on a nationwide basis is 114,059,088 miles per year.

(6) The emission factors were estimated based on an urban unrestricted road type in Westchester County, New York, and 25 mph of vehicle speed.

Table F-3.i

Summary of Net Aggregated (Direct and Indirect) Emission Changes (tons per year) for All Proposed Scenarios Calculated Based on MOVES, eGRID, and GREET Models

Alternative	VOC	NO_X	CO	$PM_{2.5}$	PM_{10}	SO_2	CO_2e
Proposed Action New vehicles: hypothetical maximum 165,000 vehicles consisting of 90% ICE NGDV + 10% BEV NGDV Replaced vehicles: 165,000 existing LLVs/FFVs/ Metris	NA	**-2,343**	NA	**-51**	NA	**-55**	**-290,306**
Proposed Action New vehicles: hypothetical maximum 165,000 BEV NGDV Replaced vehicles: 165,000 existing LLVs/FFVs/ Metris	NA	**-3,158**	NA	**-92**	NA	**-534.01**	**-865,213**
Alternative 1.1 New vehicles: maximum 165,000 COTS ICE vehicles Replaced vehicles: 165,000 existing LLVs/FFVs/ Metris	**-925**	**-2,252**	**-11,048**	**-46**	**-52**	**-1.54**	**-226,427**
Alternative 1.2 New vehicles: maximum 165,000 COTS BEVs Replaced vehicles: 165,000 existing LLVs/FFVs/ Metris	NA	**-3,380**	NA	**-117**	NA	**-739.01**	**-1,116,730**
No Action Alternative	**1,903**	**3,570**	**12,081**	**148**	**378**	**915.03**	**1,332,698**

MT = metric tons

1.102 English Short Tons (ton) = 1 Metric Ton (MT)

Notes:

(1) NA = not available, as eGRID does not provide VOC, CO, and PM_{10} emissions factor data for the upstream sources. Therefore, the aggregated net emissions for VOC, CO and PM_{10} were not calculated.

(2) Table F-3.i is the summary table of many of the individual tables presented in the EIS. (For example, EIS Tables 4-6.2 and Table F-7a indicate net aggregated air emission changes [90% ICE NDV and 10% BEV NGDV]) calculated based on MOVES, eGRID, and GREET models. Table 4-6.5 and Table F-7.b show detail values for net aggregated air emission changes [100% BEV NGDV]. Table 4-6.8 and Table F-7.c show detail values for net aggregated air emission change for Alternative 1.1., and Table 4-6.11 and Table F-7.d show detail values for Alternative 1.2.

Vehicle Emission Factors from MOVES (gram/mile)

Table F-4.a
New Vehicles – ICE NGDV or Alternative 1.1 RHD COTS ICE Vehicles – Light Commercial Truck Emission Factor (gram/mile)

Model Year	VOC	NO_X	CO	$PM_{2.5}$	PM_{10}	SO_2	CO_2e
2023	0.014	0.027	0.746	0.012	0.074	0.002	322.835
2024	0.012	0.018	0.636	0.012	0.074	0.002	308.826
2025	0.011	0.014	0.583	0.012	0.074	0.002	296.087
2026	0.010	0.012	0.502	0.012	0.074	0.002	296.096
2027	0.010	0.012	0.502	0.012	0.074	0.002	296.122
2028	0.008	0.008	0.268	0.011	0.073	0.002	296.288
2029	0.008	0.008	0.286	0.011	0.073	0.002	296.334
2030	0.008	0.008	0.286	0.011	0.073	0.002	296.377
2031	0.008	0.008	0.286	0.011	0.073	0.002	296.390
2032	0.008	0.008	0.286	0.011	0.073	0.002	296.390

Note:
Emission factors selected based on the following assumptions: (1) Fuel-Gasoline, (2) Urban Road Type - Urban Unrestricted/Arterial/Collector/Local (Westchester County, New York), (3) Vehicle Speed - 25 mph, (4) Weekday travel, (5) Winter months for CO, $PM_{2.5}$, PM_{10} and SO_2, (6) Summer months for VOC, NO_x, and CO_2

Table F-4.b
New Vehicles – BEV NGDV or Alternative 1.2 LHD COTS BEV – Light Commercial Truck Emission Factor (gram/mile)

Model Year	$PM_{2.5}$	PM_{10}
2023	0.009	0.071
2024	0.009	0.071
2025	0.009	0.071
2026	0.009	0.071
2027	0.009	0.071
2028	0.009	0.071
2029	0.009	0.071
2030	0.009	0.071
2031	0.009	0.071

Note: The emission factors were selected based on the following assumption: Winter months for $PM_{2.5}$ and PM_{10} tire and brake wear

Table F-4.c
Existing 125,988 Aged LLV Vehicles – Passenger Truck Emission Factor (gram/mile)

Model Year	VOC	NO_X	CO	$PM_{2.5}$	PM_{10}	SO_2	CO_2e
1987	1.255	2.455	17.443	0.141	0.219	0.011	594.710
1988	1.257	2.465	17.442	0.121	0.198	0.011	584.481
1989	1.264	2.489	17.445	0.122	0.198	0.010	555.241
1990	1.020	2.685	12.173	0.089	0.161	0.004	558.496
1991	1.026	2.688	12.232	0.088	0.160	0.003	523.878
1992	1.027	2.698	12.234	0.088	0.160	0.003	524.101
1993	1.035	2.707	12.315	0.089	0.161	0.003	529.892
1994	1.090	2.538	11.824	0.059	0.127	0.003	533.522
Worst-Case (minimum value)	**1.020**	**2.455**	**11.824**	**0.059**	**0.127**	**0.003**	**523.878**

Table F-4.d
Existing 21,070 Aged FFV Vehicles – Passenger Truck Emission Factor (gram/mile)

Make Year	VOC	NO_X	CO	$PM_{2.5}$	PM_{10}	SO_2	CO_2e
2000	0.602	1.521	8.163	0.052	0.120	0.004	578.253
2001	0.230	0.638	6.798	0.041	0.107	0.004	590.263
Worst-Case (minimum value)	**0.230**	**0.638**	**6.798**	**0.041**	**0.107**	**0.004**	**578.253**

Table F-4.e
Existing 17,942 Metris Vehicles – Light Commercial Truck Emission Factor (gram/mile)

Make Year	VOC	NO_X	CO	$PM_{2.5}$	PM_{10}	SO_2	CO_2e
2020	0.010	0.024	0.471	0.011	0.073	0.002	372.540
2021	0.010	0.020	0.422	0.011	0.073	0.002	352.001
2022	0.009	0.016	0.373	0.011	0.073	0.002	337.486

Indirect Emission from Energy Consumption by BEVs using eGRID

The electricity purchases (e.g., indirect GHG emissions and non-greenhouse gas emissions from energy consumption by BEVs) were evaluated using the EPA's Emissions & Generation Resource Integrated Database (eGRID) data (2021d). The EPA's Clean Air Markets Division published eGRID to provide the public with a comprehensive inventory of air emissions from the U.S. electric power sector. The eGRID includes operating data and a detailed emissions profile of CO_2, CH_4, NOx, N_2O, $PM_{2.5}$, SO_2, and CO_2e expressed as the pounds of emissions per megawatt-hour (lb/MWh) electricity generated. While the eGRID data are aggregated to calculate various geographic levels, the national-level output emission data from eGRID were used since the Proposed Action scenarios and Alternative 1.2 are nationwide. The analyses used the latest version of eGRID (eGRID2019) released in February 2021.

The indirect emissions related to electricity purchases associated with the Proposed Action and Alternative scenarios that included purchase and deployment of BEVs would depend largely on the amount of electricity purchased for the BEVs. Therefore, the potential annual electricity purchase associated with the proposed BEVs was calculated based on the following information: the number of BEVs, the number of BEV charging events per year, the electricity purchase per one fully charging event, and the emission factors per electricity consumed derived from eGRID. The analyses did not consider electricity transmission and distribution losses associated with electricity purchases.

The eGRID data represents the energy from both fuel and operation since the fuel is burned at the power plant to generate the total energy needed for vehicle operations (the stored energy is used in operation). The remaining operational emissions are brake and tire wear calculated from the MOVES model. Therefore, the Postal Service calculated the total aggregated direct and indirect emissions for BEVs by combining the emissions from MOVES and eGRID.

The following tables present detail calculations of indirect emissions using eGRID.

Table F-5.a
Total Energy Consumption by Proposed BEV Scenarios

Proposed Scenarios	Maximum number of BEVs	Total Annual Mileage for All Vehicles (miles/year)	Max Range on Single Charge (miles)	Electricity Spent for a Single Charge (kWh)	No. of Charges per Year	Total Electricity Charged per year (MWh)
Proposed Action - Purchase and Deployment of up to 165,000 NGDV (90% ICE NGDV + 10% BEV NGDV)	16,500	104,892,150	70	94	1,498,460	140,855
Proposed Action - Purchase and Deployment of up to 165,000 NGDV (100% BEV NGDV)	165,000	1,048,921,500	70	94	14,984,593	1,408,552
Alternative 1.2 - Purchase and Deployment of up to 165,000 COTS Vehicles (100% COTS BEVs)	165,000	1,048,921,500	108	67	9,712,237	650,720

kWh = kilowatt hour
MWh = megawatt hour

Table F-5.b
Indirect Emissions from Energy Consumption by BEV using eGRID's Nationwide Emission Profile Factors

Proposed Scenarios	VOC (tpy)	NO_X (tpy)	CO (tpy)	$PM_{2.5}$ (tpy)	PM_{10} (tpy)	SO_2 (tpy)	CO_2e (MT)
Proposed Action - Purchase and Deployment of up to 165,000 NGDV (90% ICE NGDV + 10% BEV NGDV)	NA	41	NA	5	NA	38	46,748
Proposed Action - Purchase and Deployment of up to 165,000 NGDV (100% BEV NGDV)	NA	413	NA	45	NA	381	467,485
Alternative 1.2 - Purchase and Deployment of up to 165,000 COTS Vehicles (100% COTS BEV)	NA	191	NA	21	NA	176	215,968

eGRID US Nationwide Emission Profile Factor	VOC (lb/MWh)	NO_X (lb/MWh)	CO (lb/MWh)	$PM_{2.5}$ (lb/MWh)	PM_{10} (lb/MWh)	SO_2 (lb/MWh)	CO_2e (lb/MWh)
Nationwide eGRID Emission Profiles	NA	0.586	NA	0.0643	NA	0.541	889.21

Notes:

(1) For Proposed Action Hypothetical Maximum, the emissions associated with the energy consumption for BEV NGDV were calculated based on the maximum mile on a single charge specific for BEV NGDV (70 miles per single charge), the battery size (94 kWh) assuming that the electricity spent for a single charge would be 100% of the battery size (as shown in Table 3-1.3), the number of charges per year (calculated based on the total miles per year divided by the maximum travel miles on a single charge), and the emission factor from eGRID.

(2) For Alternative 1.2, the emissions associated with the energy consumption for COTS BEV were calculated in the same way as for the BEV NGDV, but using a different specific basis for COTS BEV: 108 miles of travel mileage per single charge and 67 kWh of a battery size for a single charge (as shown in Table 3-2.2). The emissions associated with energy consumption for aged ICE were calculated based on the miles of travel for each year and the emission factor (kilograms per mile [kg/mi]) from the GREET model.

(3) Because of the grid gross losses (5.1% in continental U.S), it is expected that the calculated upstream emissions associated with BEV could be slightly (e.g., 1.05 times) greater than the emissions estimated in this EIS.

(4) Note: NA = not available, as eGRID does not provide VOC, CO, and PM_{10} emissions factor data for the upstream sources. Therefore, the aggregated net emissions for VOC, CO and PM10 were not calculated.

Indirect Emission from Energy Consumption by ICE using GREET

Comparably, the environmental footprint of fuel (gasoline) purchases (e.g. emissions from gasoline consumption by ICE vehicles) was evaluated using Argonne National Laboratory's Greenhouse Gases, Emissions, and Energy use in Technologies (GREET) model. The GREET model can simulate the energy use and emissions output of various vehicle and fuel combinations.

Indirect emissions associated with energy (e.g., gasoline) consumption for ICE vehicles were evaluated using GREET's emission cycle associated with fuel, called Well-to-Pump (WTP), which represents the fuel cycle from well pad to fuel pump. The following describes how the GREET emissions factors for WTP were identified.

The GREET model was run for ICEs with the LHD Vocational vehicle type and based on being flexible fuel gasoline vehicles. The vehicle types "light commercial truck" in MOVES and "vocational vehicles" in GREET are the most representative vehicles based on the size and weight of the Postal Service's vehicles, and the vehicle types between MOVES and GREET were matched as closely as possible in the EIS.

During the use of GREET appropriate input simulation inputs (SIMULATION TAB) were included to define the scenarios which included the year of analysis to update inputs for each year of analysis, the vehicle technology parameter was set to 1 year to make sure the latest technology was applied for each year of analysis. While pathways can be selected in the WTW (well-to-wheels) and PTW (pump-to-wheels) tabs for specific fuels the analysis used the default fuel mix from GREET. Additionally, no changes were made to the Data Editor Tab which requires exact information (e.g., heating values and specific percent of fuel use). When the WTW results were used for total, the full life-cycle impacts of the vehicle technology for vehicle construction, energy and emissions was reported. Also associated with this is the WTP tab that represents upstream processes of fuel production and distribution. The emission factors of VOC, CO, NOx, PM_{10}, $PM_{2.5}$, SO_2, and CO_2e for every project year (2023 through 2032) were obtained and reported on the WTP tab that represents upstream processes of fuel production and distribution.

The indirect emissions related to fuel (gasoline) purchases would depend largely on the miles traveled for the proposed ICE vehicles. Therefore, the potential annual gasoline purchase associated with the proposed ICE vehicles was calculated based on the number of ICE vehicles, the total miles traveled per vehicle per year, and the emission factors per mile traveled derived from the GREET model.

The total aggregated direct and indirect emissions for ICE vehicles were calculated by combining the direct emissions from MOVES and indirect emissions from GREET's WTP, as shown in the Tables 4-6.2, 4-6.5, 4-6.8, and 4-6.11, for each Proposed Action or Alternative.

Detailed calculations of indirect emissions using the GREET model are presented on the following pages.

Table F-6.a
Indirect Emissions from Energy Consumption by New ICE NGDV (148,5000 ICE NGDV)

Year	Total Number of ICE Vehicles	Total Annual Mileage for All Vehicles (miles/year)	VOC (tpy)	NO_X (tpy)	CO (tpy)	$PM_{2.5}$ (tpy)	PM_{10} (tpy)	SO_2 (tpy)	CO_2e (MT)
2023	2,141	13,611,187	13	18	8	1	3	12	10,463
2024	6,525	41,480,078	38	54	24	4	10	37	31,887
2025	14,310	90,970,101	84	114	51	8	21	79	68,886
2026	18,000	114,427,800	106	144	64	10	26	99	86,649
2027	18,000	114,427,800	106	144	64	10	26	99	86,649
2028	18,000	114,427,800	106	144	64	10	26	99	86,649
2029	18,000	114,427,800	106	144	64	10	26	99	86,649
2030	18,000	114,427,800	105	140	63	10	26	99	86,511
2031	18,000	114,427,800	105	140	63	10	26	99	86,511
2032	17,524	111,401,185	103	136	62	9	26	97	84,223
Total	**148,500**	**944,029,350**	**871**	**1,176**	**527**	**80**	**218**	**820**	**715,078**

tpy = Ton Per Year
MT = Metric Ton
1.102 English Short Tons (ton) = 1 Metric Ton (MT)
Notes:

(1) The above represents a hypothetical spread of vehicles to be replaced per year, used only for the purpose of this EIS evaluation.
(2) The emissions associated with energy consumption for ICE NGDV and aged ICE vehicles to be replaced were calculated based on the miles of travel for each year and the emission factor (kg/mi) from GREET model (Table F-6.f).

Table F-6.b

Indirect Emissions from Energy Consumption by New COTS ICE Vehicles (165,000 COTS ICE Vehicles)

Year	Total Number of ICE Vehicles	Total Annual Mileage for All Vehicles (miles/year)	VOC (tpy)	NO_X (tpy)	CO (tpy)	$PM_{2.5}$ (tpy)	PM_{10} (tpy)	SO_2 (tpy)	CO_2e (MT)
2023	2,379	15,123,541	14	20	9	1	4	13	11,626
2024	7,250	46,088,975	43	60	27	4	11	41	35,430
2025	15,900	101,077,890	93	127	57	9	23	88	76,540
2026	20,000	127,142,000	117	160	71	11	29	110	96,277
2027	20,000	127,142,000	117	160	71	11	29	110	96,277
2028	20,000	127,142,000	117	160	71	11	29	110	96,277
2029	20,000	127,142,000	117	160	71	11	29	110	96,277
2030	20,000	127,142,000	117	155	70	11	29	110	96,123
2031	20,000	127,142,000	117	155	70	11	29	110	96,123
2032	19,471	123,779,094	114	151	68	10	28	107	93,581
Total	**165,000**	**1,048,921,500**	**967**	**1,306**	**585**	**89**	**242**	**911**	**794,531**

tpy = Ton Per Year
MT = Metric Ton
1.102 English Short Tons (ton) = 1 Metric Ton (MT)
Note: The above represents a hypothetical spread of vehicles to be replaced per year, used only for the purpose of this EIS evaluation.

Table F-6.c
Indirect Emissions Decreases from Energy Consumption by Existing ICE Vehicles (Aged LLV Being Replaced)

Year	Total No. of ICE Vehicles	Total Annual Mileage for All Vehicles (miles/year)	VOC (tpy)	NO_X (tpy)	CO (tpy)	$PM_{2.5}$ (tpy)	PM_{10} (tpy)	SO_2 (tpy)	CO_2e (MT)
2023	-2,379	-15,123,541	-14	-20	-9	-1	-4	-13	-11,626
2024	-7,250	-46,088,975	-43	-60	-27	-4	-11	-41	-35,430
2025	-15,900	-101,077,890	-93	-127	-57	-9	-23	-88	-76,540
2026	-20,000	-127,142,000	-117	-160	-71	-11	-29	-110	-96,277
2027	-20,000	-127,142,000	-117	-160	-71	-11	-29	-110	-96,277
2028	-20,000	-127,142,000	-117	-160	-71	-11	-29	-110	-96,277
2029	-20,000	-127,142,000	-117	-160	-71	-11	-29	-110	-96,277
2030	-20,000	-127,142,000	-117	-155	-70	-11	-29	-110	-96,123
2031	-459	-2,917,909	-3	-4	-2	0	-1	-3	-2,206
2032	0	0	0	0	0	0	0	0	0
Total	**-125,988**	**-800,918,315**	**-739**	**-1,004**	**-448**	**-68**	**-185**	**-696**	**-607,033**

tpy = Ton Per Year
MT = Metric Ton
1.102 English Short Tons (ton) = 1 Metric Ton (MT)
Note: The above represents a hypothetical spread of vehicles to be replaced per year, used only for the purpose of this EIS evaluation.

Table F-6.d
Indirect Emissions Decreases from Energy Consumption by Existing ICE Vehicles (Aged FFV Being Replaced)

Year	Total No. of ICE Vehicles	Total Annual Mileage for All Vehicles (miles/year)	VOC (tpy)	NO_X (tpy)	CO (tpy)	$PM_{2.5}$ (tpy)	PM_{10} (tpy)	SO_2 (tpy)	CO_2e (MT)
2031	-19,541	-124,224,091	-114	-152	-69	-10	-28	-108	-93,917
2032	-1,529	-9,720,006	-9	-12	-5	-1	-2	-8	-8,100
Total	**-21,070**	**-133,944,097**	**-123**	**-163**	**-74**	**-11**	**-31**	**-116**	**-102,018**

tpy = Ton Per Year
MT = Metric Ton
1.102 English Short Tons (ton) = 1 Metric Ton (MT)
Note: The above represents a hypothetical spread of vehicles to be replaced per year, used only for the purpose of this EIS evaluation.

Table F-6
Indirect Emissions Decreases from Energy Consumption by Existing ICE Vehicles (Aged Metris Being Replaced)

Year	Total No. of ICE Vehicles	Total Annual Mileage for All Vehicles (miles/year)	VOC (tpy)	NO_X (tpy)	CO (tpy)	$PM_{2.5}$ (tpy)	PM_{10} (tpy)	SO_2 (tpy)	CO_2e (MT)
2032	-17,942	-114,059,088	-105	-139	-63	-10	-26	-99	-86,232
Total	**-17,942**	**-114,059,088**	**-105**	**-139**	**-63**	**-10**	**-26**	**-99**	**-86,232**

tpy = Ton Per Year
MT = Metric Ton
1.102 English Short Tons (ton) = 1 Metric Ton (MT)
Note: The above represents a hypothetical spread of vehicles to be replaced per year, used only for the purpose of this EIS evaluation.

Table F-6.f
GREET's Nationwide Emission Profile - Emission Factors for Well-to-Pump (WTP) (kg/mi)

Pollutant / Year	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
VOC	8.40E-04	8.40E-04	8.37E-04	8.37E-04	8.37E-04	8.37E-04	8.37E-04	8.36E-04	8.36E-04	8.36E-04
CO	5.24E-04	5.24E-04	5.08E-04	5.08E-04	5.08E-04	5.08E-04	5.08E-04	5.01E-04	5.01E-04	5.01E-04
NO_x	1.18E-03	1.18E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.11E-03	1.11E-03	1.11E-03
PM_{10}	2.13E-04	2.13E-04	2.09E-04	2.09E-04	2.09E-04	2.09E-04	2.09E-04	2.08E-04	2.08E-04	2.08E-04
$PM_{2.5}$	7.98E-05	7.98E-05	7.73E-05	7.73E-05	7.73E-05	7.73E-05	7.73E-05	7.60E-05	7.60E-05	7.60E-05
SO_2	7.99E-04	7.99E-04	7.87E-04	7.87E-04	7.87E-04	7.87E-04	7.87E-04	7.87E-04	7.87E-04	7.87E-04
CO_2e	7.69E-01	7.69E-01	7.57E-01	7.57E-01	7.57E-01	7.57E-01	7.57E-01	7.56E-01	7.56E-01	7.56E-01

kg/mi = kilogram per mile
Note:
(1) GREET's output emission factors (kg/mi) for the GHG and non-greenhouse gases from GREET model vary based on the model year.
(2) The GREET model was run for the years FY2023- FY2033 when the action would occur.
(3) GREET model was run for ICEs with the LHD vocational vehicle type and being flexible fuel gasoline vehicles.
(4) During the use of GREET appropriate input simulation inputs (SIMULATION TAB) were included to define the scenarios, which included the year of analysis to update inputs for each year of analysis, the vehicle technology parameter was set to 1 year to make sure the latest technology was applied for each year of analysis. While pathways can be selected in the WTW (well-to-wheels) and PTW (pump-to-wheels) tabs for specific fuels we used the default fuel mix from GREET. Additionally, no changes were made to the Data Editor Tab which requires exact information (e.g., heating values and specific percent of fuel use).
(5) When the WTW (well-to-wheels) results were used for total, the full life-cycle impacts of the vehicle technology for vehicle construction, energy and emissions was reported. Also associated with this is the WTP (well-to-pump) tab that represents upstream processes of fuel production and distribution. The emission factors of VOC, CO, NOx, PM_{10}, $PM_{2.5}$, SO_2, and CO_2e for every project year (2023 through 2032) were obtained and reported on the WTP tab that represents upstream processes of fuel production and distribution.

Aggregated Direct and Indirect Net Emission Calculation

The combined direct tailpipe GHG emissions and the indirect GHG emissions associated with energy consumption by vehicle fuel associated with the two Proposed Action scenarios and Alternatives 1.1 and 1.2 were used to evaluate the total aggregated GHG emissions.

Table F-7.a
Net Aggregated (Direct and Indirect) Air Emission Changes
Proposed Action - Purchase and Deployment of up to 165,000 Vehicles (90% ICE NGDV and 10% BEV NGDV)

Emission Type	Vehicle Action	Vehicle Description	VOC (tpy)	NO_X (tpy)	CO (tpy)	$PM_{2.5}$ (tpy)	PM_{10} (tpy)	SO_2 (tpy)	CO_2e (MT)
Direct	New	90% ICE NGDV	9.60	10.65	402.74	11.61	76.43	1.97	280,565
Direct	New	10% BEV NGDV	N/A	N/A	N/A	1.07	8.24	N/A	N/A
Direct	Removed	Replaced Vehicles (LLVs/FFVs/Metris)	-935.99	-2,264.31	-11,496	-59.14	-136.72	-3.72	-537,415
		Direct Total (Emissions Decrease)	**-926.39**	**-2,253.67**	**-11,093**	**-46.47**	**-52.06**	**-1.75**	**-256,850**

Emission Type	Vehicle Action	Vehicle Description	VOC (tpy)	NO_X (tpy)	CO (tpy)	$PM_{2.5}$ (tpy)	PM_{10} (tpy)	SO_2 (tpy)	CO_2e (MT)
Direct + Indirect	New	90% ICE NGDV (GREET + MOVES)	880.29	1,186.20	929.60	91.75	294.00	822.14	995,643
Direct + Indirect	New	10% BEV NGDV (eGRID + MOVES)	NA[1]	41.27	NA[1]	5.59	NA[1]	38.10	46,748
Direct + Indirect	Removed	Replaced Vehicles (LLVs/FFVs/Metris) (GREET + MOVES)	-1,903.42	-3,570.48	-12,081.32	-148.19	-378.47	-915.03	-1,332,698
		Aggregated Total (Emissions Decrease)	**-1,023**[1]	**-2,343**	**-11,152**[1]	**-51**	**-84.5**[1]	**-55**	**-290,306**

tpy = Ton Per Year
MT = Metric Ton
1.102 English Short Tons (ton) = 1 Metric Ton (MT)
N/A = Not Applicable
Note:
[1] This value does not include VOC, CO, and PM_{10}, as eGRID does not provide VOC, CO, and PM_{10} emissions factor data for the upstream sources. Therefore, the aggregated net emissions for VOC, CO and PM_{10} are not included in this calculation.

Table F-7.b

Net Aggregated (Direct and Indirect) Air Emission Changes
Proposed Action - Purchase and Deployment of up to 165,000 NGDV (100% BEV NGDV)

Emission Type	Vehicle Action	Vehicle Description	VOC (tpy)	NO_X (tpy)	CO (tpy)	$PM_{2.5}$ (tpy)	PM_{10} (tpy)	SO_2 (tpy)	CO_2e (MT)
Direct	New	100% BEV NGDV	N/A	N/A	N/A	10.65	82.38	N/A	N/A
Direct	Removed	Replaced Vehicles (LLVs/FFVs/Metris)	-935.99	-2,264.31	-11,496	-59.14	-136.72	-3.72	-537,415
		Direct Total	**-935.99**	**-2,264.31**	**-11,496**	**-48.49**	**-54.34**	**-3.72**	**-537,415**
Direct + Indirect	New	100% BEV NGDV (eGRID + MOVES)	NA[1]	412.71	NA[1]	55.94	NA[1]	381.01	467,485
Direct + Indirect	Removed	Replaced Vehicles (LLVs/FFVs/Metris) (GREET + MOVES)	-1,903.42	-3,570.48	-12,081.32	-148.19	-378.47	-915.03	-1,332,698
		Aggregated Total	**-1,903[1]**	**-3,158**	**-12,081[1]**	**-92**	**-378[1]**	**-534**	**-865,213**

tpy = Ton Per Year N/A = not applicable
MT = Metric Ton
1.102 English Short Tons (ton) = 1 Metric Ton (MT)
Note: [1]This value does not include VOC, CO, and PM_{10}, as eGRID does not provide VOC, CO, and PM_{10} emissions factor data for the upstream sources. Therefore, the aggregated net emissions for VOC, CO and PM_{10} are not included in this calculation.

Table F-7.c
Net Aggregated (Direct and Indirect) Air Emission Changes
Alternative 1.1 - Purchase and Deployment of up to 165,000 COTS Vehicles (100% RHD COTS ICE Vehicles)

Emission Type	Vehicle Action	Vehicle Description	VOC (tpy)	NO_X (tpy)	CO (tpy)	$PM_{2.5}$ (tpy)	PM_{10} (tpy)	SO_2 (tpy)	CO_2e (MT)
Direct	New	100% COTS ICE Vehicles	10.67	11.83	447	12.89	84.92	2.19	311,739
Direct	Removed	Replaced Vehicles (LLVs/FFVs/Metris)	-935.99	-2,264.31	-11,496	-59.14	-136.72	-3.72	-537,415
		Direct Total	**-925.32**	**-2,252.48**	**-11,048**	**-46.25**	**-51.80**	**-1.54**	**-225,676**
Direct + Indirect	New	100% COTS ICE Vehicles (GREET + MOVES)	978.10	1,317.99	1,032.88	101.94	326.67	913.49	1,106,270
Direct + Indirect	Removed	Replaced Vehicles (LLVs/FFVs/Metris) (GREET + MOVES)	-1,903.42	-3,570.48	-12,081.32	-148.19	-378.47	-915.03	-1,332,698
		Aggregated Total	**-925**	**-2,252**	**-11,048**	**-46**	**-52**	**-1.54**	**-226,427**

Table F-7.d
Net Aggregated (Direct and Indirect) Air Emission Changes
Alternative 2.2 - Purchase and Deployment of up to 165,000 COTS Vehicles (100% COTS BEVs)

Emission Type	Vehicle Action	Vehicle Description	VOC (tpy)	NO_X (tpy)	CO (tpy)	$PM_{2.5}$ (tpy)	PM_{10} (tpy)	SO_2 (tpy)	CO_2e (MT)
Direct	New	100% COTS BEVs	N/A	N/A	N/A	10.65	82.38	N/A	N/A
Direct	Removed	Replaced Vehicles (LLVs/FFVs/Metris)	-935.99	-2,264.31	-11,496	-59.14	-136.72	-3.72	-537,415
		Direct Total	**-935.99**	**-2,264.31**	**-11,496**	**-48.49**	**-54.34**	**-3.72**	**-537,415**
Direct + Indirect	New	100% COTS BEVs (eGRID + MOVES)	NA[1]	190.66	NA[1]	31.57	NA[1]	176.02	215,968
Direct + Indirect	Removed	Replaced Vehicles (LLVs/FFVs/Metris) (GREET + MOVES)	-1,903.42	-3,570.48	-12,081.32	-148.19	-378.47	-915.03	-1,332,698
		Aggregated Total	**-1,903** [1]	**-3,380**	**-12,081**[1]	**-117**	**-378**[1]	**-739**	**-1,116,730**

tpy = Ton Per Year N/A = not applicable
MT = Metric Ton
1.102 English Short Tons (ton) = 1 Metric Ton (MT)
Note: [1]This value does not include VOC, CO, and PM_{10}, as eGRID does not provide VOC, CO, and PM_{10} emissions factor data for the upstream sources. Therefore, the aggregated net emissions for VOC, CO and PM_{10} are not included in this calculation.

Table F-7.e
Aggregated (Direct and Indirect) Air Emissions from Existing Delivery Vehicles Over a Ten-Year Period

Emission Type	Vehicle Action	Vehicle Description	VOC (tpy)	NO_X (tpy)	CO (tpy)	$PM_{2.5}$ (tpy)	PM_{10} (tpy)	SO_2 (tpy)	CO_2e (MT)
Direct	Existing Vehicles	Existing Vehicles (LLVs/FFVs/Metris)	-935.99	-2,264.31	-11,496	-59.14	-136.72	-3.72	-537,415
Direct + Indirect	Existing Vehicles	Existing Vehicles (LLVs/FFVs/Metris) (GREET + MOVES)	-1,903.42	-3,570.48	-12,081.32	-148.19	-378.47	-915.03	-1,332,698

tpy = Ton Per Year
MT = Metric Ton
1.102 English Short Tons (ton) = 1 Metric Ton (MT)

F-8
Social Cost of Carbon

Table F-8.a
Social Cost of CO_2, CH_4, and N_2O, 2020-2050 (in 2020 dollars per metric ton of pollutant)

Emission Year	CO_2 Discount Rate and Statistic *(5% Average)*	CO_2 Discount Rate and Statistic *(3% Average)*	CO_2 Discount Rate and Statistic *(2.5% Average)*	CO_2 Discount Rate and Statistic *(3% 95th Percentile)*	CH_4 Discount Rate and Statistic *(5% Average)*	CH_4 Discount Rate and Statistic *(3% Average)*	CH_4 Discount Rate and Statistic *(2.5% Average)*	CH_4 Discount Rate and Statistic *(3% 95th Percentile)*	N_2O Discount Rate and Statistic (5% Average)	N_2O Discount Rate and Statistic (3% Average)	N_2O Discount Rate and Statistic(2.5% Average)	N_2O Discount Rate and Statistic *(3% 95thPercentile)*
2020	14	51	76	152	670	1500	2000	3900	5800	18000	27000	48000
2025	17	56	83	169	800	1700	2200	4500	6800	21000	30000	54000
2030	19	62	89	187	940	2000	2500	5200	7800	23000	33000	60000
2035	22	67	96	206	1100	2200	2800	6000	9000	25000	36000	67000
2040	25	73	103	225	1300	2500	3100	6700	10000	28000	39000	74000
2045	28	79	110	242	1500	2800	3500	7500	12000	30000	42000	81000
2050	32	85	116	260	1700	3100	3800	8200	13000	33000	45000	88000

CO_2 = carbon dioxide
CH_4 = methane
N_2O = nitrous oxide
Source: *Technical Support Document: Social Cost of Carbon, Methane, and Nitrous Oxide Interim Estimates under Executive Order 13990* (Interagency Working Group on Social Cost of Greenhouse Gases, United States Government, February 2021).

Table F-8.b

Social Cost of Proposed Action - Purchase and Deployment of up to 165,000 NGDV (90% ICE NGDV and 10% BEV NGDV)

Operational Year	Pollutant	Ten-year total GHG emissions (MT)	$, 2020 dollars (5% Average)	$, 2020 dollars (3% Average)	$, 2020 dollars (2.5% Average)	$, 2020 dollars (3% 95th Percentile)
2030	CO_2	-254,236	-4,830,491	-15,762,655	-22,627,037	-47,542,201
2030	CH_4	-146	-136,859	-291,188	-363,986	-757,090
2030	N_2O	-68	-530,705	-1,564,901	-2,245,292	-4,082,349
2030	***Total***	***N/A***	***-5,498,055***	***-17,618,744***	***-25,236,314***	***-52,381,640***
2035	CO_2	-254,236	-5,593,200	-17,033,837	-24,406,691	-52,372,692
2035	CH_4	-146	-160,154	-320,307	-407,664	-873,565
2035	N_2O	-68	-612,352	-1,700,979	-2,449,410	-4,558,623
2035	***Total***	***N/A***	***-6,365,706***	***-19,055,123***	***-27,263,765***	***-57,804,880***
2040	CO_2	-254,236	-6,355,909	-18,559,255	-26,186,346	-57,203,183
2040	CH_4	-146	-189,272	-363,986	-451,342	-975,481
2040	N_2O	-68	-680,392	-1,905,096	-2,653,527	-5,034,898
2040	***Total***	***N/A***	***-7,225,573***	***-20,828,337***	***-29,291,215***	***-63,213,561***
2045	CO_2	-254,236	-7,118,618	-20,084,673	-27,966,000	-61,525,201
2045	CH_4	-146	-218,391	-407,664	-509,580	-1,091,957
2045	N_2O	-68	-816,470	-2,041,175	-2,857,645	-5,511,172
2045	***Total***	***N/A***	***-8,153,479***	***-22,533,511***	***-31,333,225***	***-68,128,329***
2050	CO_2	-254,236	-8,135,564	-21,610,091	-29,491,419	-66,101,455
2050	CH_4	-146	-247,510	-451,342	-553,258	-1,193,873
2050	N_2O	-68	-884,509	-2,245,292	-3,061,762	-5,987,446
2050	***Total***	***N/A***	***-9,267,583***	***-24,306,725***	***-33,106,439***	***-73,282,774s***

N/A = not applicable

Note:

(1) Future damages are converted into present-day value by using a discount rate to determine how much weight is placed on impacts that would occur in the future. Future costs and benefits are generally less significant than present costs and benefits, and the discount rate reflects this level of relative significance. A high discount rate means that future effects are much less significant than present effects, whereas a low discount rate means that they are closer to equally significant than present effects. Higher discount rates result in a lower SCC; if future climate damages are discounted at a high rate, less value is placed on avoiding those damages today.

(2) Social Cost of GHG is presented based on ten-year total emissions in GHG after completion of the project as the basis to forecast lifespan Social Cost of GHG in five-year intervals, for each of the Proposed Actions and Alternatives. This approach likely provides higher Social Cost of GHG benefits than an approach using every intermediate year of emissions before completion of the project in year 2032. The Social Cost of GHG would be the same after completion of the project in 2033 and beyond under either approach.

(3) Ten-year total aggregated emissions in GHG after completion of the project was used as the basis to forecast lifespan Social Cost of GHG in five-year intervals. The Social Cost of GHG would be the same after completion of the project in 2033 and beyond under either approach. The emissions of GHG (CO_2, CH_4, and N_2O) for the Proposed Action are associated with the CO_2e emissions calculated in Table F-7.a.

Table F-8.c
Social Cost of Proposed Action - Purchase and Deployment of up to 165,000 NGDV (100% BEV NGDV)

Operational Year	Pollutant	Ten-year total GHG emissions (MT)	$, 2020 dollars (5% Average)	$, 2020 dollars (3% Average)	$, 2020 dollars (2.5% Average)	$, 2020 dollars (3% 95th Percentile)
2030	CO_2	-596,839	-11,339,936	-37,004,001	-53,118,647	-111,608,842
2030	CH_4	-1,380	-1,297,080	-2,759,744	-3,449,680	-7,175,335
2030	N_2O	-439	-3,426,622	-10,104,143	-14,497,248	-26,358,633
2030	***Total***	***N/A***	***-16,063,638***	***-49,867,888***	***-71,065,575***	***-145,142,810***
2035	CO_2	-596,839	-13,130,452	-39,988,195	-57,296,518	-122,948,778
2035	CH_4	-1,380	-1,517,859	-3,035,719	-3,863,642	-8,279,233
2035	N_2O	-439	-3,953,795	-10,982,764	-15,815,180	-29,433,807
2035	***Total***	***N/A***	***-18,602,106***	***-54,006,677***	***-76,975,339***	***-160,661,817***
2040	CO_2	-596,839	-14,920,968	-43,569,227	-61,474,389	-134,288,713
2040	CH_4	-1,380	-1,793,834	-3,449,680	-4,277,604	-9,245,143
2040	N_2O	-439	-4,393,105	-12,300,695	-17,133,111	-32,508,981
2040	***Total***	***N/A***	***-21,107,907***	***-59,319,603***	***-82,885,104***	***-176,042,837***
2045	CO_2	-596,839	-16,711,484	-47,150,259	-65,652,260	-144,434,972
2045	CH_4	-1,380	-2,069,808	-3,863,642	-4,829,553	-10,349,041
2045	N_2O	-439	-5,271,727	-13,179,316	-18,451,043	-35,584,155
2045	***Total***	***N/A***	***-24,053,019***	***-64,193,218***	***-88,932,855***	***-190,368,167***
2050	CO_2	-596,839	-19,098,839	-50,731,292	-69,233,292	-155,178,069
2050	CH_4	-1,380	-2,345,783	-4,277,604	-5,243,514	-11,314,952
2050	N_2O	-439	-5,711,037	-14,497,248	-19,768,975	-38,659,328
2050	***Total***	***N/A***	***-27,155,659***	***-69,506,143***	***-94,245,781***	***-205,152,349***

N/A = not applicable
Note:

(1) Future damages are converted into present-day value by using a discount rate to determine how much weight is placed on impacts that would occur in the future. Future costs and benefits are generally less significant than present costs and benefits, and the discount rate reflects this level of relative significance. A high discount rate means that future effects are much less significant than present effects, whereas a low discount rate means that they are closer to equally significant than present effects. Higher discount rates result in a lower SCC; if future climate damages are discounted at a high rate, less value is placed on avoiding those damages today.

(2) Social Cost of GHG is presented based on ten-year total emissions in GHG after completion of the project as the basis to forecast lifespan Social Cost of GHG in five-year intervals, for each of the Proposed Actions and Alternatives. This approach likely provides higher Social Cost of GHG benefits than an approach using every intermediate year of emissions before completion of the project in year 2032. The Social Cost of GHG would be the same after completion of the project in 2033 and beyond under either approach.

(3) Ten-year total aggregated emissions in GHG after completion of the project was used as the basis to forecast lifespan Social Cost of GHG in five-year intervals. The Social Cost of GHG would be the same after completion of the project in 2033 and beyond under either approach. The emissions of GHG (CO_2, CH_4, and N_2O) for the Proposed Action are associated with the CO_2e emissions calculated in Table F-7.b.

Table F-8.d
Social Cost of Alternative 1.1 - Purchase and Deployment of up to 165,000 COTS Vehicles (100% RHD COTS ICE Vehicles)

Operational Year	Pollutant	Ten-year total GHG emissions (MT)	$, 2020 dollars (5% Average)	$, 2020 dollars (3% Average)	$, 2020 dollars (2.5% Average)	$, 2020 dollars (3% 95th Percentile)
2030	CO_2	-216,169	-4,107,220	-13,402,507	-19,239,082	-40,423,689
2030	CH_4	-8	-7,945	-16,904	-21,131	-43,952
2030	N_2O	-27	-208,937	-616,096	-883,964	-1,607,207
2030	***Total***	***N/A***	***-4,324,102***	***-14,035,507***	***-20,144,176***	***-42,074,848***
2035	CO_2	-216,169	-4,755,728	-14,483,354	-20,752,268	-44,530,909
2035	CH_4	-8	-9,297	-18,595	-23,666	-50,713
2035	N_2O	-27	-241,081	-669,669	-964,324	-1,794,714
2035	***Total***	***N/A***	***-5,006,107***	***-15,171,618***	***-21,740,259***	***-46,376,337***
2040	CO_2	-216,169	-5,404,237	-15,780,371	-22,265,455	-48,638,129
2040	CH_4	-8	-10,988	-21,131	-26,202	-56,630
2040	N_2O	-27	-267,868	-750,030	-1,044,684	-1,982,222
2040	***Total***	***N/A***	***-5,683,092***	***-16,551,531***	***-23,336,341***	***-50,676,981***
2045	CO_2	-216,169	-6,052,745	-17,077,388	-23,778,641	-52,313,010
2045	CH_4	-8	-12,678	-23,666	-29,583	-63,392
2045	N_2O	-27	-321,441	-803,603	-1,125,045	-2,169,729
2045	***Total***	***N/A***	***-6,386,865***	***-17,904,657***	***-24,933,268***	***-54,546,131***
2050	CO_2	-216,169	-6,917,423	-18,374,404	-25,075,658	-56,204,060
2050	CH_4	-8	-14,369	-26,202	-32,118	-69,308
2050	N_2O	-27	-348,228	-883,964	-1,205,405	-2,357,237
2050	***Total***	***N/A***	***-7,280,020***	***-19,284,570***	***-26,313,181***	***-58,630,605***

N/A = not applicable
Note:

(1) Future damages are converted into present-day value by using a discount rate to determine how much weight is placed on impacts that would occur in the future. Future costs and benefits are generally less significant than present costs and benefits, and the discount rate reflects this level of relative significance. A high discount rate means that future effects are much less significant than present effects, whereas a low discount rate means that they are closer to equally significant than present effects. Higher discount rates result in a lower SCC; if future climate damages are discounted at a high rate, less value is placed on avoiding those damages today.

(2) Social Cost of GHG is presented based on ten-year total emissions in GHG after completion of the project as the basis to forecast lifespan Social Cost of GHG in five-year intervals, for each of the Proposed Actions and Alternatives. This approach likely provides higher Social Cost of GHG benefits than an approach using every intermediate year of emissions before completion of the project in year 2032. The Social Cost of GHG would be the same after completion of the project in 2033 and beyond under either approach.

(3) Ten-year total aggregated emissions in GHG after completion of the project was used as the basis to forecast lifespan Social Cost of GHG in five-year intervals. The Social Cost of GHG would be the same after completion of the project in 2033 and beyond under either approach. The emissions of GHG (CO_2, CH_4, and N_2O) for the Proposed Action are associated with the CO_2e emissions calculated in Table F-7.c.

Table F-8.e
Social Cost of Alternative 1.2 - Purchase and Deployment of up to 165,000 COTS Vehicles (100% COTS BEVs)

Operational Year	Pollutant	Ten-year total GHG emissions (MT)	$, 2020 dollars (5% Average)	$, 2020 dollars (3% Average)	$, 2020 dollars (2.5% Average)	$, 2020 dollars (3% 95th Percentile)
2030	CO_2	-846,947	-16,091,995	-52,510,722	-75,378,294	-158,379,112
2030	CH_4	-1,401	-1,317,021	-2,802,172	-3,502,716	-7,285,648
2030	N_2O	-442	-3,450,891	-10,175,705	-14,599,924	-26,545,317
2030	***Total***	***N/A***	***-20,859,908***	***-65,488,599***	***-93,480,934***	***-192,210,077***
2035	CO_2	-846,947	-18,632,837	-56,745,457	-81,306,924	-174,471,107
2035	CH_4	-1,401	-1,541,195	-3,082,390	-3,923,041	-8,406,517
2035	N_2O	-442	-3,981,798	-11,060,549	-15,927,190	-29,642,271
2035	***Total***	***N/A***	***-24,155,829***	***-70,888,396***	***-101,157,155***	***-212,519,895***
2040	CO_2	-846,947	-21,173,678	-61,827,140	-87,235,554	-190,563,102
2040	CH_4	-1,401	-1,821,412	-3,502,716	-4,343,367	-9,387,278
2040	N_2O	-442	-4,424,219	-12,387,815	-17,254,456	-32,739,224
2040	***Total***	***N/A***	***-27,419,310***	***-77,717,670***	***-108,833,377***	***-232,689,604***
2045	CO_2	-846,947	-23,714,519	-66,908,823	-93,164,183	-204,961,204
2045	CH_4	-1,401	-2,101,629	-3,923,041	-4,903,802	-10,508,147
2045	N_2O	-442	-5,309,063	-13,272,658	-18,581,722	-35,836,178
2045	***Total***	***N/A***	***-31,125,212***	***-84,104,523***	***-116,649,707***	***-251,305,528***
2050	CO_2	-846,947	-27,102,308	-71,990,505	-98,245,866	-220,206,252
2050	CH_4	-1,401	-2,381,847	-4,343,367	-5,324,128	-11,488,907
2050	N_2O	-442	-5,751,485	-14,599,924	-19,908,988	-38,933,131
2050	***Total***	***N/A***	***-35,235,640***	***-90,933,797***	***-123,478,982***	***-270,628,290***

N/A = not applicable
Note:
(1) Future damages are converted into present-day value by using a discount rate to determine how much weight is placed on impacts that would occur in the future. Future costs and benefits are generally less significant than present costs and benefits, and the discount rate reflects this level of relative significance. A high discount rate means that future effects are much less significant than present effects, whereas a low discount rate means that they are closer to equally significant than present effects. Higher discount rates result in a lower SCC; if future climate damages are discounted at a high rate, less value is placed on avoiding those damages today.
(2) Social Cost of GHG is presented based on ten-year total emissions in GHG after completion of the project as the basis to forecast lifespan Social Cost of GHG in five-year intervals, for each of the Proposed Actions and Alternatives. This approach likely provides higher Social Cost of GHG benefits than an approach using every intermediate year of emissions before completion of the project in year 2032. The Social Cost of GHG would be the same after completion of the project in 2033 and beyond under either approach.
(3) Ten-year total aggregated emissions in GHG after completion of the project was used as the basis to forecast lifespan Social Cost of GHG in five-year intervals. The Social Cost of GHG would be the same after completion of the project in 2033 and beyond under either approach. The emissions of GHG (CO_2, CH_4, and N_2O) for the Proposed Action are associated with the CO_2e emissions calculated in Table F-7.d.

Table F-8.f
Social Cost of No-Action Alternative - 165,000 Existing Delivery Vehicles

Operational Year	Pollutant	Ten-year total GHG emissions (MT)	$, 2020 dollars (5% Average)	$, 2020 dollars (3% Average)	$, 2020 dollars (2.5% Average)	$, 2020 dollars (3% 95th Percentile)
2020	CO_2	1,061,705	14,863,873	54,146,965	80,689,594	161,379,189
2020	CH_4	1,419	950,932	2,128,953	2,838,604	5,535,277
2020	N_2O	445	2,581,543	8,011,684	12,017,527	21,364,492
2020	***Total***	***N/A***	***18,396,348***	***64,287,602***	***95,545,725***	***188,278,958***
2025	CO_2	1,061,705	18,048,988	59,455,491	88,121,531	179,428,177
2025	CH_4	1,419	1,135,442	2,412,813	3,122,464	6,386,859
2025	N_2O	445	3,026,636	9,346,965	13,352,807	24,035,053
2025	***Total***	***N/A***	***22,211,066***	***71,215,269***	***104,596,802***	***209,850,089***
2030	CO_2	1,061,705	20,172,399	65,825,722	94,491,762	198,538,870
2030	CH_4	1,419	1,334,144	2,838,604	3,548,255	7,380,370
2030	N_2O	445	3,471,730	10,237,152	14,688,088	26,705,615
2030	***Total***	***N/A***	***24,978,272***	***78,901,478***	***112,728,105***	***232,624,855***
2035	CO_2	1,061,705	23,357,514	71,134,248	101,923,698	218,711,269
2035	CH_4	1,419	1,561,232	3,122,464	3,974,045	8,515,812
2035	N_2O	445	4,005,842	11,127,340	16,023,369	29,821,270
2035	***Total***	***N/A***	***28,924,588***	***85,384,051***	***121,921,112***	***257,048,350***
2040	CO_2	1,061,705	26,542,630	77,504,479	109,355,634	238,883,667
2040	CH_4	1,419	1,845,092	3,548,255	4,399,836	9,509,323
2040	N_2O	445	4,450,936	12,462,620	17,358,650	32,936,925
2040	***Total***	***N/A***	***32,838,658***	***93,515,354***	***131,114,120***	***281,329,915***
2045	CO_2	1,061,705	29,727,745	83,874,710	116,787,571	256,932,656
2045	CH_4	1,419	2,128,953	3,974,045	4,967,557	10,644,764
2045	N_2O	445	5,341,123	13,352,807	18,693,930	36,052,580
2045	***Total***	***N/A***	***37,197,821***	***101,201,563***	***140,449,058***	***303,630,000***
2050	CO_2	1,061,705	33,974,566	90,244,941	123,157,802	276,043,349
2050	CH_4	1,419	2,412,813	4,399,836	5,393,347	11,638,276
2050	N_2O	445	5,786,217	14,688,088	20,029,211	39,168,235
2050	***Total***	***N/A***	***42,173,596***	***109,332,865***	***148,580,360***	***326,849,860***

N/A = not applicable
Note:

(1) Future damages are converted into present-day value by using a discount rate to determine how much weight is placed on impacts that would occur in the future. Future costs and benefits are generally less significant than present costs and benefits, and the discount rate reflects this level of relative significance. A high discount rate means that future effects are much less significant than present effects, whereas a low discount rate means that they are closer to equally significant than present effects. Higher discount rates result in a lower SCC; if future climate damages are discounted at a high rate, less value is placed on avoiding those damages today.

(2) Social Cost of GHG is presented based on ten-year total emissions in GHG after completion of the project as the basis to forecast lifespan Social Cost of GHG in five-year intervals, for each of the Proposed Actions and Alternatives. This approach likely provides higher Social Cost of GHG benefits than an approach using every intermediate year of emissions before completion of the project in year 2032. The Social Cost of GHG would be the same after completion of the project in 2033 and beyond under either approach.

(3) Ten-year total aggregated emissions in GHG after completion of the project was used as the basis to forecast lifespan Social Cost of GHG in five-year intervals. The Social Cost of GHG would be the same after completion of the project in 2033 and beyond under either approach. The emissions of GHG (CO_2, CH_4, and N_2O) for the Proposed Action are associated with the CO_2e emissions calculated in Table F-7.b.

EFFECTS OF CLIMATE CHANGE ON PROPOSED ACTION AND ALTERNATIVES 1.1 AND 1.2

The climate of the United States is strongly connected to the changing global climate. Global annual average surface air temperature has increased by 1.8°F over the last 115 years (1901-2016). Studies conducted around the world have documented rising surface, atmospheric, and oceanic temperatures, melting glaciers, diminishing snow cover, shrinking sea ice, changing in precipitation patterns, increased frequency and/or intensity of extreme weather events, rising sea levels and associated storm surge, and ocean acidification (U.S. Global Change Research Program 2017).

The Proposed Action and Alternatives 1.1 and 1.2 involve the replacement of up to 165,000 vehicles in total production orders over a ten-year period. High-maintenance and end-of-life delivery vehicles would be replaced at various existing Postal Service facility locations throughout the U.S. on a one-for-one basis, resulting in no additional delivery vehicles. No new VMFs would be needed, and expansions of Postal Service facilities are not currently anticipated.

At facilities where BEVs would be deployed and that are subject to flooding (100-year and 500-year floodplains as established by the Federal Emergency Management Agency), or to flooding from extreme weather events or sea level rise, the Postal Service would carefully consider the placement of BEV charging stations. The Postal Service would conduct appropriate environmental review at the local level per Postal Service Handbook RE-6 (2015) as needed. Postal Service environmental checklists, screening analyses, and stand-alone, project-level Environmental Assessments would be employed on a facility-specific basis to assess the extent of impacts.

New BEV operation could be impacted by excessive ambient air temperatures that could affect BEV performance and the life of the batteries, and in extreme cases result in brown-out of the electrical grid that would hinder charging the BEVs.

Appendix F References

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APPENDIX G

FUEL CONSUMPTION CALCULATIONS

Table G-1
Current Fuel Efficiency and Estimated Fuel Consumption of Existing Delivery Vehicles Proposed for Replacement

Table G-2
Estimated Fuel Consumption of Future ICE NGDV (Proposed Action Hypothetical Maximum) and COTS ICE Delivery Vehicles (Alternative 1.1)

Table G-3
Estimated Fuel Consumption Comparison of Existing 165,000 Delivery Vehicles and the Proposed Action ICE Hypothetical Maximum (90% ICE NGDV and 10% BEV NDGV)

Table G-4
Estimated Fuel Consumption Comparison of Existing 165,000 Delivery Vehicles and Alternative 1.1 (165,000 COTS ICE Vehicles)

Table G-1
Current Fuel Efficiency and Estimated Fuel Consumption of Existing Delivery Vehicles Proposed for Replacement

Vehicle Type	Fuel Efficiency (mpg)[1]	Number of Vehicles Proposed for Replacement[2]	Average Delivery Route Length (miles)	Number of Delivery Days	Total Estimated Gasoline Usage[3] (gallons)
LLVs	8.2	125,988.00	21.05	302	97,672,965
FFVs	6.9	21,070.00	21.05	302	19,412,188
COTS (Metris)	6.3	17,942.00	21.05	302	18,104,617
Annual Total[2]	N/A	**165,000.00**	21.05	302	**135,189,770**

[1] Based on USPS FY 2020 fuel consumption monitoring
[2] See Table D-1 in Appendix D
[3] Estimated annual fuel usage calculated as [(Average Delivery Route Length/Fuel Efficiency) X # Vehicles X # Delivery Days]
N/A = not applicable

Table G-2
Estimated Fuel Consumption of Future ICE NGDV (Proposed Action Hypothetical Maximum) and COTS ICE Delivery Vehicles (Alternative 1.1)

Vehicle Type	Fuel Efficiency (mpg)[1, 2]	Number of Vehicles Proposed for Replacement[3]	Average Delivery Route Length (miles)	Number of Delivery Days	Total Estimated Gasoline Usage[4] (gallons)
ICE NGDV	8.6	148,500	21.05	302	109,770,855
COTS ICE Vehicles	6.3	165,000	21.05	302	166,495,476

[1] ICE NGDV with air conditioning (see Table 3-1.2)
[2] Actual Postal Service average mileage for RHD Metris Vehicles (see Table 3-2.1)
[3] See Table D-1 in Appendix D
[4] Estimated annual fuel usage calculated as [(Average Delivery Route Length/Fuel Efficiency) X # Vehicles X # Delivery Days]

Table G-3
Estimated Fuel Consumption Comparison of Existing 165,000 Delivery Vehicles and the Proposed Action ICE Hypothetical Maximum (90% ICE NGDV and 10% BEV NDGV)

Vehicle Type	Fuel Efficiency (mpg)[1]	Number of Vehicles Proposed for Replacement[2]	Average Delivery Route Length (miles)	Number of Delivery Days	Total Estimated Gasoline Usage[3] (gallons)
Existing Delivery Vehicles being Replaced	(see Table G-1)	165,000	21.05	302	-135,189,770
ICE NGDV	8.6	148,500	21.05	302	109,770,855
BEV NGDV	N/A	16,500	21.05	302	N/A
				Difference[4]	**-25,418,916**

[1] ICE NGDV with air conditioning (see Table 3-1.2)
[2] See Table D-1 in Appendix D
[3] Estimated annual fuel usage calculated as [(Average Delivery Route Length/Fuel Efficiency) X # Vehicles X # Delivery Days]
[4] ICE NGDV are estimated to be more fuel-efficient than the current mix of Delivery Vehicles, thus resulting in less gasoline usage, plus this Proposed Action scenario includes at least 10% BEV NGDV

Table G-4
Estimated Fuel Consumption Comparison of Existing 165,000 Delivery Vehicles and Alternative 1.1 (165,000 COTS ICE Vehicles)

Vehicle Type	Fuel Efficiency (mpg)[1]	Number of Vehicles Proposed for Replacement[2]	Average Delivery Route Length (miles)	Number of Delivery Days	Total Estimated Gasoline Usage[3] (gallons)
Existing Delivery Vehicles being Replaced	(see Table G-1)	165,000	21.05	302	-135,189,770
COTS ICE Vehicles	6.3	165,000	21.05	302	166,495,476
				Difference[4]	**31,305,706**

[1] Actual Postal Service average mileage for RHD Metris Vehicles (see Table 3-2.1)
[2] See Table D-1 in Appendix D
[3] Estimated annual fuel usage calculated as [(Average Delivery Route Length/Fuel Efficiency) X # Vehicles X # Delivery Days]
[4] COTS ICE vehicles are estimated to be less fuel-efficient than the current mix of Delivery Vehicles, thus resulting in more gasoline usage for the same number of vehicles