



# National Park Service Electric Vehicle Transition



February 2023





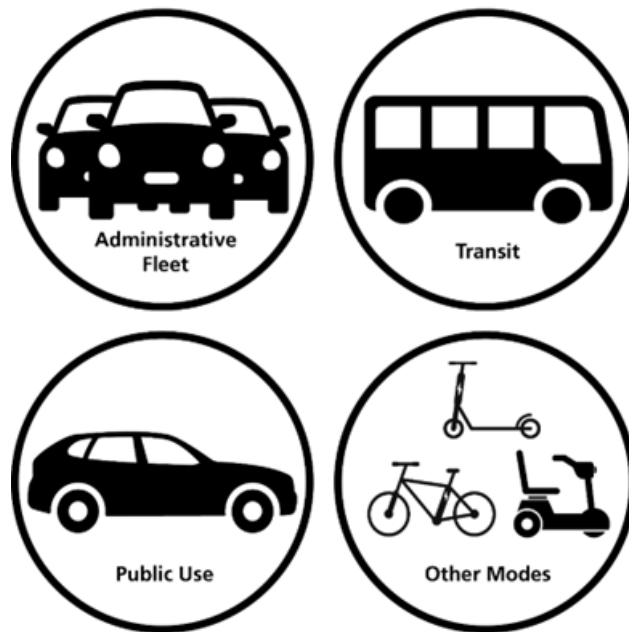
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## Introduction and Purpose

With recent Executive Orders (EOs) 14008 and 14057, the Biden Harris Administration has set ambitious goals to transition the Federal vehicle fleet to electric vehicles (EVs) as part of its strategy to address the climate crisis. These EOs call for government agencies to transition to 100 percent zero-emission vehicle (ZEV) acquisitions by 2035 and 100 percent zero-emission light-duty vehicle acquisitions by 2027.<sup>1,2</sup> EO 14057 also calls for a transition to 100 percent carbon-free electricity on a net annual basis by 2030, including 50 percent 24/7 carbon-free electricity. The transition to EVs also forms part of NPS initiatives around emerging mobility.<sup>3</sup> The 2021 Memorandum of Understanding between the Department of the Interior and the Department of Transportation Regarding Transportation Innovation in the National Park System strengthens the collaboration between the NPS and DOT to continue working together to proactively address emerging transportation trends, including electric vehicles and charging.<sup>4</sup>

A transition to EVs will require changes to NPS infrastructure and business practices. This will include a wide range of activities to prepare the NPS for this transition, including policy development and guidance; installation or upgrading of utilities and chargers; vehicle procurement; workforce development; and a multi-year financial strategy. This transition to EVs will require consideration of all transportation functions within the NPS, including:



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<sup>1</sup> Current Council on Environmental Quality (CEQ) guidance allows agencies to purchase plug-in hybrid electric vehicles (PHEV) to meet ZEV requirements.

<sup>2</sup> The U.S. Environmental Protection Agency defines light-duty vehicles as passenger vehicles with a Gross Vehicle Weight Rating less than 8,500 pounds.

<sup>3</sup> [NPS Emerging Mobility webpage.](#)

<sup>4</sup> [Memorandum of Understanding between DOI and DOT Regarding Transportation Innovation in the National Park System.](#)



Each of these transportation functions includes a range of vehicle types and unique needs for electric charging. This transition will require close collaboration between NPS offices and parks, and with external partners.

This document assesses the current state of NPS EV adoption, analyzes needs and gaps, and outlines the range of activities that the NPS will need to undertake to successfully transition to EVs and plan for the lifecycle maintenance of these vehicles.

## 1.1 Goals & Desired Outcomes

The NPS has the following goals and desired outcomes for the EV transition:

- Meet the Administration’s and Department’s goals outlined in EO 14057, including:
  - 100 percent zero-emission vehicle acquisitions by 2035, including 100 percent zero-emission light-duty vehicle acquisitions by 2027;
- Contribute to regional electric vehicle supply equipment (EVSE) corridors and fill gaps in EVSE networks, particularly in rural and disadvantaged communities;
- Take a proactive approach to EV transition, leading by example and preparing for new programs and opportunities;
- Pursue funding opportunities, programs, and partnerships to support EV fleet conversion and the development of utilities and EVSE;
- Develop a coordinated and consistent approach across NPS offices, regions, and parks; and
- Develop successful and sustainable partnerships with Federal, State, local, and Tribal partners.

## 1.2 Actions & Timeframe

To implement this EV transition in an expeditious manner, the NPS will:

- Strategically engage with funding and partnership opportunities, such as funding opportunities in the Bipartisan Infrastructure Law;
- Provide technical consultation and recommendations to NPS decisionmakers;
- Oversee the service-wide development of EV policy and guidance;
- Support regions and parks electrifying the NPS fleet and installing EVSE for the administrative fleet, transit, NPS employees, and the public;
- Coordinate EV activities across the service and with external agencies and partners;
- Establish a process for tracking progress, evaluating completed activities, and sharing knowledge and lessons learned; and
- Update annually to reflect completed activities, as well as changing conditions and needs as EV technologies and knowledge develop.

Table 1 presents a summary of the activities completed as of December 2022.

**Table 1**  
**Summary of NPS Completed EV Transition Activities**

Activity	Date
Zion National Park received \$33.4 million from the Nationally Significant Federal Lands and Tribal Project Program to replace the legacy transit fleet with new battery electric buses	Spring 2021
Developed ZEV Transition Plan for Sedans and Light-Duty Transit Vehicles	Fall 2021
Established EV Working Group	Spring 2022
Identified phase one parks for electrification (considering administrative fleet, transit fleet, and public use)	Fall 2022
Conducted assessments with NREL in three pilot parks (Golden Gate National Recreational Area, Yellowstone National Park, and Grand Teton National Park)	Fall 2022
Grand Canyon National Park submitted an application requesting \$56.8 million from the Nationally Significant Federal Lands and Tribal Project Program to facilitate transit fleet electrification and other related needs	Fall 2022

## The NPS Electric Vehicle “Road Map”

The purpose of this section is to illustrate at a high level how each function of NPS transportation systems relate to the EV transition and the different components of EV systems planning.

### 1.3 Transportation Functions within the NPS

There are three primary transportation functions within the NPS, each of which has unique needs and considerations:



**Administrative Fleet:** The NPS administrative fleet includes all NPS-owned and NPS-leased vehicles that NPS staff use to carry out their duties. This document uses the term administrative fleet to refer to all of the federal fleet except transit vehicles, some of which are federally owned. The administrative fleet includes sedans and light-duty vehicles, law enforcement vehicles, and maintenance vehicles. The administrative fleet also includes materials handling equipment, such as forklifts and backhoes.



**Transit:** Transit systems include a range of vehicle and vessel types, including trams, passenger vans; light, medium, and heavy-duty transit buses; and ferries. Transit vehicles can be NPS-owned or owned by a concessioner, service provider or partner.



**Public Vehicle Use:** Public vehicle use refers to the use of private vehicles by NPS visitors. As the public increasingly adopts EVs, visitors will need to charge their vehicles on or near NPS units to support non-local trips. Public vehicle use also includes NPS employees' use of personally owned vehicles.

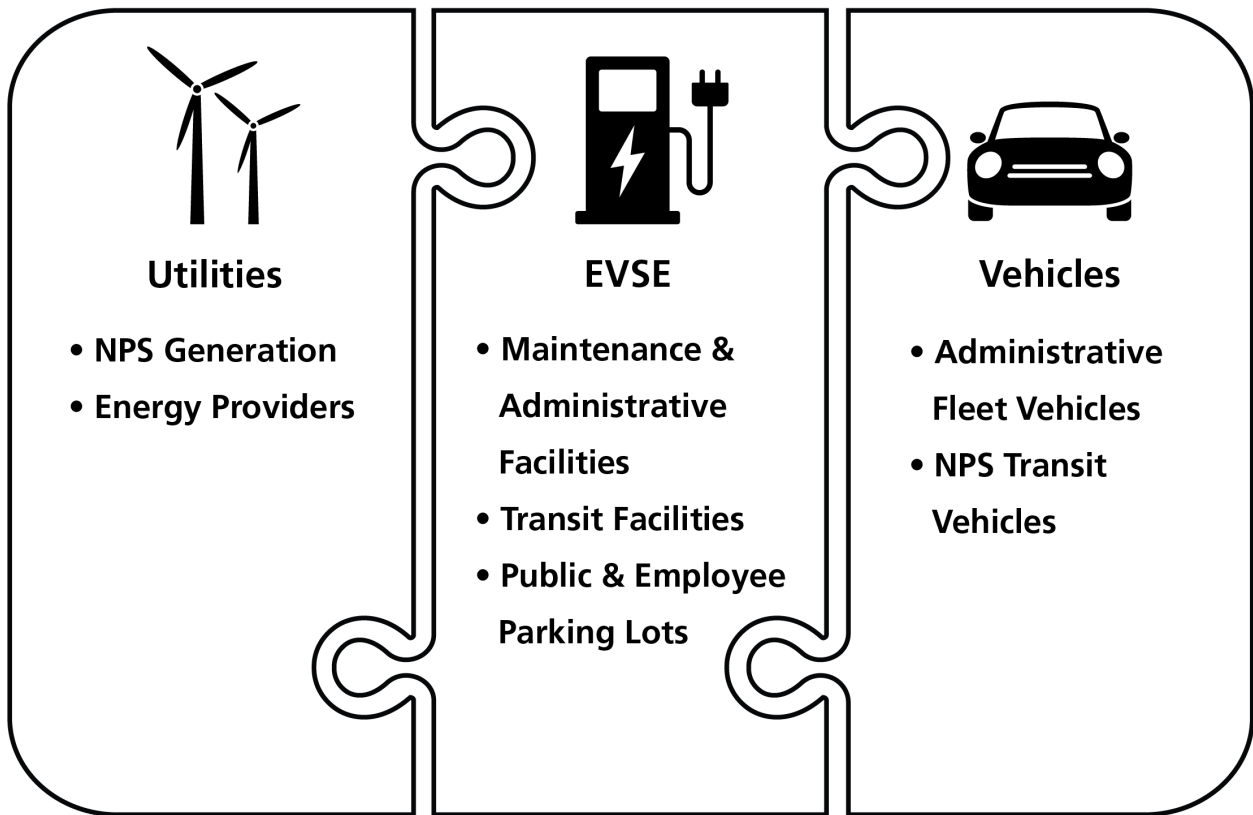


**Other Modes of Electric Mobility:** Although this transition document primarily focuses on automotive vehicles, there are a variety of existing and emerging modes of electric mobility, such as e-bikes and e-scooters. These other mobility modes have different charging needs and considerations from EVs, but a holistic plan for EV adoption provides an opportunity to consider how these modes also contribute to NPS climate and transportation goals. The NPS will monitor development in this area and coordinate activities through its Emerging Mobility Working Group.

## 1.4 Components of EV Systems Planning

To plan for holistic, functioning EV systems in national parks, the NPS must consider three separate but related components: vehicles, electric vehicle supporting infrastructure (EVSE), and utilities (Figure 1). EVs rely on EVSE for energy, and EVSE rely on utilities and transmission infrastructure to supply the required electricity. Because all types of EVs in a national park rely on EVSE and utilities for charging, the NPS will need to consider the projected needs of transportation functions within and around national parks to assess EVSE and utilities upgrades needed to support EV systems. This will require collaboration among a variety of offices within the NPS and with NPS partners, as discussed in more detail below.

**Figure 1**  
**Components of EV Systems**



### 1.4.1 Vehicles

This section discusses the acquisition of EVs for the NPS administrative fleet and transit systems. This section does not consider public use vehicles, because the focus is on NPS actions to transition its future vehicle purchases to EVs in accordance with EO 14057.

#### 1.4.1.1 Administrative Fleet Vehicles



The NPS has developed a Zero Emissions Vehicle (ZEV) Transition Plan for Sedans and Light-Duty Vehicles. Currently there are EV options available for these vehicle types, but other vehicle types—such as materials handling equipment—may not have viable EV options on the market yet. There are some vehicle uses—such as law enforcement vehicles with high daily mileage requirements—for which electrification is not currently feasible.<sup>5</sup> As a result, the NPS will focus on sedans and light-duty vehicles for earliest electrification. The NPS has begun to transition its administrative fleet by installing EVSE in parks and moving towards EVs for leases. NPS currently has 230 Level 2 and 7 Level 3 chargers installed in 34 parks.

<sup>5</sup> Law enforcement vehicles are exempted from the vehicle requirements in EO 14057.





One challenge is that EVs may not work for all parks. For example, it may not be feasible to upgrade utilities infrastructure to some remote parks. An analysis of these limitations is needed to inform a phased approach to EV implementation in parks. This analysis should also document what actions to take to make EVs feasible in remote parks in later phases. Renewable energy and/or off-grid solution alternatives should also be studied to provide the needed power to support EV charging.

#### 1.4.1.2 Transit Vehicles



NPS transit systems have supporting fleet that is either owned by NPS or owned by a concessioner, service provider or partner.

The NPS has taken several steps towards electrification of its transit fleet, with support from its partners. The National Renewable Energy Laboratory (NREL) of the Department of Energy performed an analysis comparing EV transit vehicles to internal combustion engine and hybrid battery electric buses in Zion, Bryce Canyon, and Yosemite National Parks, which contributed to the transition of the Zion fleet to all EV.<sup>6</sup> The Transportation Branch is currently working with NREL to evaluate EV appropriateness for the NPS-owned fleet and to develop a checklist that can be used by parks outlining steps needed to be EV ready. The NPS has worked to incorporate sustainability incentives into concessions contract prospectuses to encourage the use of zero-emissions vehicles and vessels. The NPS has a transit vehicle recapitalization plan that it is updating to support the transition to ZEVs.

Transit vehicle electrification has the following challenges and constraints:

- There are a wide range of transit vehicle types operating within NPS units. These include passenger vans; light-, medium-, and heavy-duty transit buses; trams; and ferry vessels. EV options for some of these vehicle types are currently limited, although the NPS expects that EV technologies will continue to develop and fill current gaps.
- Transit systems have specific operational needs based on route characteristics, remoteness of service, daily service mileage and hours, and potential for locating EVSE along their routes for recharging. In some cases, electrification of routes may not be feasible given current technology and infrastructure.
- For transit systems in which the NPS does not own the vehicles, the NPS has less direct control over vehicle selection and acquisition. The NPS needs to work with concessioners, service operators, and other transit service partners to transition to electric vehicles through incentives or functional requirements and/or contractual instruments.

#### 1.4.2 Electric Vehicle Supply Equipment (EVSE)

Electric Vehicle Supply Equipment (EVSE) refers to charging stations or docks and associated equipment required to recharge EVs. This includes EVSE on NPS land as well as those that are external to NPS lands but may still be important for enabling EV travel to and from park units. In the NPS context, EVSE is required to charge all transportation functions, including the administrative fleet, transit systems, public use, employee personal vehicle charging, and other electric mobility modes. However, these different types of use have different charging needs

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<sup>6</sup> [National Park Service Bus Electrification Study: 2020 Report.](#)

and may be supported by separate EVSE. This section considers EVSE owned and operated by the NPS or provided by some other entity through another business model.

Each transportation function has particular needs for EVSE, listed below. In some cases, different transportation functions may share common EVSE, while in other cases they may use EVSE in different designated locations. For EVs, the NPS may install Level 2 chargers or Level 3 fast chargers, depending on operational needs. In most cases for EVs, Level 2 chargers should be sufficient to meet NPS needs.



**Administrative Fleet:** NPS administrative fleet vehicles will require EVSE to charge when vehicles are not in use. These EVSE may be in designated administrative vehicle parking lots, in maintenance facilities, or attached to NPS buildings.



**Transit Fleet:** Transit fleet EVSE will be required to charge transit EVs. They may be located at transit storage and maintenance facilities or along transit routes to allow for recharging during daily service.



**Public Use:** EVSE for visitor use will need to be located in public parking lots and will need to be equipped with a mechanism for fee collection to cover the costs of electricity. The NPS will also need to collect fees from employees charging their personal vehicles.

As part of planning and deployment for EVSE, the NPS needs to develop a national strategy and provide clear guidance to regions and parks on a variety of considerations, such as:

- How to assess EVSE needs for each transportation function within a park or unit;
- How to choose between Level 2 and Level 3 chargers; and
- Natural and cultural resource compliance.

EVSE for public use and employee vehicle charging pose additional policy and implementation challenges associated with fee collection. The NPS has facilitated projects to install over 100 EVSE in parks around the U.S., relying on concessioners and NPS non-profit Friends Groups to manage fee collection. However, not all parks have access to existing concessions contracts or an affiliated Friends Group that can provide fee collection services to park visitors. The NPS needs to develop policies on EVSE fee collection for public and employee use, as well as guidance on available mechanisms to collect fees. As part of this effort, guidance on partnerships and business models for ownership, maintenance, and operation of EVSE by NPS partners is needed.

***The NPS needs to develop policies on EVSE fee collection for public and employee use, as well as guidance on available mechanisms to collect fees.***

Coordination with external partners, such as State Departments of Transportation (DOTs) and gateway communities, on planning for regional EVSE corridors helps ensure park visitors can travel to and from parks using EVs. The NPS will need to develop a strategy on where charging stations for public use should be placed within parks, and how that complements with availability of charging stations outside of parks. For example, public use chargers may be available at businesses within proximity of urban parks, but they may not be as readily available for visitors who are staying overnight within rural parks.



### 1.4.3 Utilities and Infrastructure

This section covers utilities and other EV-supporting infrastructure. Supporting infrastructure is important because it enables installation and operation of EVSE, which, in turn, enables operation of EVs. Conversely, if infrastructure is insufficient, this prevents the deployment and expansion of EVs.

Relevant fundamental infrastructure includes:

- Electric grid (substations, transformers, distribution lines, panels); and
- Communication infrastructure for networked charging infrastructure (e.g., cellular service or Wi-Fi).<sup>7</sup>

Other relevant infrastructure considerations include:

- Distributed energy generation (e.g., on-site renewable energy);
- Energy storage;
- Smart charging;
- Micro-grids; and
- Redundancy.

When planning for future utility and infrastructure that support EVs, the NPS needs to:

- Consider all transportation functions—including administrative fleet, transit, and public use—to assess utility needs;
- Coordinate with NPS staff charged with implementing the clean power requirements in EO 14057;
- Update guidance to incorporate future EV utilities infrastructure needs into current and future construction projects. This may include laying electrical conduit during parking lot repaving projects or building construction; and
- Understand permitting and compliance needs and project timelines to avoid delays.

## 1.5 EV Systems Management Needs

### 1.5.1 Policy

There are a variety of areas in which new policy and guidance related to EVs need to be issued. These include:

- Implementation of the requirements in EO 14057;
- EVSE fee collection (e.g., public use, employee charging of personal vehicles, NPS-leased sites, sites with mixture of fleet and private vehicle parking); and
- Asset management guidance.

### 1.5.2 Asset Management

Asset management considerations for EVs, charging stations, and utilities includes asset data and actions that can be taken to plan for the maintenance, repair, and eventual replacement of EVs and associated infrastructure. A conversion to EVs at scale will require the purchase and installation of substantial new infrastructure and

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<sup>7</sup> Communications infrastructure is important for EVSE that rely on networking for credit card transactions to collect fees. Other EVSE, such as NPS fleet EVSE that do not collect fees, may not require communications infrastructure.

equipment with unique asset management needs for which the NPS should prepare. NPS will also need to evaluate business models for long-term operations and maintenance costs.

The DOI is currently developing asset management data policies for EVs, EVSE, and utilities. Once the DOI guidance is complete, the NPS will develop guidance to tier off of DOI guidance.

### **1.5.3 Workforce Development**

The NPS is new to system-wide EV planning and implementation. Given the lack of EV expertise across the agency, it will be imperative to develop trainings, materials, and workforce development programs to equip NPS staff to safely and effectively transition to EVs. The workforce development needs for EVs are cross-cutting and relate to many of the other topic areas in this document.

### **1.5.4 Financial Analysis**

An NPS-wide transition to EVs is a complex, large, and multi-faceted proposition with many unknowns; as such, it will require significant investment and a long-term financial plan that looks beyond implementation towards continual operations and maintenance. Detailed analysis is needed to understand what the financial/funding implications are for EVs and their associated infrastructure. This transition will impact funding at the park, regional, and national levels. A comprehensive funding strategy is needed for the EV transition that analyzes financial needs associated with all EV system components.

## **The NPS National Electric Vehicles Strategy Development**

There is a need for a proactive approach to the EV transition that aligns available resources with areas of highest need and priority. As such, the NPS will develop a national strategy to guide the EV transition and provide resources to support regions and parks. This section details the necessary steps for an NPS National EV Strategy.

### *1.6 Scale of the Transition*

The NPS fleet consists of approximately 12,500 vehicles, including both administrative and transit fleets. There are 371 park units<sup>8</sup> that have NPS fleet vehicles, but the bulk of the fleet is concentrated in just a few—the top 30 park units have over 40 percent of all the vehicles. In addition, many parks have transit services provided by non-NPS fleet; system-wide there are approximately 600 non-NPS transit fleet vehicles and 100 fleet vessels (boats). As with the NPS fleet, most of the non-NPS fleet is also concentrated in a small subset of the park units and those with a large non-NPS fleet are generally also among the top 30 park units in terms of NPS fleet. Figure 2 shows the distribution of fleet vehicles for the top 30 park units with the largest NPS fleets.<sup>9</sup> It is sorted from largest to smallest based on the size of the NPS fleet.

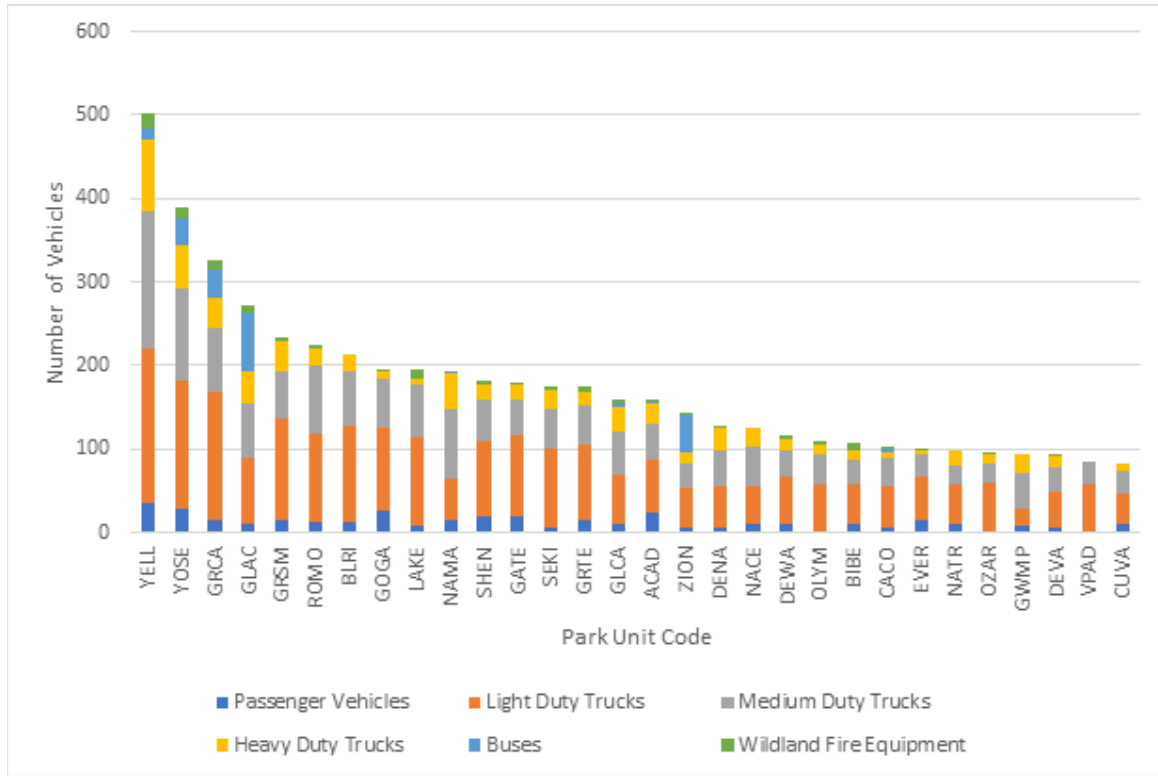
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<sup>8</sup> Plus the US Park Police (USPP), which has multiple locations across the NPS.

<sup>9</sup> Figure 2 and Figure 3 do not capture situations in which the NPS has already disposed of a fleet vehicle but has not yet obtained a replacement.



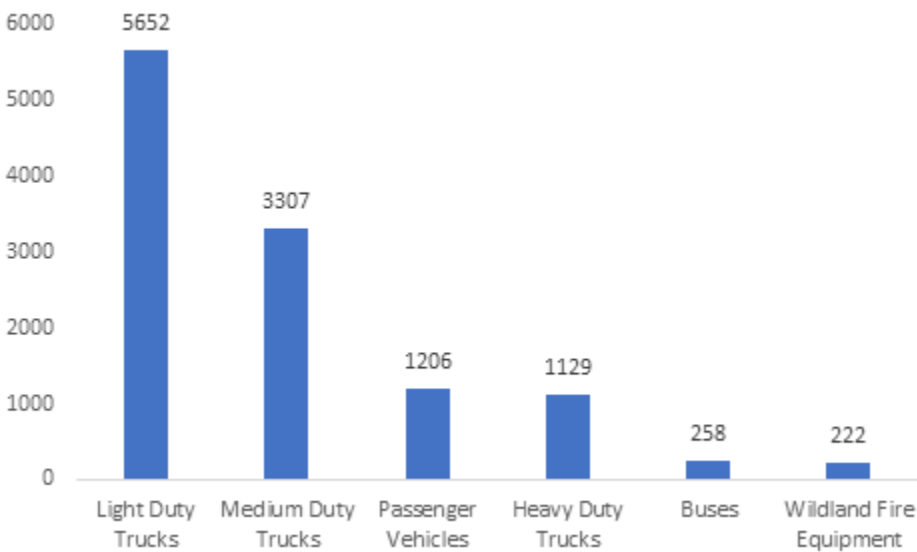
**Figure 2**  
**Fleet Vehicles for Top 30 Park Units**



Source: March 2022 Office of Property, Space, and Fleet Management Fleet Inventory

Figure 3 shows the total NPS fleet by vehicle type. Currently, about one percent are battery electric vehicles (BEVs), meaning they are all-electric. The overall fleet transition to EVs will depend on the market availability of different vehicle types. Not all vehicles are on the market yet, although the NPS will still need to plan for the EV transition for all types. As new vehicle types enter the market, demand might outpace supply at the outset, and the NPS might not be able to acquire models as soon as they are theoretically available. In addition, the NPS will need to consider other factors to understand the feasibility of replacing specific vehicles with EV alternatives, including how vehicles are used, their operating environment and grid reliability.

**Figure 3**  
**NPS Fleet Vehicles by Type**



Source: March 2022 Office of Property, Space, and Fleet Management Fleet Inventory

### *1.7 High-Priority External Corridors*

The NPS transportation electrification will influence and be influenced by the external transportation system and its electrification. This is particularly relevant in 2023, with a pending large-scale increase in EVSE deployment on roadway corridors associated with the Bipartisan Infrastructure Law (BIL). The NPS has an opportunity to identify priority corridors from a national strategic perspective and advance electrification in collaboration with external partners. The NPS will coordinate with the Federal Highway Administration (FHWA), other federal land management agencies (FLMAs), and state and local transportation agencies as they prioritize corridors. This will prevent duplication of effort and capitalize on shared goals.

The BIL created the National Electric Vehicle Infrastructure (NEVI) Formula Program, which provides funds for states to build out EVSE infrastructure. State agencies must prioritize use of these funds to deploy EVSE on their Alternative Fuel Corridors for EVs, which state and local agencies designate through the FHWA Alternative Fuel Corridor Program.<sup>10</sup> The NPS and other FLMAs have opportunities to engage one or more state agencies and provide input on EVSE deployment, in terms of:

- Nominations of Alternative Fuel Corridors within the state; and
- Their EV Infrastructure Deployment Plans, which each state must produce in order to use NEVI funds.

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<sup>10</sup> State and local agencies nominate corridors for designation as EV-Ready or EV-Pending under the FHWA Alternative Fuel Corridors Program. EV-Ready corridors already have EVSE at least every 50 miles, and EV-Pending corridors have plans to achieve the same minimum coverage.



The NPS will evaluate the accessibility of its park units to and from external destinations via EV travel, given current and planned EVSE locations and proximity to the Alternative Fuel Corridors, and then identify high-priority gaps where EVSE coverage is insufficient based on NPS strategic priorities.

In addition to coordinating with State and local agencies on high-priority EVSE gaps, the NPS will also coordinate with Federal agencies on these gaps and other shared priorities. The NPS is participating in a geospatial analysis of EVSE gaps that the U.S. DOT Volpe Center is conducting on behalf of the Department of Interior bureaus as well as the U.S. Forest Service and the U.S. Army Corps of Engineers. The NPS will also participate in the interagency working group on EVs convened by the FHWA Office of Federal Lands Highway (FLH).

The NPS will seek to leverage external partnerships and funding for EVSE corridor deployment and will document key barriers and considerations for this, including circumstances under which receipt of external donations would not be desirable. Partnerships require a clear understanding of the division of responsibilities and future expectations regarding ownership, installation, maintenance, and reporting.

### 1.8 Phased Parks Approach to EV Transition

The EV transition is multi-faceted. The electrical grid infrastructure and EVSE for any given park unit will need to support a variety of uses, including NPS fleet (transit/non-transit administrative), non-NPS transit fleet and other concessionaire vehicles, public charging, and employee charging of personally-owned vehicles. External transportation and electrical systems near park units are also important factors for success. Given the connections between all of these areas, the NPS will need holistic analysis for a successful transition at any given park unit, and this is especially true for park units with the greatest complexity. The NPS developed a phased plan for EV transition, identifying the set of parks that should transition to EVs first. The NPS will then support phase one parks and ensure a comprehensive and strategic approach. The NPS will define what information to collect and how to capture lessons learned from the phase one parks, and then use that information to guide implementation at additional park units in future phases.

As shown in Table 2, the NPS identified phase one parks for transportation electrification in terms of the administrative fleet, transit fleet, and provision of EVSE for the public.

**Table 2**  
**Phase One Parks**

Park / Unit	Administrative Fleet	Transit Fleet	Public Charging
Acadia National Park	✓	✓	✓
Alibates Flint Quarries National Memorial	✓		
Bandelier National Memorial	✓	✓	✓
Blue Ridge Parkway	✓		
Boston National Historical Park	✓		
Cabrillo National Memorial	✓		
Cape Cod National Seashore	✓	✓	

<b>Park / Unit</b>	<b>Administrative Fleet</b>	<b>Transit Fleet</b>	<b>Public Charging</b>
Carlsbad Caverns National Park	✓		✓
Colonial National Historical Park	✓		
Colorado National Memorial	✓		
Crater Lake National Park	✓	✓	✓
Craters of the Moon National Monument and Preserve	✓		
Cuyahoga Valley National Park	✓		
Death Valley National Park	✓		✓
Delaware Water Gap National Recreation Area	✓	✓	
Denali National Park and Preserve	✓	✓	
Dinosaur National Memorial	✓	✓	
Ebey's Landing National Historical Reserve	✓		
Everglades National Park	✓	✓	
Fort Larned National Historic Site	✓		✓
Fort Monroe National Memorial	✓		
Fort Vancouver National Historic Site	✓		
George Rogers Clark National Historical Park	✓		
George Washington Memorial Parkway	✓		
Glacier National Park	✓	✓	✓
Golden Gate National Recreation Area	✓		
Grand Canyon National Park		✓	✓
Grand Teton National Park	✓		✓
Great Basin National Park	✓		
Great Smoky Mountains National Park	✓		
Guadalupe Mountains National Park	✓		✓
Haleakala National Park	✓		
Homestead National Historical Park	✓		
Independence National Historical Park	✓		
Jimmy Carter National Historical Park	✓		
John Day Fossil Beds National Memorial	✓		✓
Joshua Tree National Park	✓		
Kalaupapa National Historical Park	✓		
Kaloko Honokohau National Historical Park	✓		
Kennesaw Mountain National Battlefield Park	✓	✓	
Lake Mead National Recreation Area	✓		
Lake Meredith National Recreation Area	✓		✓
Lassen Volcanic National Park	✓		✓
Lava Beds National Memorial	✓		





Park / Unit	Administrative Fleet	Transit Fleet	Public Charging
Lewis and Clark National Historical Park	✓		
Mammoth Cave National Park	✓	✓	
Martin Luther King, Jr. National Historical Park	✓		
Mount Rushmore National Memorial			✓
Natchez Trace Parkway	✓		
National Capital Parks East	✓		
National Capital Regional Office	✓		
National Mall and Memorial Parks	✓	✓	
Nez Perce National Historical Park	✓		✓
Olympic National Park	✓		✓
Oregon Caves National Monument and Preserve	✓		
Ozark National Scenic Riverways	✓		✓
Petroglyph National Memorial	✓		
Pinnacles National Park	✓	✓	
Point Reyes National Seashore	✓	✓	
Prince William Forest Park	✓		
Pu'uhonua o Honaunau National Historical Park	✓		
Richmond National Battlefield Park	✓		
Rock Creek Park	✓		
Rocky Mountain National Park	✓	✓	
Saratoga National Historical Park	✓		
Sequoia National Park	✓	✓	✓
Shenandoah National Park	✓	✓	
Steamtown National Historic Site	✓		
United States Park Police	✓		
Valles Caldera National Preserve	✓		
Vanderbilt Mansion National Historic Site	✓	✓	✓
Whiskeytown National Recreation Area	✓		
White House	✓		
Whitman Mission National Historic Site	✓		
Yellowstone National Park	✓	✓	✓
Yosemite National Park	✓	✓	
Zion National Park	✓	✓	✓

## Appendix A: Definitions

This EV transition document uses the following key definitions of terms:

- *Electric Vehicle (EV)*: An electric vehicle is a vehicle that can run on electricity alone via a rechargeable battery that powers an electric motor. For the purposes of this transition document, EVs may be passenger vehicles, such as sedans and light trucks; transit vehicles such as heavy-duty transit buses or small shuttles; and specialized vehicles such as maintenance and emergency response vehicles. EVs include the following types:
    - *Plug-in Hybrid Electric Vehicle (PHEV)*: PHEVs are powered by an internal combustion engine (ICE) and an electric motor that uses energy stored in a battery. PHEVs can operate in all-electric mode. To support a driver's typical daily travel needs, most PHEVs can travel between 20 and 40 miles on electricity alone, and then will operate solely on gasoline, similar to a conventional hybrid.<sup>11</sup>
    - *All-Electric Vehicles*: EVs, also called battery electric vehicles (BEVs), have a battery that is charged by plugging vehicle into charging equipment. All-electric vehicles always operate in all-electric mode and have typical driving ranges from 150 to 300 miles.<sup>12</sup>
  - *Other Electric Modes*:
    - *Electric Vessel*: An electric vessel is a maritime vessel that can run on electricity alone. Although this transition document focuses primarily on electric vehicles, the NPS is also considering conversion of ferry boats and other vessels to electric vessels, and some of the activities in this transition document relate to electric vessels in addition to EVs.
    - *Electric Bicycle (e-bike)*: An e-bike is a bicycle with a small electric motor that provides power to help move the bicycle.<sup>13</sup> This transition document does not address e-bikes. However, there may be areas in which e-bikes have similar planning and infrastructure needs to EVs.
  - *Electric Vehicle Supply Equipment (EVSE)*: EVSE refers to EV chargers, cables, couplers, embedded software, and other associated equipment to charge EV batteries.
  - *Utilities Supporting EVSE*: This refers to the utilities infrastructure providing electricity to EVSE.
  - *Internal Combustion Engine (ICE)*: An internal combustion engine (ICE) vehicle is a vehicle using a traditional engine relying on fuel, typically gasoline.
- Zero Emission Vehicle (ZEV)*: A ZEV is a vehicle that does not produce tailpipe pollution. There are three distinct vehicle designs that are considered ZEVs: PHEVs, EVs, and hydrogen fuel cell vehicles.

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<sup>11</sup> [U.S. Department of Energy, Alternative Fuels Data Center.](#)

<sup>12</sup> Ibid.

<sup>13</sup> National Park Service, General Provisions: Electric Bicycles. 85 FR 69175.