



Fort Sumter National Historical Park



Mammoth Cave National Park



Grand Canyon National Park

# NPS National Transit Inventory and Performance Report, 2020



Yosemite National Park

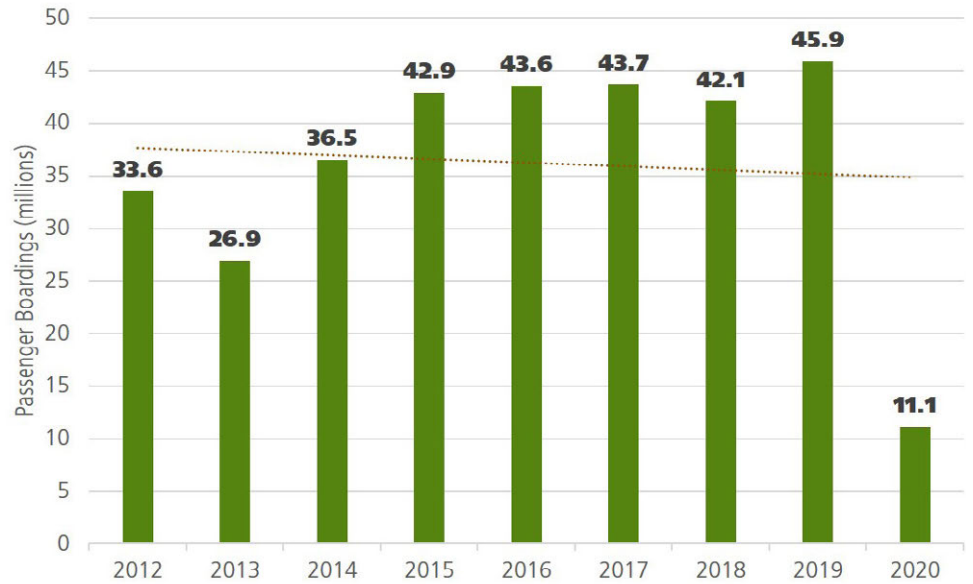
This is a summary of the 2020 National Park Service Transit Inventory and Performance Report. This effort:

1. identifies NPS transit systems across the country,
2. tracks the operational performance (e.g., boardings) of each system, and
3. inventories NPS- and non-NPS-owned transit vehicles and vessels and collects detailed vehicle information.

## 11.1 Million Passenger Boardings

**66** Systems Operated  
**49** Parks Represented  
**673** Vehicles & Vessels

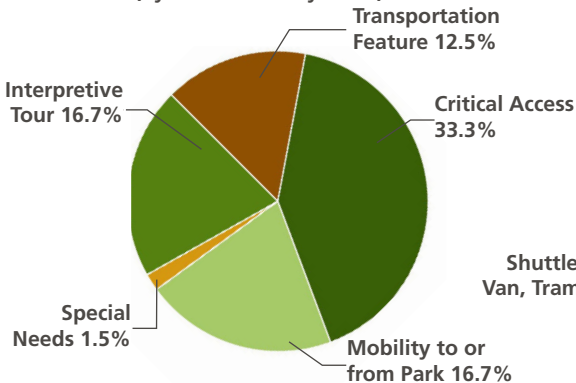
\*Reflects systems that operated during the fiscal year 2020 only.



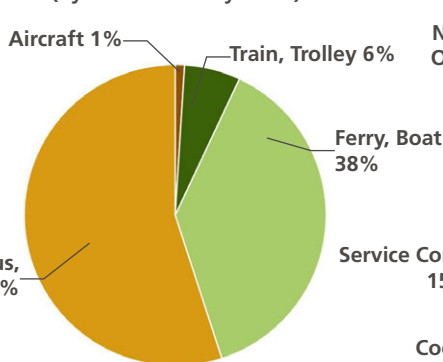
**Of the 66 transit systems that operated, the top 10 transit systems accounted for 90% of the passenger boardings in 2020.** The systems with over a million boardings are located at Ellis Island/Statue of Liberty National Monuments, Grand Canyon National Park, Zion National Park, and the National Mall and Monuments. The top parks list has remained relatively stable over time.

**The National Park Service owns and operates 13 systems and owns the fleet for 36% of the systems.** NPS-operated systems account for 29,191 passenger boardings—about 1% of total boardings.

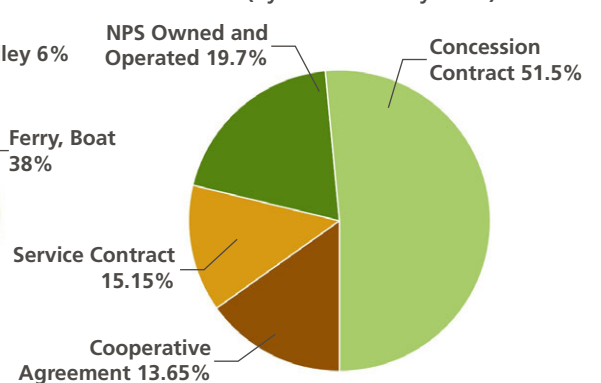
**Purpose**  
(by % of transit systems)



**Mode**  
(by % of transit systems)



**Business Model**  
(by % of transit systems)





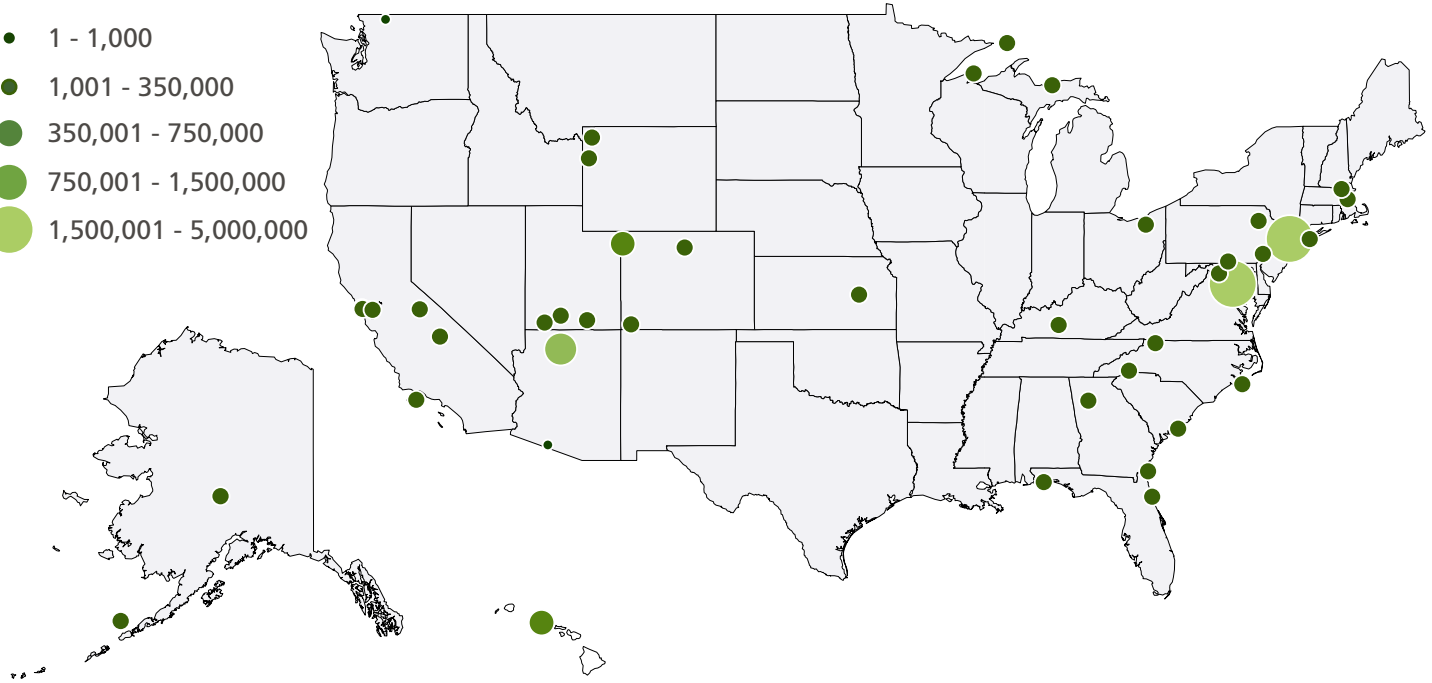
62% of NPS-owned transit vehicles operate on alternative fuel, while 14% of non-NPS-owned vehicles operate on alternative fuel.



66 NPS Transit Systems operated in fiscal year 2020. Only 30 reported operated during the pandemic (March 2020–September 2020).

## Passenger Boardings by Park

- 1 - 1,000
- 1,001 - 350,000
- 350,001 - 750,000
- 750,001 - 1,500,000
- 1,500,001 - 5,000,000



# Performance Measures

### Visitor Experience

The majority of the NPS-owned transit system vehicles and vessels are accessible for people with mobility impairments. 66% of NPS-owned vehicles are accessible to people with mobility impairments (e.g., require a wheelchair lift).

### Operations

The National Park Service partners with the private sector to provide the majority of transit services. Non-NPS entities operate 80% of NPS transit systems, which account for 99% of passenger boardings servicewide. The National Park Service owns and operates the remaining 20% of transit systems, which account for the remaining 1% of passenger boardings.

### Environmental Impact

National Park Service transit systems mitigate vehicle emissions. The net CO<sub>2</sub> emissions savings of the 673 transit vehicles and vessels evaluated (excluding planes, rail, snowcoaches, and vehicles with incomplete data or that did not operate) was equivalent to removing 4.2 million personal vehicle trips, and 114 million passenger vehicle miles from the road.

### Asset Management

National Park Service-owned shuttle/bus/van/tram vehicles have an estimated \$125 million in recapitalization needs between 2021 and 2031. Parks with estimated transit vehicle replacement costs over \$5 million during the next 10 years include Acadia National Park, Grand Canyon National Park, Isle Royale National Park, and Yosemite National Park.



## NPS National Transit Inventory and Performance Report Transit System Response to the COVID-19 Pandemic



Pearl Harbor National Memorial, HI

### Overview

In March 2020, the National Park Service's (NPS) transit systems initiated pandemic operations. The 2020 national transit inventory collected information from systems that operated in some capacity between March 2020 and September 2020. The national transit inventory also queried systems on planned operations for 2021. Across all the systems, parks were challenged: to address social distancing; to change visitation patterns; to implement operational changes; and to meet financial impacts while also adhering to local, state, and federal regulation. In addition, parks had to provide direction and manage safe environments for employees, concessioners, and visitors who use transit systems across the National Park Service.

In November 2020, the Park Planning, Facilities and Lands Directorate distributed the *Transportation System Operations COVID-19 Management Practice* and the *COVID-19 Standards Prevention and Mitigation* guidance. These documents provided a starting point for all systems to establish COVID-19 operations. The Alternative Transportation Program (ATP) continued support during the pandemic by updating the COVID-19 guidance documents, developing a COVID-19 revenue impact tool, supporting COVID-19 mitigation funding, and assisting with operation changes.

- **Developing and Implementing Operation Plans:** In the Intermountain Region, parks and service operators collaborated on the development of individual park COVID-19 mitigation plans using the ATP COVID-19 guide and other Centers for Disease Control and Prevention (CDC), state, and local guidelines and regulations. The service contractor submitted the plan to the region. The regional public health staff provided input and recommendations and the regional alternative transportation program coordinator facilitated comment resolution between the park, region, and public health staff. Once complete, a park's transit systems could begin implementing the plan and operating.
- **Guideline Changes:** Understanding and adapting to changing regulations and guidelines and communicating those changes to passengers is challenging. Parks are using park staff, contracted staff, and volunteers at transit stops to help answer questions and enforce new rules.
- **Physical Changes:** Most systems implemented the six physical changes recommended by the November 2020 Transportation System Operations: COVID-19 Best Management Practices including, but not limited to: blocking or removing seats to encourage social distancing and enforce capacity, installing markers at transit stops to encourage social distancing, installing barriers to protect drivers, providing sanitation stations and masks, increasing cleaning frequency and using recommended sanitizing products, and opening windows to increase ventilation. Removing seats and installing barriers are some of the highest costs incurred by the park. Providing masks and hand sanitizer is a moderate cost.

- **Operational Changes:** Operational changes were required to maintain service while meeting capacity requirements. Parks used a mix of responses to address this challenge:
  - » **Reservations:** At the park or transit system level, timed reservations were used to limit the number of passengers who had access to the system at one time. Reservation systems enabled transit systems to safely operate within COVID regulations while protecting both employees, operators, and passengers. Reservation systems that were developed in 2020 are continuing in the 2021 season.
  - » **Route Options:** Some parks with multiple routes focused transit operations for routes where private vehicles are not permitted. As COVID-19 restrictions have relaxed, routes that were not operated in 2020 are slowly coming back online.
  - » **Eliminating Stops:** By eliminating stops along the route, transit systems reduced risk, particularly to drivers, by minimizing interactions. Eliminating transit stops or converting stops to “drop-off only” also reduced the amount of infrastructure modifications required.
- **Financial Impacts:** Systems that operated have requested reimbursement from COVID-19 relief funds and transportation fee with mixed results. In some cases, transportation was left out of funding opportunities to make modifications to protect health and safety of passengers and employees. Service operators and concessioners also reported difficulties offsetting costs of operating without rebounding visitation to help recovery.

## System Case Studies

The following case studies detail the planning, mitigations, and operations of four systems during the pandemic. Each case study provides an overview of the system, comparison of ridership and overall park visitation, and look at policy, physical, and operational changes implemented by the park.



Ferry boat passengers arriving to Fort Sumter National Historical Park.



# NPS National Transit Inventory and Performance Report Transit System Response to the COVID-19 Pandemic



Bryce Canyon National Park, UT

System	Fleet Type	Business Model	Boardings	Park Visitation
Bryce Canyon Shuttle	Heavy-Duty Transit Bus	Service Contract, Non-NPS-Owned Vehicles	744,010 (2019) 178,524 (2020) 77% decline	2,594,904 (2019) 1,464,655 (2020) 43.6% decline

## Overview

The National Park Service implemented the voluntary, seasonal Bryce Canyon Shuttle in response to increased visitation and traffic congestion. On March 7, 2020, the park closed completely to visitors. The park reopened on May 6, 2020. Shuttle system operations resumed a limited schedule from June 1, 2020, through October 18, 2020. The Bryce Canyon Shuttle began operations on April 2, 2021.

## Mitigation Strategies

### Planning and Communication

- Developed a communication strategy that included safety signage at shuttle stops; informational graphics on buses, visually showing social distancing and mask wearing guidelines; and website updates.

### Guideline Changes

- Required social distancing: Passengers should cluster with their traveling companions and social distance away from others.
- Issued face masks and provided access to handheld sanitizer spray bottles for first week until mounted touch dispensers arrived from being on back-order.
- Increased cleaning schedule and used recommended cleaners and electrostatic sprayers.



A service provider cleans the interior of a shuttle.

### Physical Changes

- In response to CDC recommendations, increased ventilation by opening all bus windows and running air conditioners.
- Installed plexiglass to protect drivers and required all passengers to enter and exit through rear doors.
- Physically removed seats to reduce capacity. Normal seating for 38 passengers remains reduced by 75% to 20 passengers.

### Operational Changes and Staffing

- In a typical year, peak ridership occurs between May and October. During the pandemic, the shuttle system operated on a limited schedule between June 1 and October 18.
- Despite declining ridership, the park ran more busses at peak times to meet demand and maintain capacity and social distance requirements.
- The service operator had trouble finding additional drivers for increased service once the park reopened. Drivers were hired later in the season.

### Park-Wide Impacts

- During the pandemic, the park observed more crowding and congestion as more cars entered the park per hour than parking spots became available. Shuttle demand was low, and park staff speculates that visitors did not feel comfortable riding the shuttle bus.
- To manage crowding, the transit service operator provided "transportation liaisons" who primarily help with parking lot management. During the pandemic, the liaisons assisted with enforcing face mask and shuttle capacity policies.
- Drivers and park staff observed visitor use changes. Some visitors avoided getting off at more popular and crowded stops and went on to less visited attractions.

### Financial Impacts

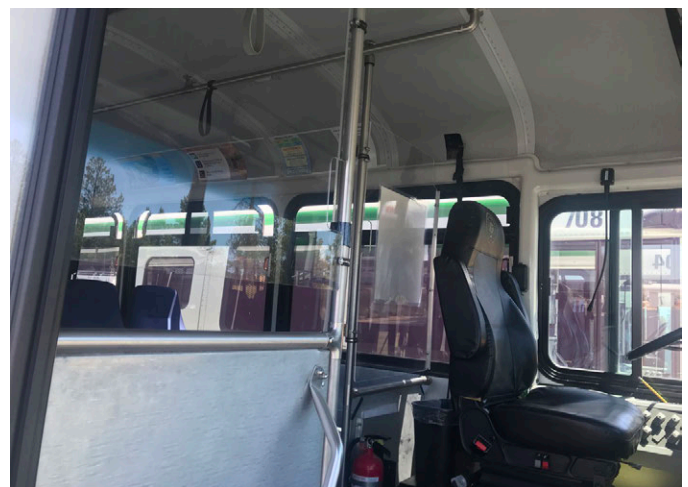
- Safety and pandemic response equipment, supplies, and staffing increased operating expenses.



Visitors wait to board the shuttle on Labor Day weekend.



Safety policy bulletins have been posted on the outside of buses.



Partitions installed between the driver and passenger seating area.



# NPS National Transit Inventory and Performance Report Transit System Response to the COVID-19 Pandemic



Grand Canyon National Park, AZ

System	Fleet Type	Business Model	Boardings	Park Visitation
Grand Canyon South Rim Shuttle Service	Heavy-Duty Transit Bus	Service Contract, NPS-Owned Vehicles	7,644,271 (2019)	5,974,411 (2019)
			1,142,098 (2020)	2,897,098 (2020)
			85% decline	51.5% decline

## Overview

Grand Canyon National Park has operated a shuttle transit system on the South Rim of Grand Canyon National Park for more than 40 years. The shuttle system provides easy access to South Rim trails, viewpoints, and other areas of interest. Shuttle service was suspended for six months from mid-March 2020 through September 4, 2020. The park began limited shuttle system operations of the Hikers' Express, Hermits Rest Route (Red Route), and Kaibab Rim Route (Orange Route) eastbound in fall 2020 with COVID-19 mitigation measures in place. The Village Route (Blue Route), Kaibab Rim Route (Orange Route) westbound, and Tusayan Route (Purple Route) remain closed.

Visitation to the park remained below average in 2020. Only 15 passengers could board per bus (as opposed to 70 during prepandemic times). Visitors may also have preferred not to use the shuttle system and walked or used personal vehicles instead.

## Mitigation Strategies

### Planning and Communication

- Developed a communication strategy that included information signage at transit stops, transit system liaisons at key locations, and significant website and social media updates.

### Guideline Changes

- Reduced capacity from 70 passengers to 15 passengers. In consultation with public health and industry standards, 15 passengers allowed for the greatest physical distancing and being able to block off every other row of seats.



Socially distanced passengers waiting to board a shuttle bus.



## Grand Canyon South Rim Shuttle

- Beginning on May 1, 2021, in consultation with public health and the shuttle bus contractor, capacity was increased to 20 passengers per bus.
- Small groups were permitted to travel together while aboard.
- Required passengers to wear face masks or coverings. Passengers must have their own face mask or covering before entry.
- Provided hand sanitizer to passengers.
- Cleaned buses daily per NPS and CDC guidelines.
- Required shuttle bus staff to follow specific screening protocols when reporting to work each day.



Seats were blocked off and removed inside the shuttles to enforce capacity restrictions.

### Physical Changes

- Removed and blocked off seats to enforce capacity and social distancing.
- Installed sidewalk decals, tape, and signage at bus stops to promote physical distancing.

### Operational Changes and Staffing

- In a typical year, peak ridership occurs between March and September. During the pandemic, the shuttle system began limited operations of two routes on September 5, 2020.
- Only operated routes that required bus access/closed to personal vehicles.
- Limited number of stops to streamline service on the Hikers' Express Route.
- Service operator hired staff to monitor key transit stops and provide verbal guidance to passengers on physical distancing, operational, and policy changes.



Masked bicyclists use the bike rack before boarding the shuttle.

### Financial Impacts

- Implementing mitigations increased operating expenses for both the park and the transit system operator.



A bus monitor shares information with passengers waiting to board the bus and helps enforce the COVID-19 safety policies.



# NPS National Transit Inventory and Performance Report Transit System Response to the COVID-19 Pandemic



Rocky Mountain National Park, CO

System	Fleet Type	Business Model	Boardings	Park Visitation
Rocky Mountain National Park Visitor Shuttle	Heavy-Duty Transit Bus	Service Contract, Non-NPS-Owned Vehicles	764,423 (2019) 409,565 (2020) 46.4% decline	4,670,053 (2019) 3,305,199 (2020) 29.9% decline

## Overview

The Rocky Mountain National Park Visitor Shuttle began in 1978 under a service contract. The system operates along a 9-mile section of road inside the park and services two main campgrounds, numerous trailheads, and supports concession operations. Three shuttle routes within the park offer hikers and day trippers access to Bear Lake, Moraine Park, and other trailheads. The park shuttle system typically operates between late May and early October. On March 20, 2020, Rocky Mountain National Park closed to all visitors for two months and began a phased reopening of the park began on May 27, 2020. The park implemented a timed entry reservation system between June 4, 2020, and October 12, 2020. Visitors reserved access to the park during certain time windows with the goal of reducing crowds due to the pandemic. During those four months, the park recorded about 73% of its actual capacity in visitation. The park closed due to wildfires between October 22, 2020, and November 2, 2020.

## Mitigation Strategies

### Planning and Communication

- Developed a communication strategy that included informational signage at transit stops and on board shuttles, web updates, and temporary, staffed information tents at key shuttle stops.
- Contradicting federal, state, and local guidelines created confusion around implementation and enforcement of COVID-19 mitigations.



Passenger vehicles wait in line to enter the park via the timed entry permit reservation system.

## Rocky Mountain Visitor Shuttle

- Adapted mitigation and communication strategies as COVID-19 response guidelines and shuttle operations change.

### Guideline Changes

- Reduced capacity to 15 riders from 65 riders. Increased space between riders or rider groups and encouraged small groups travelling together to sit together.
- Implemented a timed entry reservation system parkwide and aligned transit schedule to match. Park visitation and ridership peaked daily after 5:00 p.m. after required reservations lifted.
- From May 2020 to January 2021, masks were strongly recommended but not mandatory for passengers. Beginning in January 2021, face masks were required aboard the shuttle. Park staff and drivers have worn masks since reopening.
- Increased cleaning and disinfecting and fogged shuttles with disinfectant every night.

### Physical Changes

- Installed sidewalk markings and informational signage at transit stops to enforce physical distancing.

### Operational Changes and Staffing

- In a typical year, peak ridership occurs between July and September. During the pandemic, the shuttle system began operations in time for the summer season. Service schedules were adjusted to best accommodate the timed entry reservation system.
- Increased park visitation from local residents increased shuttle demand.
- Increased frequency of pick ups and drop offs to maintain service and meet capacity requirements.
- Provided passenger assistance using volunteers as additional transit system liaisons. Seasonal hires were reduced by 33% due to reduced capacity restrictions and availability of park housing.

### Parkwide Impacts

- Park staff reported high stress as a result of implementing mitigation measures to keep passengers safe.
- Significant staff time was spent coordinating service route schedules with timed entry reservations and service operators.

### Financial Impacts

- Lack of visitation affected the revenue stream.



Passengers board the shuttle system. Masks were not required on the shuttle until 2021.



Passengers crowd around staff working the Bear Lake transit stop.



# NPS National Transit Inventory and Performance Report Transit System Response to the COVID-19 Pandemic



Zion National Park, UT

System	Fleet Type	Business Model	Boardings	Park Visitation
Zion Shuttle	Medium-Duty Transit Bus	Service Contract, NPS-Owned Vehicles	6,777,100 (2019) 1,532,052 (2020) 77.4% decline	4,488,268 (2019) 3,591,254 (2020) 19.9% decline

## Overview

Zion National Park established a shuttle system in 2000 to respond to the impacts of growing visitation and traffic congestion in an area that is topographically constrained with limited parking and highway access. The park ceased operation of the shuttle system on March 17, 2020, due to the COVID-19 pandemic. Zion National Park implemented a temporary shuttle reservation ticket system, which required timed tickets for reduced shuttle capacity to enable reopening in on July 1, 2020.

The Zion Shuttle operated between July 2020 and December 2020 with COVID-19 mitigations in place, allowing access to Zion Canyon Scenic Drive while meeting COVID-19 public health guidelines.

## Mitigation Strategies

### Planning and Communication

- Developed a communication strategy that included informational signage at transit stops and aboard shuttles, web updates, and staffing tents at key shuttle stops.



Passengers board the shuttle. Roof vents and windows are open to increase air flow aboard the shuttle.

# Zion Shuttle

## Guideline Changes

- Reduced bus capacity to from 68 passengers to 33.
- From July 2020 to December 2020, masks were suggested, not mandatory, due to lack of federal guidance. Beginning in February 2021, face masks were required on board the shuttle based on federal guidance.
- Provided face masks and hand sanitizer for drivers.
- Increased cleaning and disinfecting of shuttles and added electrostatic cleaning procedures.



Traffic cones show passengers where to wait at the transit stop while remaining socially distant.

## Physical Changes

- Installed informational signage at shuttle stops and within shuttle loading areas to encourage physical distancing.
- Removed approximately half of the seats within shuttles to encourage physical distancing and capacity limits.
- Installed plastic curtains to protect drivers as passengers used the door near the driver to board and disembark.
- Opened windows and roof vents to increase ventilation.

## Operational Changes and Staffing

- The park implemented a shuttle ticket reservation system through Recreation.gov to manage limited capacity and reduce long wait times at transit stops. Passengers were permitted to board at the visitor center at their ticketed time and could use the same ticket to hop on and off as often as desired at all up-canyon stops. The reservation system had benefits, such as helping visitors plan their visit to Zion, and disadvantages, such as tickets being resold on unauthorized websites and visitors unable to get tickets because demand exceeded supply. The park has implemented limited, free afternoon walk-up tickets for visitors without a reservation.
- The park increased frequency of shuttle runs to maximize capacity.
- The park eliminated stops along the Zion Canyon route to increase system efficiency.

## Financial Impacts

- A lack of visitation affected the revenue stream.
- The minimal ticket fee (\$1) is a Recreation.gov service fee. Zion did not receive any funds from the fee.
- Park staff experienced significant increased costs and burden to implement and manage the shuttle ticket system.
- The park used transportation fees to fund the cost of barriers, remove seats, and provide masks and hand sanitizer.

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## Introduction

The *2020 National Park Service (NPS) Transit Inventory and Performance Report* communicates the servicewide outcomes and status of NPS transit systems. This comprehensive listing has been compiled annually in this format since 2012 and covers surface, waterborne, and airborne systems. The inventory establishes a working definition of NPS transit systems for the purpose of this document; helps the National Park Service comply with 23 United States Code (USC) 203(c),<sup>1</sup> which requires “a comprehensive national inventory of public Federal lands transportation facilities;” and fulfills other internal needs.

The 2020 inventory is meant to assist the National Park Service in the following:

- Measure NPS transit performance.
- Capture asset management and operational information not tracked in current NPS systems of record.
- Integrate transit data with NPS systems of record, including asset management data in the Financial and Business Management System for NPS-owned vehicles.
- Inform the *National Long Range Transportation Plan*, regional long range transportation plans, and the Annual Accomplishments Report by providing key transit statistics, which can also be used to track progress towards goals.
- Comply with Executive Order 13693, which requires federal agencies to measure, manage, and reduce greenhouse gas emissions.
- Communicate program information and projected vehicle recapitalization needs.

### *Updates in the 2020 Inventory*

After the 2019 inventory, the Washington Program Office worked with Financial and Business Management System managers and the Volpe Center to clearly define on-road vehicle types used in the inventory. Each on-road vehicle included in the 2019 National Transit Inventory was reviewed to confirm the vehicle type based on the following standards:

- Passenger van chassis: Standard or extended passenger vehicle
  - Light-duty passenger van: Gross vehicle weight rating (GVWR) of less than 10,000 pounds
- Truck chassis: Work truck chassis, front cab included
  - Light-duty shuttle GVWR of less than 10,000 pounds
  - Medium-duty shuttle GVWR between 10,000–25,999 pounds
- Transit bus chassis: longer width with no front cab
  - Medium-duty transit GVWR between 10,001–25,999 pounds
  - Heavy-duty transit GVWR greater than 26,000 pounds

The reclassification may result in different counts of vehicle types compared to previous inventories.

As part of the reporting, the National Park Service developed an online reporting tool using Microsoft Power BI that compiles the inventory data into a coherent and interactive report. The national transit

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<sup>1</sup> 23 USC 203 Federal lands transportation program: <https://www.gpo.gov/fdsys/pkg/USCODE-2014-title23/pdf/USCODE-2014-title23-chap2-sec203.pdf>.





inventory and performance report will continue to be updated annually so that transit managers can gain insight to transit trends over time..

Beginning in 2020, the collection period was shifted from calendar year (January 2020–December 2020) to fiscal year (October 2019–September 2020) to better align with other NPS data collection, systems of record, and reporting efforts.

## *Data Collection and Methodology*

Each year, the same definition of NPS transit systems is used to ensure consistent data collection across the nation and over time. Only parks with systems that meet each of the following three criteria listed below are included in this effort (see appendix C for more information).

1. The NPS transit systems move people by motorized vehicle on a regularly scheduled service.<sup>2</sup>
2. The NPS transit systems operate under one of the following business models: concessions contract; service contract; partner agreement including memorandum of understanding, memorandum of agreement, or cooperative agreement (commercial use agreements are not included); or is NPS-owned and operated.<sup>3</sup>
3. All routes and services at a given park that are operated under the same business model by the same operator are considered a single NPS transit system.

The 2020 NPS transit inventory is limited to systems in which the National Park Service either has a direct financial stake or has committed resources to develop a formal contract or agreement.

The following information was collected for the 2020 fiscal year:

- Transit system name and description
- Passenger boardings
- Business model
- System purpose
- System type/mode
- System level safety
- Vehicle information including fuel type, capacity, service miles, engines, horsepower, accessibility, and age
- Owner and operator type (National Park Service or non-National Park Service) and contact information
- Operating schedule
- Participation of a local transit agency in the service
- Safety metrics (accident occurrence and property damage)
- COVID-19 operation information

For the 2020 inventory, 49 parks provided information. Some parks reported incomplete information because they do not track the requested service information or they could not provide the information before the end of the data collection period. Specific to the 2020 inventory data collection process, some parks reported that they were unable to collect data from concessioners due to the COVID-19 pandemic.

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<sup>2</sup> This criterion includes services with a posted schedule and standard operating seasons/days of week/hours. Services that do not operate on a fixed route are charter services for individual groups or exist for the sole purpose of providing access to persons with disabilities, are not included.

<sup>3</sup> This report does not distinguish between a memorandum of understanding, memorandum of agreement, or cooperative agreement. All are recorded as “cooperative agreement.”



For the purposes of this report, 66 of 96 identified transit systems operated in fiscal year 2020. Non-operating transit systems and associated vehicles have not been included unless specifically stated.

Appendix D includes a full list of surveyed transit systems by region.

## Inventory Results

Detailed findings of the 2020 inventory are presented in the Vehicle Inventory Statistics, System Characteristics, and Passenger Boardings sections below.

### *Vehicles Inventory Statistics*

Table 1 summarizes the differences in key results of the NPS transit inventories over the last five years.

**Table 1: NPS transit systems changes between inventories (2016 to 2020)**

Note: NPS=National Park Service.

Source: 2016–2020 NPS transit inventory data

Key Findings	2016 <sup>4</sup>	2017	2018	2019	2020 <sup>5</sup>
Number of Systems	100	99	95	95	66
Number of Parks Represented	64	65	60	60	49
Passenger Boardings (millions)	43.6	43.7	42.1	45.9	11.1
• Excluding 10 Highest Ridership Systems	7.0	7.0	7.0	7.1	1.1
Number of Vehicles	843	873	976	835	673
• NPS-Owned Vehicles	278	262	281	236	149
• Non-NPS Vehicles	565	611	695	599	524
Systems Operated by Local Transit Agency	13	13	9	9	3

The Akers Ferry at Ozark National Park was the only system added in 2020.<sup>6</sup> There are a total of 96 systems within the National Park Service, 66 of which operated in some capacity, in the 2020 inventory. Thirty systems did not operate in 2020 because of the COVID-19 pandemic.

Passenger boardings decreased by 34.5 million, 76%, reflecting closures and limited operations. The decrease in boardings greatly surpasses the 24% decrease in visitation across the entire national park system from 2019 to 2020, possibly indicating that while visitors continued to come to national parks, they did not choose to use transit systems if they were available.

<sup>4</sup> The list of systems in 2016 were reevaluated to ensure that all systems met the definition of transit used for the report. As a result, 28 systems included in 2015 were removed from the 2016 report, contributing to the overall reduction in the number of systems between 2015 and 2016.

<sup>5</sup> The information for fiscal year 2020 only includes data from systems that operated.

<sup>6</sup> The Akers Ferry previously existed but had not participated in the inventory.



## System Characteristics

The 2020 inventory identified 66 operating systems in 49 parks. Figures 1 and 2 place these systems in the context of the primary system purpose, mode, and business model. Results for system characteristics in 2020 are similar to the results reported in 2019 except for the number of systems that operated.

### System Purpose

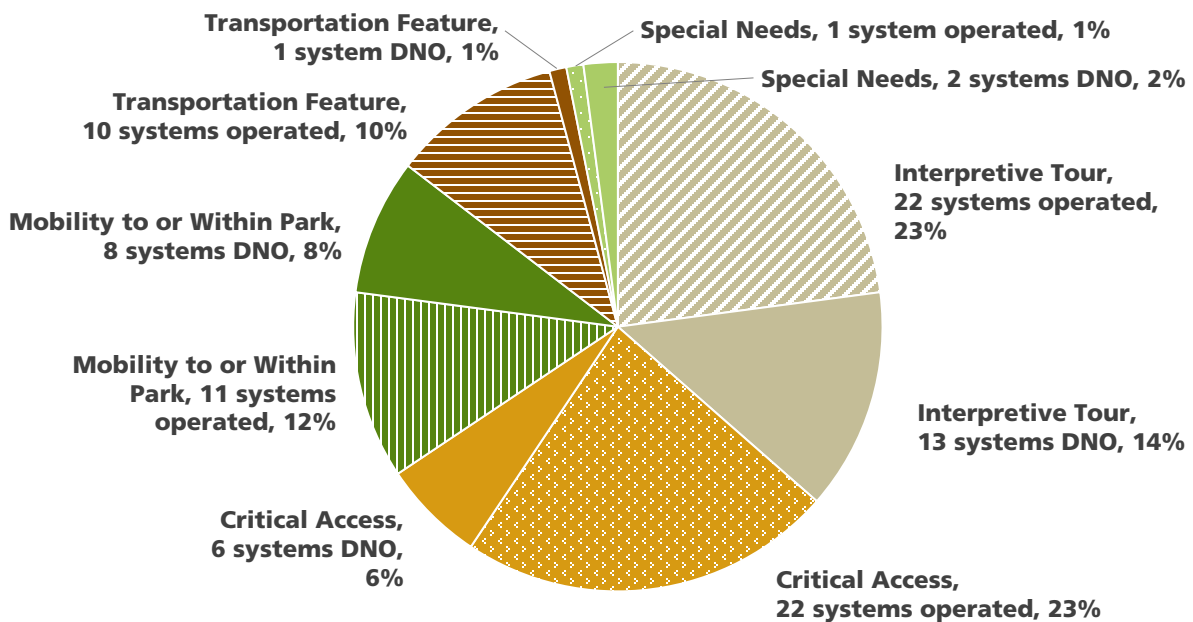
Park staff categorized each of their transit systems into one of the five following primary purposes (figure 1):

- 22 systems are guided **interpretive tours**.
- 22 systems provide **critical access** to an NPS park or site that is not readily accessible to the public due to geographic constraints, park resource management decisions, or parking lot congestion.
- 11 systems provide **mobility to or within a park** as a supplement to private automobile access.
- 10 systems are considered a **transportation feature** (a primary attraction of the park).
- 1 system is designed to meet the **intermittent accessibility** needs of visitors.

**Figure 1: Systems by primary purpose**

Note: (N=96 systems), DNO=did not operate

Source: 2020 NPS transit inventory data



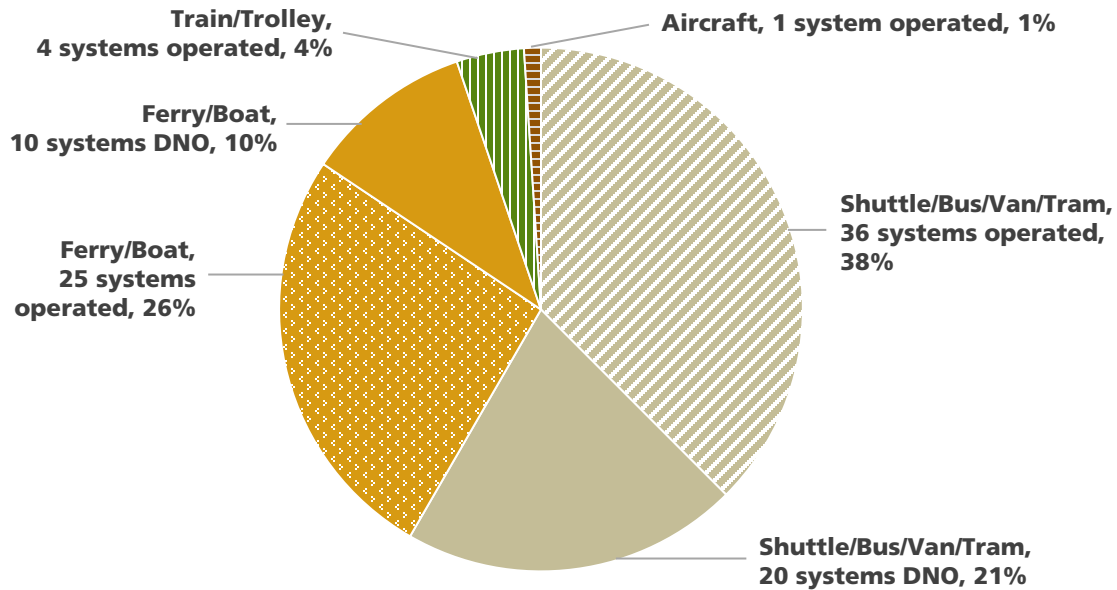
## Mode

The 2020 transit inventory identified four modes operating in NPS transit systems. The majority of the transit systems are shuttle/bus/van/tram systems (37 systems, 56%), followed by ferry/boat (25 systems, 38%), train/trolley (3 systems, 5%), and plane (1 system, 1%) (figure 2).

**Figure 2: Systems by vehicle mode**

Note: N=96 systems, DNO=did not operate

Source: 2020 NPS transit inventory data



## Business Models

NPS transit systems typically operate under one of four types of business models (table 2, figure 3).

- **Concession Contracts:** In 2020, 34 of the transit systems operated through concession contracts in which a private concessioner pays the National Park Service a franchise fee to operate inside a park. Five concession contract systems used vehicle fleets exclusively owned by the National Park Service. An additional three systems have a mixed ownership fleet.
- **Service Contracts:** Transit systems that are owned and/or operated by a private firm use service contracts. In 2020, 10 transit systems operated under a service contract. Out of the 10 service contract systems, 5 service contract systems used vehicle fleets owned by the National Park Service.
- **Cooperative Agreements:**<sup>7</sup> Nine transit systems operated under an agreement in 2020. Only one of those systems is owned by the National Park Service.
- **NPS Owned and Operated:** In 2020, the National Park Service owned vehicle fleets for 24 system and operated 13 of those systems.<sup>8</sup> These owned-and-operated systems tend to be small and

<sup>7</sup> The National Park Service Alternative Transportation Program uses ‘cooperative agreement’ as a general term, encompassing all qualifying partner agreements (memorandum of understanding, memorandum of agreement, and cooperative agreement).

<sup>8</sup> The National Park Service maintained ownership of vehicle fleets for 35 systems in 2020. Eleven systems with NPS-owned vehicle fleets were idle in 2020.



provided critical access to a park or park site, were interpretive tours, provided service for special needs visitors, or were not easily provided by a private operator.

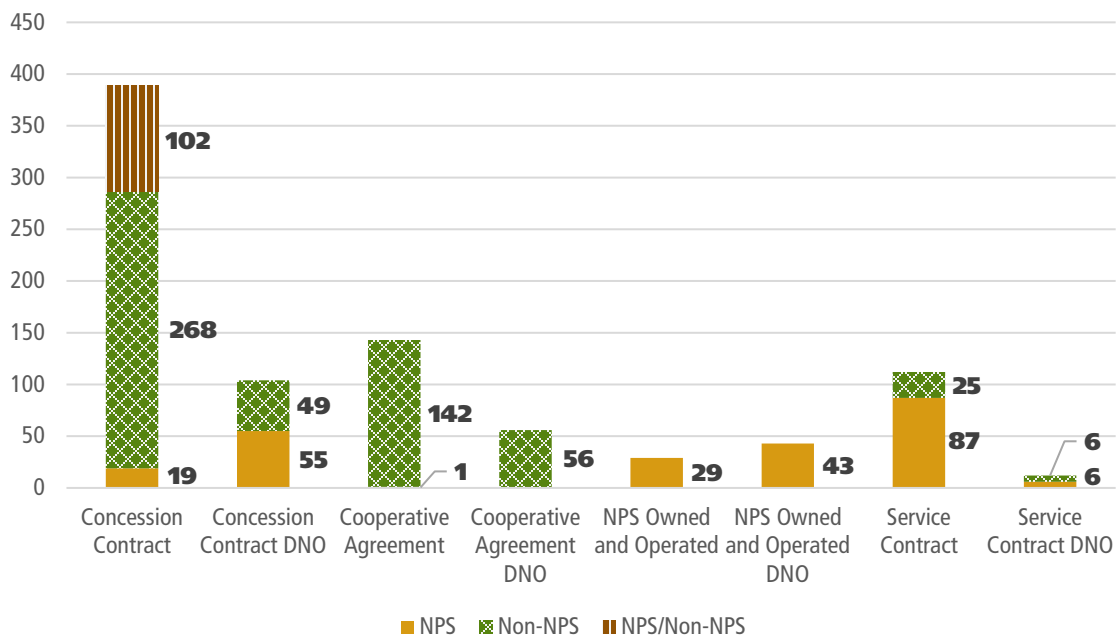
**Table 2: Systems by primary purpose**

Notes: N=96 systems; DNO=did not operate; NPS=National Park Service  
Source: 2020 NPS transit inventory data

System	Concession Contract	Cooperative Agreement	NPS Owned and Operated	Service Contract	Total
Critical Access	11, 2 DNO	1, 1 DNO	6, 1 DNO	4, 2 DNO	22, 6 DNO
Interpretive Tour	15, 10 DNO	3, 1 DNO	4, 2 DNO	0	22, 13 DNO
Mobility to or within the Park	2, 2 DNO	4, 3 DNO	1, 2 DNO	4, 1 DNO	11, 8 DNO
Special Needs	0	0	1, 2 DNO	0	1, 2 DNO
Transportation Feature	6, 1 DNO	1	1	2	10, 1 DNO
<b>Total</b>	<b>34, 15 DNO</b>	<b>9, 5 DNO</b>	<b>13, 7 DNO</b>	<b>10, 3 DNO</b>	<b>66, 30 DNO</b>

**Figure 3: Fleet system ownership by business model**

Source: 2020 NPS transit inventory data



## Passenger Boardings

In 2020, 11 million passenger boardings occurred across all NPS transit systems.<sup>9</sup> Excluding concession contracts and cooperative agreements, NPS-owned and operated systems and service contract systems reported 3.9 million trips (35% of total boardings) in 2020.

Parks use various methodologies to count boardings. Most systems indirectly record passenger boardings through ticket sales (6.3 million) and manual counts (3.5 million). Estimated, automated, and other counter methodologies account for the remaining approximately 1.4 million passenger boardings.

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**Table 3: Count methodology**

Source: 2020 NPS transit inventory data

Count Methodology	Number of Systems	Passenger Boardings
Ticket Sales	32	6,225,032
Manual	25	3,452,878
Estimated	3	1,232,759
Other	4	9,159
Automatic	2	178,524

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Approximately 90% (9.9 million) of boardings on NPS transit systems in 2020 are attributable to 10 systems (table 4). Three systems from the 2019 top 10 list did not make the top 10 list in 2020.<sup>10</sup>

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<sup>9</sup> A “passenger boarding” or “unlinked trip” occurs each time a passenger boards a vehicle. This is an industry-standard measure used in the Federal Transit Administration’s National Transit Database.

<sup>10</sup> The Yosemite Valley Shuttle did not operate in 2020. Alcatraz Cruises Ferry (Golden Gate National Recreation Area) operated January – March 2020. The Giant Forest Shuttle (Sequoia National Park) operated November 2019 – January 2020.



**Table 4: Passenger boardings for the 10 highest use transit systems**

Source: 2020 NPS transit inventory data

Rank	Park	System Name	2020 Boardings	Business Model	System Purpose
1	STL/ELIS	Statue of Liberty Ferries	3,257,598	Concession Contract	Critical Access
2	NAMA	DC Circulator	2,005,653	Cooperative Agreement	Transportation Feature
3	ZION	Zion Canyon Shuttle	1,532,052	Service Contract	Critical Access
4	GRCA	South Rim Shuttle Service	1,142,098	Service Contract	Mobility to or within Park
5	PERL	USS Arizona Memorial Tour	595,279	Cooperative Agreement	Interpretive Tour
6	DINO	Tram Transit	504,000	Service Contract	Critical Access
7	ROMO	Rocky Mountain National Park Visitor Shuttle	409,565	Service Contract	Mobility to or within Park
8	GRTE	Jenny Lake Shuttle Boat	207,047	Concession Contract	Mobility to or within Park
9	BRCA	Bryce Canyon Shuttle and Rainbow Point Shuttle	178,524	Service Contract	Mobility to or within Park
10	GRCA	Grand Canton Railway	167,424	Concession Contract	Mobility to or within Park

Notes: BRCA=Bryce Canyon National Park; DINO=Dinosaur National Monument; ELIS=Ellis Island; GRTE=Grand Teton National Park; GRCA=Grand Canyon National Park; NAMA=National Mall and Memorial Parks; NPS=National Park Service; PERL=Pearl Harbor National Memorial; ROMO=Rocky Mountain National Park; STL=Statue of Liberty National Monument; ZION=Zion National Park.

High-ridership shuttle systems are typically provided via service contracts, concession contracts, and cooperative agreements. A greater proportion of the water-based systems are provided through concession contracts and either provide critical access to parks and park sites or serve as interpretive tours.

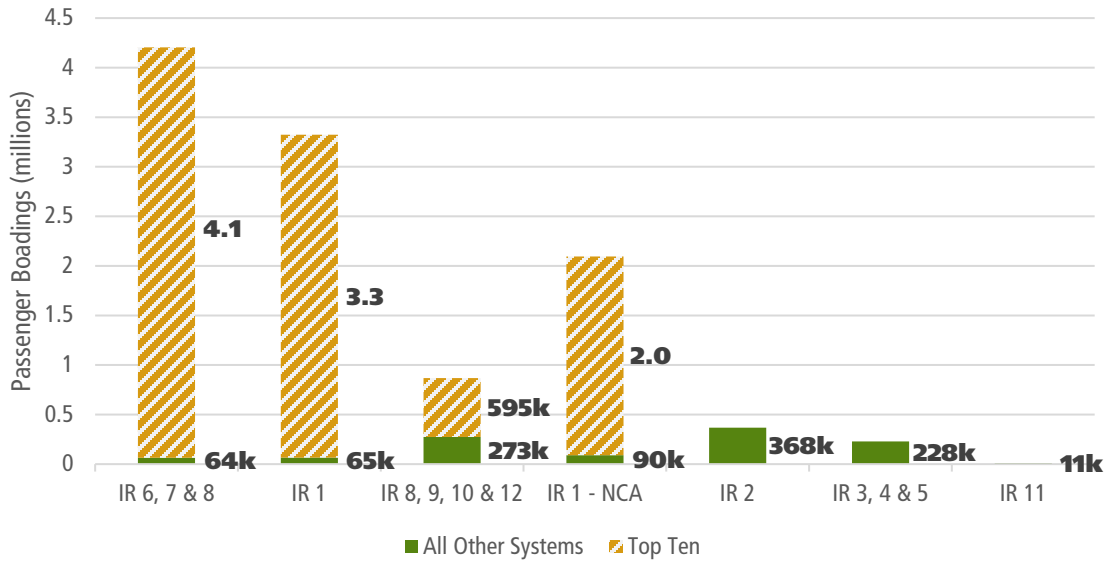
The National Park Service partnered with two local transit agencies in 2020; those partnerships accounted for just over 2 million passenger boardings in that year. Passenger boardings among NPS owned and operated systems (13 systems) accounted for 29,191 passenger boardings. Most of these systems provide either critical access to a site or an interpretive experience for visitors.

Interior Regions 6, 7, and 8 and Interior Region 1 each reported more than 3 million passenger boardings in 2020, exceeding other regions. Interior Region 1 – National Capital Area reported more than 2 million passenger boardings. However, if the 10 highest use systems are excluded, each region ranged from 11,000 to 300,000 passenger boardings in 2020 (figure 4).



### Figure 4: Passenger boardings by NPS region

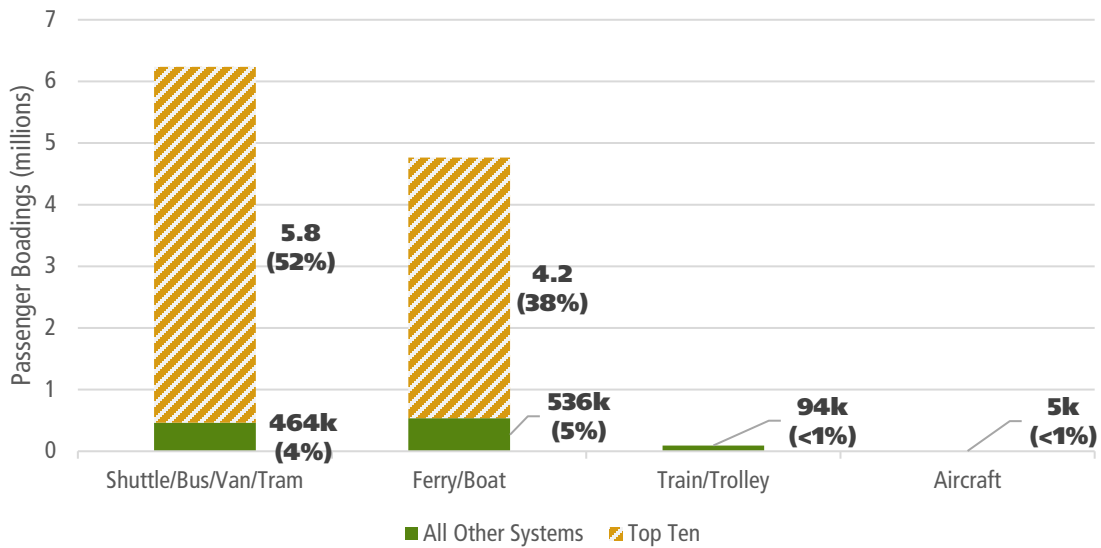
Notes: N=66 systems; IR=Interior Region; NCA=National Capital Area; NPS=National Park Service  
 Source: 2020 NPS transit inventory data



Over half (56%) of passenger boardings were in systems that use shuttles, buses, vans, or trams, and 42% were in water-based systems that use boats and ferries. Trains, trolleys, and aircraft accounted for only about 0.8% of all passenger boardings (figure 5).

### Figure 5: Passenger boardings by mode

Note: N=66 systems  
 Source: 2020 NPS transit inventory data



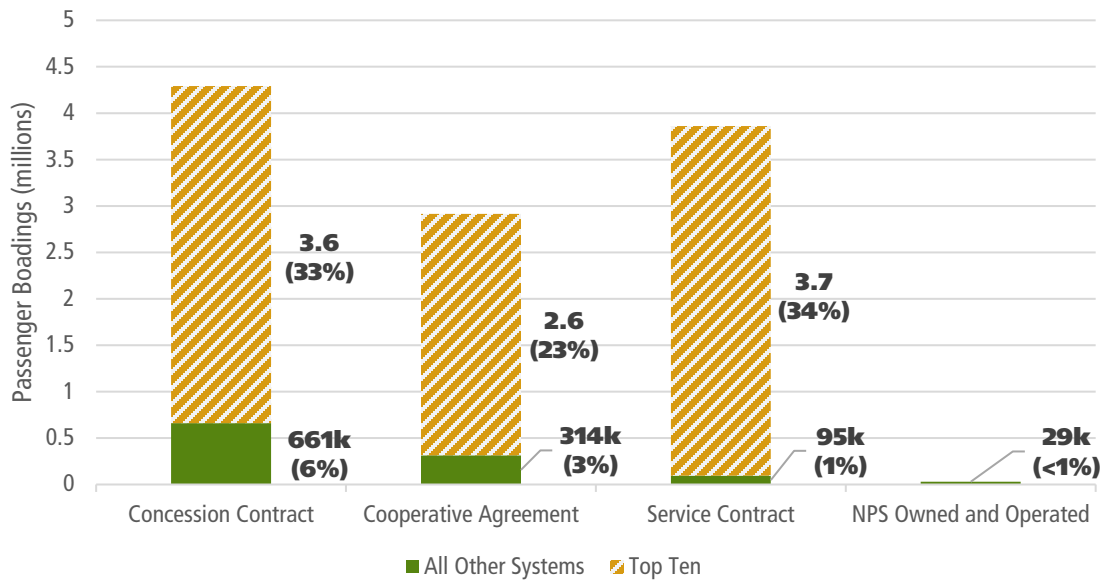


Less than half of passenger boardings (39%) took place on systems operated using concession contracts. Service contracts carried 35% of passenger boardings and 26% used cooperative agreements. NPS owned and operated systems carried 0.3% of boardings (see figure 6). Excluding the 10 highest use systems, concession contracts accounted for the most boardings (6%), followed by cooperative agreements (3%) and services contracts (1%).

**Figure 6: Passenger boardings by business model**

Notes: N=66 systems; NPS=National Park Service

Source: 2020 NPS transit inventory data



## Vehicles and Vessels

### Vehicle Fleets

In 2020, half of the transit systems (34 systems, or 51.5%) operated under concession contracts, of which 5 used fleets owned exclusively by the National Park Service. The National Park Service owned and operated 13 transit systems (19.6%); these tend to be small and provided critical access, interpretive tours, or mobility to or within the park in ways not easily provided by a private operator. Systems managed through cooperative agreements account for 9 of the systems (13.6%); all but 1 used vehicle fleets not owned by the National Park Service. The remaining 10 transit systems (15.1%) operate under service contracts; of these, 5 use vehicle fleets owned by the National Park Service,<sup>11</sup> including the large systems at Grand Canyon National Park and Zion National Parks.

<sup>11</sup> The five systems operating 87 NPS-owned vehicles under a service contract are: Adams Trolley, Grand Canyon South Rim Shuttle, Harpers Ferry Shuttle Transport, Kennesaw Mountain Shuttle Bus, and Zion Canyon Shuttle.



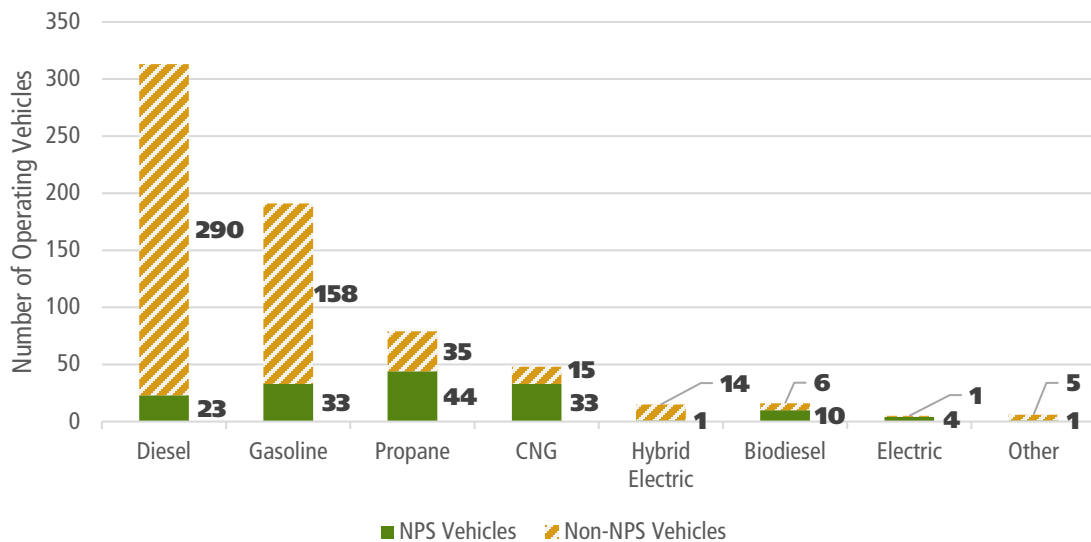
For the active fleet reporting in 2020:

- NPS owned:<sup>12</sup>
  - 24 systems used National Park Service owned fleets; 3 systems used mixed ownership fleets.
  - 149 vehicles operated 104 vehicles did not operate. Of the systems with NPS-owned fleets, one system had a capacity for no more than 10 passengers, five systems had capacity for 11–20 passengers, five systems had capacity for 20–39 passengers, and six systems had capacities over 40 passengers. Four systems did not report vehicle capacity information.
- Non-NPS owned:<sup>13</sup>
  - 38 systems had non-NPS-owned fleets.
  - 524 vehicles operated 111 vehicles did not operate. Of the systems with non-NPS-owned or mixed ownership fleets, 8 systems had a capacity for no more than 10 passengers, three systems have capacity for 11–20 passengers, 5 systems have capacity for 20–39 passengers, and 24 systems had capacities over 40 passengers. Two systems did not report vehicle capacity information.

In some cases, contractors and concessioners were not able to provide vehicle data due to reasons related to COVID-19.

**Figure 7: Number of vehicles by fuel type**

Notes: N=673 active vehicles and vessels; DNO=did not operate; CNG=compressed natural gas; NPS=National Park Service  
 Source: 2020 NPS transit inventory data



<sup>12</sup> Three systems did not report: Coastguard Beach Shuttle (CACO), Pinnacle Shuttle (PINN), and Green River Ferry (MACA).

<sup>13</sup> Two systems did not report: Headlands Shuttle (PORE) and Watch Hill Ferry (FIIS).



**Table 5: Number of vehicles by fuel type**

Fleet	Diesel	Gasoline	Propane	CNG	Hybrid Electric	Biodiesel	Electric	Other	Total	% Alt Fuel
NPS-Owned	23	33	44	33	1	10	4	1	149	62%
Non-NPS Owned	290	158	35	15	14	6	1	5	524	14%
Total	313	191	79	48	15	16	5	6	673	23%

**Age of Vehicles**

All 149 active NPS-owned vehicles and 524 active non-NPS owned vehicles provided vehicle age data.

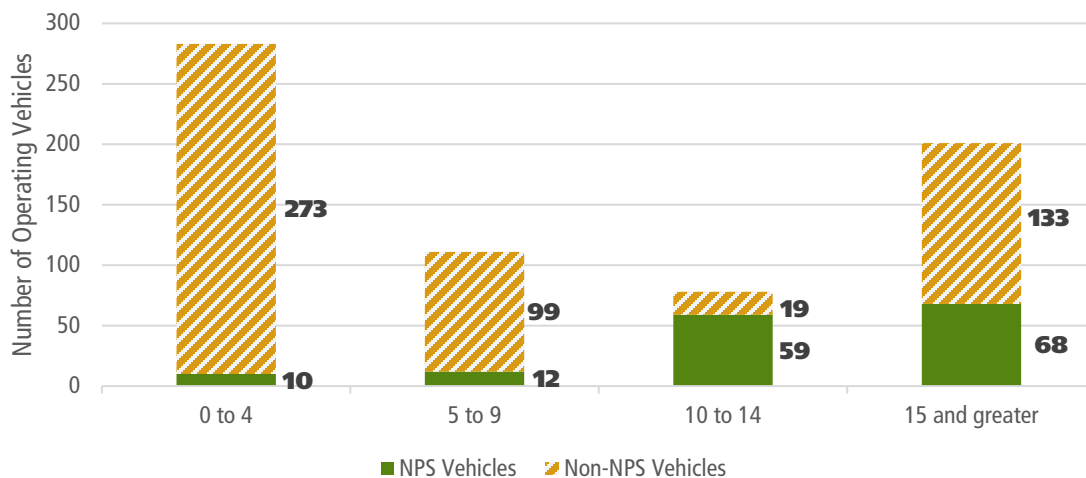
**Table 6: Vehicle ownership by age class**

Notes: N=673 active vehicles and vessels  
Source: 2020 NPS transit inventory data

Vehicle Ownership	0 to 4 Years Old	5 to 9 Years Old	10 to 14 Years Old	15 Years and Older	Total
National Park Service	10 6.7%	12 8%	59 39.6%	68 45.7%	149
Non-National Park Service	273 52.1%	99 18.9%	19 3.6%	133 25.4%	524
Total	283 42%	111 16.5%	78 11.6%	201 29.9%	673

**Figure 8: All vehicles by age class (years)**

Notes: N=673 active vehicles and vessels; NPS=National Park Service  
Source: 2020 NPS transit inventory data



The non-NPS fleet is decidedly newer. A larger overall proportion of newer non-NPS vehicles suggests that older vehicles have been retired at a higher rate in recent years. The replacement of older vehicles may reflect contract language requiring vehicles to be within a certain age range.



The active NPS-owned fleet, with 85% 10 years old or greater, puts many of the vehicles in the latter portion of their service lives. This suggests an enormous need for vehicle replacements in the next 10 years. In addition, parks must invest in the maintenance of older vehicles to not only keep them operating but extend the service life.

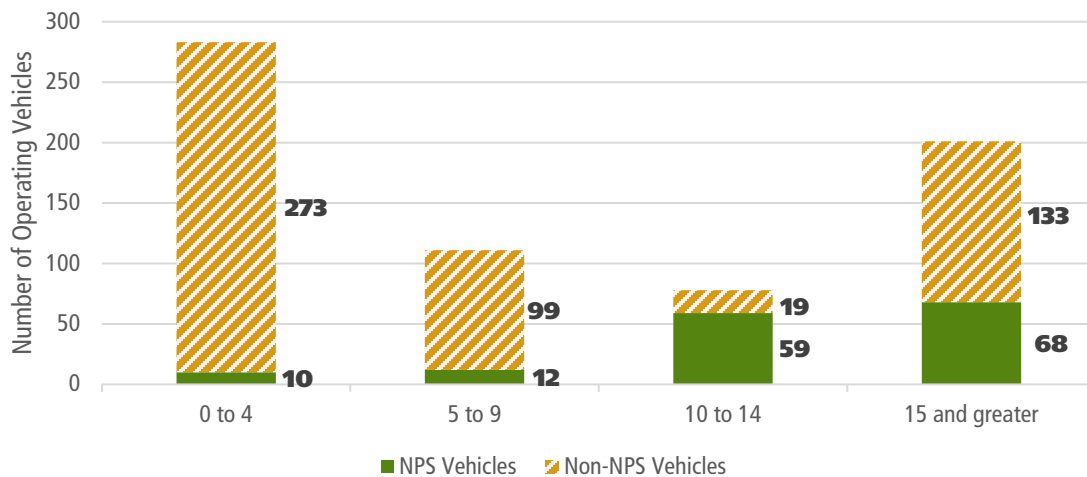
Transit vehicles operating in the parks are not used in the same way as urban transit vehicles. Park transit vehicles are typically not used for the entire year, nor are they used as intensively as vehicles operated in an urban environment. As a result, they may be in service for considerably longer lifespans, and recapitalization estimates should rely on park-specific estimates that depend on their specific use (see the “Asset Management” section and appendix F).

### Vessels

The National Park Service has 25 systems that use ferries or boats: 10 for critical access to park sites, 7 for interpretive tours, 7 are transportation features and 1 provides mobility to or within the park. The National Park Service owns 11 of these vessels and there are 85 non-NPS owned ferries or boats that operated in 2020. Vessels typically have a life cycle of 40–50 years. Gulf Islands National Seashore recently purchased two ferries in 2017 using funds from the Gulf oil spill. These boats were damaged during Hurricane Barry and did not operate in 2020. Fort Matanzas National Monument has two boats that need replaced with planned replacements beginning in 2021. The Ranger III at Isle Royale National Park is over 60 years old and has outlived its useful service life. A value analysis completed in 2019 indicates the need for a new Ranger IV at a cost of \$40–60 million.

**Figure 9: All vehicles by age class (years)**

Notes: N=673 active vehicles and vessels; NPS=National Park Service  
Source: 2020 NPS transit inventory data



### Performance Measures

The NPS Alternative Transportation Program (ATP) seeks to use meaningful, reliable data. The objective is to use measurable, applicable, and achievable performance measures and metrics to guide and support decision making and management of NPS transit systems.

The performance measures below are split into the following sections that correspond to ATP goals and the [NPS National Long Range Transportation Plan](#): visitor experience, operations, environmental impact, and asset management. The Alternative Transportation Program goals are included in appendix B.



## Visitor Experience

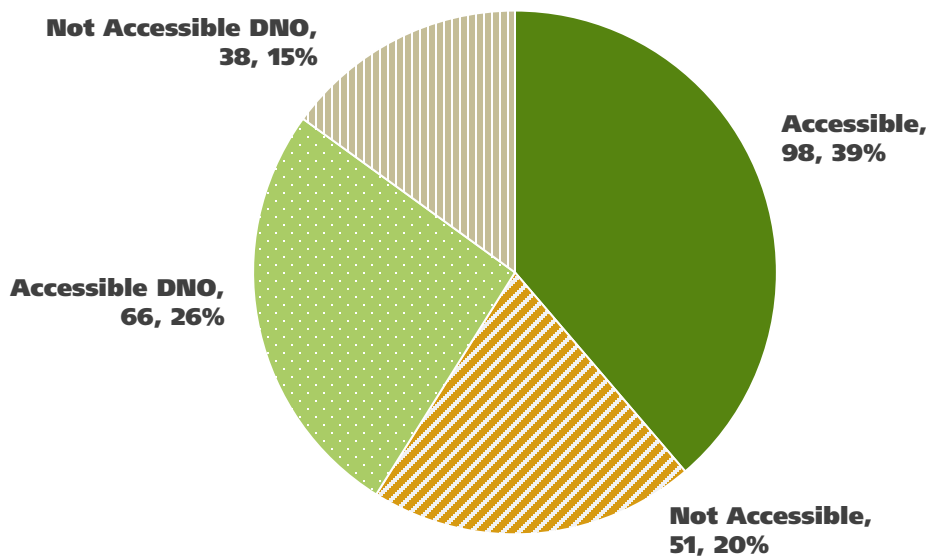
This performance area addresses how park transportation systems enhance the visitor experience. For 2020, the visitor experience performance measure includes accessibility for mobility-impaired park visitors.

### Accessibility for Visitors with Disabilities

In 2020, the majority of NPS-owned transit vehicles and vessels (65.8%, 66 vehicles) were accessible for people with mobility impairments (figure 10). This proportion is slightly reduced from 2019, likely because more active and inactive vehicles were added to the inventory this year. Of the 24 systems with NPS-owned vehicles or vessels, 8 do not have vehicles or vessels that are accessible: this number increased by one from 2019 with the addition of Akers Ferry (OZAR). However, while the ferry itself is not accessible, passengers can drive on the ferry and remain in their vehicle.

**Figure 10: Accessibility of NPS-owned transit vehicles**

Notes: N=253 vehicles and vessels; DNO=did not operate; NPS=National Park Service  
Source: 2020 NPS transit inventory data



## Operations

This section evaluates the operational performance of the NPS transit systems by measuring the annual percent change in boardings over the last five years. In 2018, the reduced number of boardings may be attributed to a more-intense-than-usual hurricane season and the 2018 government shutdown, along with impacts from nonreporting parks. In 2020, the reduced number of boardings is attributed to park closures and limited or no transit system operations due to the COVID-19 pandemic.

### Year-to-Year Trends in Boardings

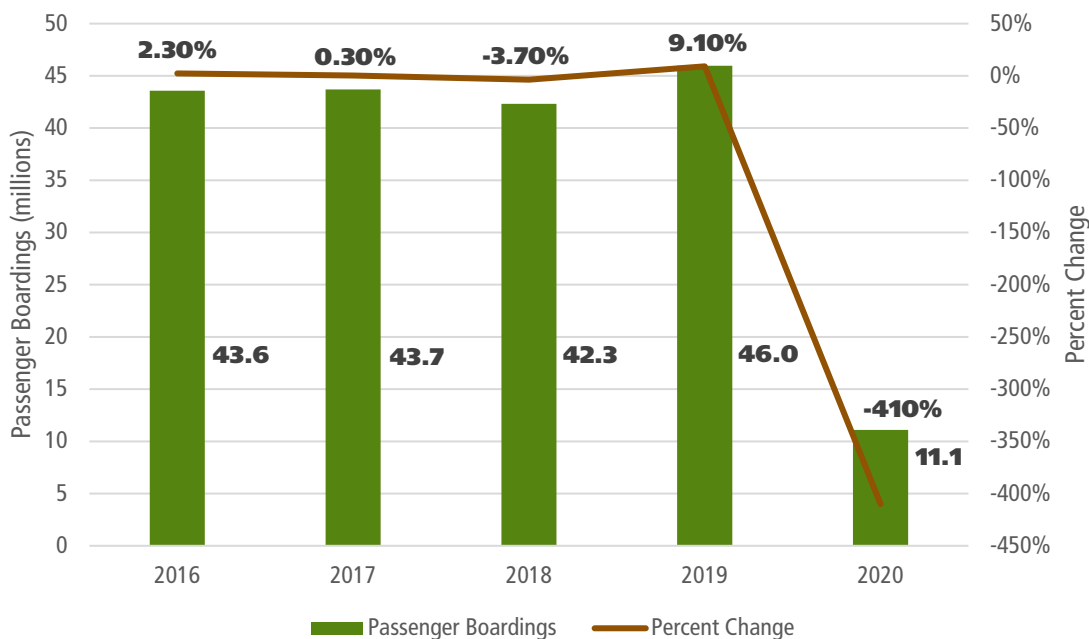
Figure 11 shows the percent change in boardings from 2016 to 2020. In 2016, the list of systems was reevaluated by applying the definition of transit from appendix C. The result was the removal of several systems that were under commercial use agreements (CUAs) from the inventory. The removal of the CUA systems influenced the reported change in boardings between 2015 and 2016.

Absolute boardings continued to increase in most of the prior years, except in 2018 when the absolute ridership dipped slightly due to the government shutdown and in 2020 due to the pandemic (table 1). Since the first inventory, parks have acquired more sophisticated methods for counting system boardings and have refined their boardings estimates over time. A less volatile rate of change may simply indicate an improvement in the reliability of more recent estimates.

Although the National Park Service had 27.6% drop in visitation overall in 2020, the number of parks experienced record crowds and welcomed new visitors. Overall, 15 parks set new visitation records in 2020, 5 of those records were set in 2019. Assateague Island National Seashore, Cape Cod National Seashore, Cape Lookout National Seashore, and Eugene O'Neill National Historic Site had more visitors in July 2020 than July 2019.

**Figure 91: Percent change in boardings from 2015 to 2020**

Notes: HAFE=Harpers Ferry National Historical Park; GRCA=Grand Canyon National Park; ZION=Zion National Park  
Source: 2015–2020 NPS transit inventory data



### Service Schedule

The 2020 inventory did not collect service schedules due to the pandemic. Anecdotally, systems that traditionally operate during the winter operated between January and early March. Many of the 66 systems that did operate initiated limited operations with COVID-19 mitigations in place at some point in the year. Please see the special section, “Transit System Operations During the Pandemic.”

### Safety

The 2020 inventory included questions regarding safety at the system level. Visitor and workforce safety are among the highest NPS priorities, and transportation is a significant source of risk to the safety of NPS transportation system users. Collecting safety and crash information for transit systems informs the *NPS National Long Range Transportation Plan’s* transportation safety goals and performance metrics.

In 2020, three NPS transit systems reported a traffic accident; of those, one had passengers on board during the accident (table 7). None of these accidents resulted in an injury or fatality nor involved pedestrians or bicyclists. Two systems reported minor vehicle damage and two systems had multiple accidents with varying level of damage. All three systems reported accidents due to driver error and one system reported an accident due to the error of others.

- **Harpers Ferry Shuttle Transport (HAFE):** One accident in which the top part of the cab was damaged, and bus was removed from service for repairs. Another accident in which the bus has two dents on the driver side but still able to operate.
- **Zion Shuttle (ZION):** Minor accidents required little to no down time. Cost of repairs in 2020 was \$1,702.00.
- **South Rim Shuttle Service (GRCA):** A few minor accidents occurred; some were due to driver error and some due to the error of others.

**Table 7: Response to safety and operational questions**

Source: 2020 NPS transit inventory data

Park	System Name	Passengers on Board	Injuries or Fatalities	Bicycles or Pedestrians	Accident Occurred on Route	Result of Driver Error	Real Property Damaged
HAFE	Harpers Ferry Shuttle Transport	No	No	No	No	Yes	No
GRCA	South Rim Shuttle Service	Yes	No	No	Yes	Yes	No
ZION	Zion Canyon Shuttle	No	No	No	Yes	Yes	No



## Environmental Impact

Since 2017, the transit inventory uses the US Environmental Protection Agency's (EPA) Motor Vehicle Emissions Simulator (MOVES) for estimating NPS transit vehicle emissions.<sup>14</sup> The Motor Vehicle Emissions Simulator is a state-of-the-science emissions modeling software that uses preloaded measurement data to estimate emissions rates for different vehicle types, model years, fuel types, and road types across several Clean Air Act criteria pollutants “from the bottom-up” for both on- and off-road vehicles, including waterborne vessels. MOVES software is also the regulatory standard for emissions inventory analyses under the Clean Air Act and related legislation.<sup>15</sup> MOVES software bases emissions estimates on observations of actual vehicle operations.

This section describes the results of the 2020 emissions analysis with respect to carbon dioxide (CO<sub>2</sub>). The results for the other criteria pollutants—nitrogen oxides (NO<sub>x</sub>), volatile organic compounds (VOCs), and particulate matter—as well as a detailed description of the analysis methodology, are presented in appendix E. Due to the COVID-19 pandemic, emitting activity significantly decreased (i.e., a decrease in vehicle miles traveled; VMT) in the 2020 system inventory. In addition, some systems were captured in the 2019 inventory but not in 2020 and vice versa. Thus, the 2020 results differ from 2019. As data collection becomes more consistent over the next few years, these results are expected to stabilize and results may be more directly compared year to year.

### Annual CO<sub>2</sub> Emissions

Figure 12 shows the results of MOVES CO<sub>2</sub> emissions modeling for transit systems, aggregated to the regional level and split by ownership. Across all regions, NPS-owned transit fleets emitted just under 2,000 metric tons of CO<sub>2</sub> in 2020. Regions 8, 9, 10, and 12 emitted the greatest amount of CO<sub>2</sub>, with a large number of transit systems in each region and many operating in rural and hilly areas. In contrast, a substantial part of the National Capital Area’s transit system’s operations occurs on relatively flat urban streets. Table 8 shows the distribution of vehicles, miles traveled, and associated CO<sub>2</sub> emissions.

**Table 8: Distribution of miles and CO<sub>2</sub> emissions by vehicle ownership**

Notes: N=673<sup>16</sup> vehicles and vessels

Source: 2020 NPS transit inventory data

Ownership	Vehicles (number)	Vehicles (percent)	Miles Traveled	Miles (percent)	CO <sub>2</sub> (metric tons)	CO <sub>2</sub> (percent)
NPS Owned	149	22%	1,020,698	30%	1,947.27	15%
Non-NPS Owned	524	78%	2,388,012	70%	10,926.2	85%
<b>Total:</b>	<b>673</b>	<b>100%</b>	<b>3,408,710</b>	<b>100%</b>	<b>12,873.5</b>	<b>100%</b>

<sup>14</sup> This national transit inventory uses version MOVES2014b, which includes updates published in August 2018.

<sup>15</sup> “Official Release of the MOVES2014 Motor Vehicle Emissions Model for SIPs and Transportation Conformity.” Federal Register 79:194 (October 7, 2014) p. 60343. Available from the Government Publishing Office at: <https://www.gpo.gov/fdsys/pkg/FR-2014-10-07/pdf/2014-23258.pdf>.

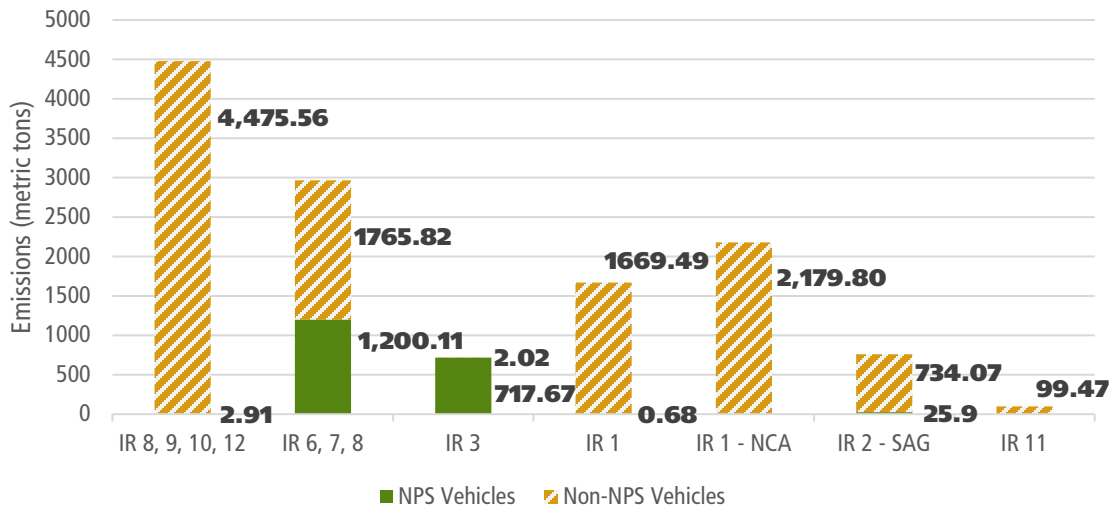
<sup>16</sup> Due to data gaps, an N of 673 vehicles is used for the emissions analysis. In addition to excluding vehicles with missing data, snow coach, aircraft, and rail operations are not analyzed in the emissions analysis. This data also only counts vehicles that operated in 2020.





**Figure 12: Annual CO<sub>2</sub> emissions**

Source: 2020 NPS transit inventory data



### Diverted Passenger Vehicle Trips and CO<sub>2</sub> Emissions Avoided

The benefits of using transit include:

- reduction of the number of vehicle trips in parks,
- congestion relief on park roads by carrying more people per square foot of road space,
- elimination of associated fuel-inefficient driving behaviors like extended idling and stop-and-go,
- potential to influence how visitors spend their time in the park, and
- removal of long lines of cars from viewsheds.

Servicewide, an estimated 4.2 million private vehicle trips were eliminated in 2020 with a reduction in of nearly 44,000 metric tons of CO<sub>2</sub> emissions; without transit service, there would have meant an additional 114 million miles driven in private vehicles. Transit systems emitted 12,874 metric tons of CO<sub>2</sub> in 2020. As stated previously, regions with high transit use and more boardings divert more personal vehicles from the road.



## Asset Management

Performance measurement for assets helps support the long-term financial viability of the transit systems through tracking the age of NPS-owned vehicle fleets and estimating fleet recapitalization costs. In this context, “vehicles” refers only to on-road motorized vehicles and excludes nonroad transportation, such as ferries, locomotives, snow coaches, and aircraft. Any of those described in table 9 are shown only for reference and were not analyzed for recapitalization estimates.

### Average Age of NPS Vehicles

Table 9 reports the aggregate average age for NPS-owned transit vehicles servicewide and includes all NPS-owned vehicles regardless of whether they operated or not in 2020. The average age of each NPS vehicle type is below the service life for most vehicle types, but many categories include vehicles older than their typical lifespan. In the case of medium-duty transit, the average age exceeds the service life. Notably, 39 vehicles will exceed their service life in next three years; of these, 35 are heavy-duty transit or medium-duty shuttles. On average, heavy- and medium-duty shuttle buses are the newest vehicles in the NPS-owned fleet, which is reflective of the fleet replacements occurring at Glacier, Grand Canyon, Yosemite, and Zion National Parks.

**Table 9: Vehicle age for NPS transit vehicle types<sup>17</sup>**

Notes: N=220 vehicles and vessels<sup>18</sup>; N/A=not applicable

Source: 2020 NPS transit inventory data

Vehicle Type	Average Age	Number of Vehicles	Service Life (years)	Number of Vehicles Beyond Service Life
6-12 Pax Electric Tram	3	2	11	0
Passenger Van	13.1	29	10	25
Light-Duty Shuttle	8.57	7	15	1
Medium-Duty Shuttle	10.29	38	15	6
Medium-Duty Transit	18.29	34	18	26
Heavy-Duty Transit	11.38	69	18	3
Ferry/Boat	20.80	15	N/A	N/A
Train/Streetcar	43	4	N/A	N/A
School Bus	15.14	7	18	1
Snowmobile/Snow Coach	52	12	N/A	N/A
Van	6.5	2	10	0
<b>Total:</b>	<b>–</b>	<b>253</b>	<b>–</b>	<b>62</b>

<sup>17</sup> The recategorization of the NPS fleet vehicles described in the “Updates in the 2020 Inventory” section resulted in new categories and shifting vehicles to more appropriate vehicle type categories compared to past inventories.

<sup>18</sup> The GLAC Red Bus Tours vehicles were excluded from this analysis, as they have been extensively retrofitted during their 80 plus years in service.



## Estimated Vehicle Recapitalization Needs

Estimates of NPS-owned vehicle replacement needs begin with vehicle ages, along with the standard replacement costs and service life assumptions shown in appendix F. Each park is responsible for determining when a vehicle needs to be replaced, which is dependent on funding availability and other factors. Service life is highly dependent on vehicle use, in addition to vehicle age; therefore, more detailed information is needed before determining if a vehicle is truly due for replacement.

Based on an analysis using the methodology outlined in appendix F, the National Park Service is facing a large fleet replacement need over the next 10 years and an estimated \$126.5 million in NPS-owned transit vehicle capital costs. These fleet replacements include legacy transit systems at Acadia, Yosemite, and Grand Canyon National Parks. Projected costs are calculated in 2020 dollars and may vary from year to year as vehicles from different systems are replaced or rehabilitated to extend their service life.

## Transit System Operations During the Pandemic

In March 2020, the National Park Service's transit systems initiated pandemic operations. The 2020 national transit inventory collected information from systems that operated in some capacity between March 2020 and September 2020. The national transit inventory also queried systems on planned operations for 2021. Across all the systems, parks were challenged: to address social distancing, to change visitation patterns, to implement operational changes, and to meet financial impacts while also adhering to local, state, and federal regulation. In addition, parks had to provide direction and manage safe environments for employees, concessioners, and visitors who use transit systems across the National Park Service.

In November 2020, the Park Planning, Facilities and Lands Directorate distributed the "Transportation System Operations COVID-19 Management Practice" and the "COVID-19 Standards Prevention and Mitigation" guidance. These documents provided a starting point for all systems to establish COVID-19 operations. The Washington Program Office continued support during the pandemic by updating the COVID-19 guidance documents, developing a COVID-19 revenue impact tool, supporting COVID-19 mitigation funding, and assisting with operation changes.

- **Developing and Implementing Operation Plans:** In the Intermountain Region, parks and service operators collaborated on the development of individual park COVID-19 mitigation plans using the Alternative Transportation Program COVID-19 guide and other Centers for Disease Control and Prevention (CDC), state, and local guidelines and regulations. The service contractor submitted the plan to the region. The regional public health staff provided input and recommendations and the regional alternative transportation program coordinator facilitated comment resolution between the park, region, and public health staff. Once complete, a park's transit systems could begin implementing the plan and operating.
- **Guideline Changes:** Understanding and adapting to changing regulations and guidelines and communicating those changes to passengers is challenging. Parks are using park staff, contracted staff, and volunteers at transit stops to help answer questions and enforce new rules.
- **Physical Changes:** Most systems implemented the six physical changes recommended by the November 2020 *Transportation System Operations: COVID-19 Best Management Practices* including, but not limited to, blocking or removing seats to encourage social distancing and enforce capacity; installing markers at transit stops to encourage social distancing; installing barriers to protect drivers; providing sanitation stations and masks; increasing cleaning frequency and using recommended sanitizing products; and opening windows to increase ventilation. Removing seats and installing barriers are some of the highest costs incurred by the park. Providing masks and hand sanitizer is a moderate cost.
- **Operational Changes:** Operational changes were required to maintain service while meeting capacity requirements. Parks used a mix of responses to address this challenge:
  - **Reservations:** At the park or transit system level, timed reservations were used to limit the number of passengers who had access to the system at one time. Reservation systems



enabled transit systems to safely operate within COVID-19 regulations while protecting employees, operators, and passengers. Reservation systems that were developed in 2020 are continuing in the 2021 season.

- **Route Options:** Some parks with multiple routes focused transit operations for routes where private vehicles are not permitted. As COVID-19 restrictions have relaxed, routes that were not operated in 2020 are slowly coming back online.
- **Eliminating Stops:** By eliminating stops along the route, transit systems reduced risk, particularly to drivers, by minimizing interactions. Eliminating transit stops or converting stops to “drop-off only” also reduced the amount of infrastructure modifications required.
- **Financial Impacts:** Systems that operated have requested reimbursement from COVID-19 relief funds and transportation fees with mixed results. In some cases, transportation was left out of funding opportunities to make modifications to protect health and safety of passengers and employees. Service operators and concessioners also reported difficulties offsetting costs of operating without rebounding visitation to help recovery.

## Next Steps

The inventory continues to provide essential information on NPS transit systems at the park, regional, and national levels. This effort allows stakeholders to understand the basic characteristics of NPS transit systems, including how many visitors are served, the number and types of transit systems, vehicle service life and fuel types, the business models under which these systems operate, and performance measures (including emissions).

The transit inventory collects annual operational information to supplement other data initiatives that focus on NPS fixed real property assets. This effort provides a consistent platform to efficiently gather information that can be compared through time and enables the National Park Service to examine disparate transit systems as a whole and evaluate their benefits and impacts. As visitation at national parks increases, transit systems remain important assets for reducing resource impacts from personal vehicles while improving access and enhancing the visitor experience.



The following lessons will be incorporated to improve future transit data calls:

- **Continued Coordination with Relevant NPS Stakeholders:** Continue sharing data and identifying ways the transit data can be used to support program missions, goals, and outcomes across the National Park Service. Consider stronger coordination with concessions and service contracts to include data requirements in new contracts.
- **Create New and/or Refine Existing Data Elements:** Continue to refine the number of fields in the data call, adding or removing data fields, as necessary, to gather only necessary information while limiting the burden of data collection on the park staff.
- **Improve the Data Collection Online Tool:** The online data collection tool moved to the Microsoft PowerApps platform in 2019, and user interface enhancements were updated for the 2020 inventory. A limitation of this tool is that it is restricted to NPS users only and concessioners are not able to access the tool. The option for concessioners to submit their data via spreadsheet was provided for 2020. The interactive web report was also updated for the 2020 analysis and report and efforts to include all historic inventory data in the web report are ongoing. The transition also opens opportunities to incorporate data from the transit inventory into the Alternative Transportation Service Lifecycle Asset Management dashboard and to connect to the Financial and Business Management System.
- **Continue to Expand Performance Measures Analysis:** Continue including additional performance measures to track progress of NPS transit systems over time and include in this report. Collaborate with other NPS planning efforts to provide measurable data. Shift safety questions to a quantitative input.
- **Communicate the Benefit and Impact of NPS Transit Systems to Visitors:** Consider communicating to visitors how their choice to use transit has a positive impact on park resources through reducing congestion and emissions from private vehicles. The positive impacts of transit use could be communicated in a variety of ways, such as consistent signage throughout the national park system, through social media, or on the NPS website.
- **Consider Multimodal Connections to Transit:** The transit inventory could be expanded to include connections to multiuse trails. Considering opportunities for bicycling and walking in national parks and connections to transit could give a better picture of the opportunities for exploring national parks without using a private vehicle.
- **Update the recapitalization analysis:** This year, the recapitalization analysis was used to generate real data from parks and create a baseline recapitalization plan. This baseline recapitalization effort will better inform future inventory and analysis efforts. Use real data from parks, project management information system statements, and the Parks Transportation Allocation and Tracking System to update cost assumptions on a per-vehicle (attached to vehicle identification numbers), per-system basis. Consider including recapitalization questions in the inventory data collection process. Integrate the national transit inventory with the developing vehicle health Index.
- **Revisit transit definition** (appendix C) to reflect new laws and regulations.



## Appendix

### *Appendix A – Acknowledgments*

The National Park Service would like to thank the numerous NPS transit system contacts who graciously provided their time, knowledge, and guidance in the development of this inventory and new web application.

Special thanks to each park and park contact who provided data for the 2020 inventory year. A list of each park contact is included in appendix D.

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National Capital Region

#### **Interior Region 1**

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#### **Interior Region 2 – South Atlantic Group**

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## *Appendix B – National Park Service Alternative Transportation Program (ATP) Goals and Objectives*

**GOAL:** Cultivate improvements in transportation connectivity, convenience, and safety for visitors and workforce.

**OUTCOME:** Access to, from, and within national parks is convenient, safe, and well-connected via appropriate and integrated transportation solutions.

- Develop transportation options that meet the diverse needs of park visitors and NPS workforce.
- Connect and enhance existing transportation options.
- Minimize injuries, fatalities, and crashes associated with all modes of transportation.
- Participate in local, regional, and statewide transportation planning processes to ensure appropriate integration of NPS transportation infrastructure, systems, and services.

**GOAL:** Provide quality transportation experiences that enhance park visits.

**OUTCOME:** NPS transportation systems contribute to the positive experience of park visitors.

- Improve visitor access to appropriate destinations.
- Use transportation to educate and inform visitors about park resources and services.
- Reduce disruptions to the visitor experience related to vehicle traffic congestion.
- Design and adapt transportation systems to complement each park's unique context and mission.

**GOAL:** Demonstrate leadership in environmentally responsible transportation.

**OUTCOME:** The National Park Service is recognized as a leader in environmentally responsible transportation.

- Prioritize investments and operations that reduce vehicle emissions, noise and light pollution, traffic congestion, and unendorsed parking.
- Educate park visitors and workforce about the environmental benefits of transportation options within and beyond park boundaries.
- Contribute to NPS and park greenhouse gas emissions reduction goals.
- Implement proven green transportation innovations and best practices where appropriate.

**GOAL:** Ensure the long-term financial viability of NPS transportation infrastructure, systems, and services.

**OUTCOME:** Funding is adequate to maintain transportation infrastructure, operate transportation systems, and manage transportation services now and into the foreseeable future.



- Consider the full range of business models and associated lifecycle costs (direct and indirect) before making investments.
- Increase the flexibility of funding mechanisms to better support transportation options.
- Rightsize and maintain needed transportation assets and services in a state of good repair.
- Develop transportation options with reciprocal benefits for NPS and gateway communities that can be collaboratively funded and/or operated.
- Seek to enhance or develop partnerships with public, private, and philanthropic organizations that are aligned with the NPS mission.

GOAL: Manage the transportation program based on meaningful, reliable data.

OUTCOME: The National Park Service demonstrates accountability in the management of transportation resources.

- Use measurable, applicable, and achievable performance measures and metrics to guide and support decision-making and management of the transportation program.
- Invest in and maintain data that supports performance measures aligned with program goals.
- Continually evaluate transportation options to ensure they meet program goals, and adjust operations to optimize system performance.





## Appendix C – Definition of Transit

The National Park Service (NPS) Alternative Transportation Program (ATP) developed a definition for an “NPS transit system” prior to conducting the 2012 transit inventory. Only parks with systems that met each of the three criteria listed below were considered for the inventory:

1. Moves people by motorized vehicle on a regularly scheduled service.<sup>19</sup>
2. Operates under one of the following business models: concession contract; service contract; partner agreement including memorandum of understanding, memorandum of agreement, or cooperative agreement (commercial use agreements are not included); or is NPS owned and operated.<sup>20</sup>
3. All routes and services at a given park that are operated under the same business model by the same operator are considered a single NPS transit system.

This definition was based on a review of past efforts, analysis of the existing transit portfolio, and individual and group conversations with the Regional Transportation Program coordinators and the Federal Lands Highway Program Servicewide Maintenance Advisory Committee. In response to challenges encountered during the course of the inventory, small changes were made to the original draft definition to improve clarity. The definition was uniformly applied to all potential systems to determine whether each should be included in the inventory.

The NPS Alternative Transportation Program investigated several potential criteria that stemmed from existing ATP documents and conversations with ATP stakeholders, as presented below.

**Provides transit service:** An “NPS transit system” should provide transit service. In the glossary of the National Transit Database, the Federal Transit Administration defines transit as synonymous with public transportation and public transportation is defined as follows in the Federal Transit Act: “. . . transportation by a conveyance that provides regular and continuing general or special transportation to the public, but does not include school bus, charter, or intercity bus transportation or intercity passenger rail transportation provided by [Amtrak].” Conversations with NPS regional transportation coordinators further specified transit service should be limited to motorized conveyances. Based on this information, the NPS Alternative Transportation Program proposed the following criterion: “*moves people by motorized vehicle on a regularly scheduled service.*”

**Is important to the NPS mission:** The importance of transit systems to fulfilling the NPS mission is a core tenet of the Alternative Transportation Program, as established in previous program plans and extensively discussed at program meetings. However, the simple question, “Is this system important to the NPS mission?” is subjective and would return inconsistent results. For many systems, particularly those for which the National Park Service has a financial stake or has a formal contract or agreement in place, the answer seems clear: because the National Park Service has made an effort to provide the service, the service is assumed to be important to the mission. Other services, particularly those that operate under a commercial use agreement (CUA), are not as

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<sup>19</sup> This criterion includes services with a posted schedule that have standard operating seasons/days of week/hours. Services that do not operate on a fixed route, are charter services for individual groups, or exist for the sole purpose of providing access to persons with disabilities are not included.

<sup>20</sup> For the purposes of this inventory, no distinction was drawn between a memorandum of understanding, memorandum of agreement, or cooperative agreement. All were recorded as “cooperative agreement.”



clearly essential to the mission. Thus, the NPS Alternative Transportation Program proposed the following criterion: “*operates under one of the following business models: concessions contract; service contract; partner agreement including memorandum of understanding, memorandum of agreement, or cooperative agreement (commercial use agreements are not included); or NPS owned and operated systems.*” The NPS Alternative Transportation Program used “cooperative agreement” as a general term, encompassing all qualifying partner agreements (memorandum of understanding, memorandum of agreement, and cooperative agreement).

Concession contracts were included because they require resources and desire by the NPS to initiate. Also, after the bid and award process, concession contracts limit competition with other private operators and thus generally result in close working relationships with the National Park Service. Commercial use agreements are not included because prospective CUA operators request permission from the National Park Service to operate. These agreements are not initiated by the National Park Service and the resulting services are inherently not “NPS” systems.

Commercial use agreements were not included because these services are owned and operated by private operators, and the National Park Service only provides oversight to ensure that the services are operated in accordance with NPS policies and requirements. Hundreds of commercial use agreements exist servicewide that provide visitors tours and transportation. Collecting and reporting information on all these systems could be burdensome to parks and regions. If information were to be collected and reported on CUA services at all, an objective measure of importance would need to be identified and two key questions would need to be addressed. First, how does one objectively determine whether a service operated under a commercial use agreement is important versus nonessential to the NPS mission? This effort found only one subcategory of commercial use agreement that could be considered objective: services that provide sole access to an NPS resource. Second, should the National Park Service represent as its own services for which it has no role in the acquisition, operations, or maintenance activities? Even for commercial use agreements that provide sole access, this effort suggests not. This determination is not to suggest that the service is not important to the National Park Service, but rather to acknowledge that the service is not the responsibility of the National Park Service—in other words, the service is not an “NPS transit system.” These systems could be tracked separately but would not be included in the inventory.

**Reduces vehicle miles traveled (VMT):** In theory, reducing VMT reduces emissions. However, the simple question of “Does a system reduce VMT?” was tested on candidate NPS transit systems, and answers tended to be complex and debatable. The NPS Alternative Transportation Program determined that “reduces VMT” is not an objective criterion. Although reducing VMT can be a goal of NPS transit systems, it should not be a defining characteristic.

**Provides critical access:** The question “Does a system provide critical access?” was tested on candidate NPS transit systems. However, not all NPS transit systems provide critical access, and not all systems which provide critical access meet other likely criteria of a definition, such as the National Park Service having a financial stake. Thus, this criterion would not contribute toward a simple, clear definition.

**Tours versus transportation:** A distinction exists between interpretive tours and transportation, the former being a recreational activity itself, and the latter being the conveyance of a passenger to or between activities. Whether a system is a tour or provides transportation was tested on candidate NPS transit systems. The distinction was often ambiguous. Many “transportation services” also provide interpretation or offer an experience on board. Many “tours” transport people to activities, allow people to get on and off, and/or take passengers to places in national parks that they could not access in their cars (for example, to a point on a body of water). Furthermore, both tours and



transportation services further the visitor experience component of the NPS mission, and the NPS Alternative Transportation Program sought not to prioritize one over the other. Although in daily life a transportation trip (often thought to be mandatory—e.g., to the grocery store) might be more important than a tour trip (often thought to be discretionary—e.g., a historical tour of a battlefield), in a recreational setting such as national park, both types of trips may be vital to providing high-quality visitor experiences.

**Is part of a connected, multimodal network:** Several stakeholders suggested this criterion. However, it is vague, and requires further definition of the term “connected, multimodal network.”

**Identifying unique systems:** In order to be consistent servicewide in counting the number of transit systems, the NPS Alternative Transportation Program investigated methods for defining where one transit system stops and another starts and tested these with candidate NPS transit systems, particularly at parks thought to have more than one system. Based on this investigation, the NPS Alternative Transportation Program proposed a final criterion: *“all routes and services operated by the same operator under the same business model at a given park are considered a single transit system.”*

Once developed, the pilot definition was shared individually with the transportation program coordinators from each of the seven NPS regions. Feedback from each region was generally supportive. The definition was also presented at the May 2012 Federal Lands Highway Program Servicewide Maintenance Committee. Again, reaction by meeting participants was generally supportive. The associate director, Park Planning, Facilities, and Lands, formalized the draft definition in August 2012 in a memo titled, “National Park Service Transit Inventory Definition and Next Steps.”



## Appendix D – 2020 NPS National Inventory System List

### Interior Region 1

Park Code	System Name	Vehicle Type	2020 Passenger Boardings	Vehicle Ownership	Agreement Type	Purpose	NPS Contact Name
ACAD	Island Explorer & Bicycle Express	Shuttle/Bus/ Van/Tram	Did not operate	Non-NPS	Cooperative Agreement	Mobility To Or Within Park	John Kelly
ADAM	Adams Trolley	Shuttle/Bus/ Van/Tram	9,177	NPS	Service Contract	Critical Access	Kevin Kelly
BOHA	Boston Light Tour	Ferry/Boat	Did not operate	Non-NPS	Cooperative Agreement	Interpretive Tour	Beth Jackendoff
BOHA	Thompson Island Ferry	Ferry/Boat	Did not operate	Non-NPS	Cooperative Agreement	Mobility To Or Within Park	Beth Jackendoff
CACO	Coastguard Beach Shuttle	Shuttle/Bus/ Van/Tram	Did not operate	NPS	NPS Owned & Operated	Critical Access	Lauren McKean
EISE	EISE Shuttle	Shuttle/Bus/ Van/Tram	7,996	Non-NPS	Concession Contract	Critical Access	Angela Atkinson
FIIS	Sailors Haven Ferry	Ferry/Boat	27,410	Non-NPS	Concession Contract	Critical Access	Jason Pristupa
FIIS	Watch Hill Ferry	Ferry/Boat	13,424	Non-NPS	Concession Contract	Critical Access	Jason Pristupa
HOFR	Roosevelt Ride	Shuttle/Bus/ Van/Tram	345	NPS	NPS Owned & Operated	Critical Access	Dave Bullock
HOFR	FDR Tram	Shuttle/Bus/ Van/Tram	Did not operate	NPS	NPS Owned & Operated	Special Needs	Dave Bullock
HOFR	Val-Kill Tram	Shuttle/Bus/ Van/Tram	Did not operate	NPS	NPS Owned & Operated	Special Needs	Dave Bullock
JOFL	Lakebed Tours	Shuttle/Bus/ Van/Tram	Did not operate	NPS	NPS Owned & Operated	Interpretive Tour	Doug Bosley
LOWE	Canal Tours	Ferry/Boat	Did not operate	NPS	NPS Owned & Operated	Interpretive Tour	Curran, Michael
LOWE	LOWE Historic Trolley	Train/Trolley	1,252	NPS	NPS Owned & Operated	Mobility To Or Within Park	Michael Curran
SHEN	Rapidan Camp Bus	Shuttle/Bus/ Van/Tram	327	NPS	NPS Owned & Operated	Interpretive Tour	Tim Taglauer
STEA	Scranton Limited & Live Steam Excursions	Train/Trolley	4,015	NPS	NPS Owned and Operated	Interpretive Tour	Jessica Weinman
STLI	Statue of Liberty Ferries	Ferry/Boat	3,257,598	Non-NPS	Concession Contract	Critical Access	Ben Hanslin
VAFO	History of Valley Forge Trolley Tour	Shuttle/Bus/ Van/Tram	1,368	Non-NPS	Cooperative Agreement	Interpretive Tour	Pamela Zesotarski



### Interior Region 1 – National Capital Area

Park Code	System Name	Vehicle Type	2020 Passenger Boardings	Vehicle Ownership	Agreement Type	Purpose	NPS Contact Name
HAFE	HAFE shuttle transport	Shuttle/Bus/Van/Tram	79,720	NPS	Service Contract	Critical Access	Larry Moore
NAMA	Big Bus Tours Washington, DC	Shuttle/Bus/Van/Tram	10,046	Non-NPS	Concession Contract	Interpretive Tour	Karl Gallo
NAMA	DC Circulator	Shuttle/Bus/Van/Tram	2,005,653	Non-NPS	Cooperative Agreement	Transportation Feature	Eliza Voigt
WOTR	Fairfax Connectors Wolf Trap Express	Shuttle/Bus/Van/Tram	Did not operate	Non-NPS	Service Contract	Mobility to or within Park	Janette Lemons

### Interior Region 2 – South Atlantic Group

Park Code	System Name	Vehicle Type	2020 Passenger Boardings	Vehicle Ownership	Agreement Type	Purpose	NPS Contact Name
BLRI	Sharp Top Mountain Shuttle	Shuttle/Bus/Van/Tram	1,806	Non-NPS	Concession Contract	Transportation Feature	Shawn Cloutier
CALO	Ferry Service	Ferry/Boat	79,133	Non-NPS	Concession Contract	Critical Access	Katherine Cusinberry
CARL	Electric Shuttle	Shuttle/Bus/Van/Tram	1,558	NPS	NPS Owned & Operated	Special Needs	Sarah Perschall
CUIS	Ferry Service	Ferry/Boat	51,430	Non-NPS	Concession Contract	Critical Access	Jill Hamilton-Anderson
CUIS	Land and Legacies Tour	Shuttle/Bus/Van/Tram	2,216	NPS	Concession Contract	Interpretive Tour	Jill Hamilton-Anderson
FOMA/C ASA	Ferry Service	Ferry/Boat	8,762	NPS	NPS Owned & Operated	Critical Access	Andrew Rich
FOSU	Ferry Service	Ferry/Boat	134,521	Non-NPS	Concession Contract	Critical Access	Michelle Haas
GUIS	Ferry Service	Ferry/Boat	18,687	NPS	Concession Contract	Transportation Feature	Richard Devenney
GUIS	Ship Island Ferry	Ferry/Boat	10,439	NPS/Non-NPS	Concession Contract	Transportation Feature	Richard Devenney
KEMO	Shuttle Bus	Shuttle/Bus/Van/Tram	4,579	NPS	Service Contract	Transportation Feature	Ladrick Downie
MACA	Cave Tours Bus Shuttle	Shuttle/Bus/Van/Tram	46,084	NPS/Non-NPS	Concession Contract	Interpretive Tour	Steve Kovar
MACA	Green River Ferry	Ferry/Boat	9,202	NPS	NPS Owned & Operated	Transportation Feature	Steve Kovar

### Interior Regions 3, 4, and 5

Park Code	System Name	Vehicle Type	2020 Passenger Boardings	Vehicle Ownership	Agreement Type	Purpose	NPS Contact Name
APIS	Excursion Boat	Boat/Ferry	30,000	Non-NPS	Concession Contract	Interpretive Tour	Elizabeth Lowthian



Park Code	System Name	Vehicle Type	2020 Passenger Boardings	Vehicle Ownership	Agreement Type	Purpose	NPS Contact Name
CUVA	Cuyahoga Valley Scenic Railroad	Trolley/Train	88,486	Non-NPS	Cooperative Agreement	Mobility to or Within Park	Jennifer Vasarhelyi
ISRO	MV Isle Royale Queen IV	Boat/Ferry	Did not operate	Non-NPS	Concession Contract	Critical Access	Chris Amidon
ISRO	MV Ranger III	Boat/Ferry	253	NPS	NPS Owned & Operated	Critical Access	Chris Amidon
ISRO	MV Sandy tour	Boat/Ferry	Did not operate	Non-NPS	Concession Contract	Interpretive Tour	Chris Amidon
ISRO	MV Voyageur II and Sea Hunter III	Boat/Ferry	Did not operate	NPS/Non-NPS	Concession Contract	Critical Access	Chris Amidon
ISRO	Royale Air Service Inc. Float Plane	Plane	4,614	Non-NPS	Concession Contract	Critical Access	Chris Amidon
OZAR	Akers Ferry	Boat/Ferry	281	NPS	Concession Contract	Transportation Feature	Peggy Tarrence
PIRO	Pictured Rocks Cruises	Boat/Ferry	103,543	Non-NPS	Concession Contract	Interpretive Tour	Joseph Hughes
SCBL	SCBL Free Shuttle Service	Shuttle/Bus/ Van/Tram	Did not operate	NPS	NPS Owned & Operated	Mobility to or within Park	Justin Cawiezel
SLBE	Manitou Island Transit	Boat/Ferry	Did not operate	Non-NPS	Concession Contract	Transportation Feature	Phil Akers
TAPR	TAPR Bus Tour	Shuttle/Bus/ Van/Tram	1,036	NPS	NPS Owned & Operated	Interpretive Tour	Heather Brown
VOYA	VOYA Tour Boat	Boat/Ferry	Did not operate	NPS	NPS Owned & Operated	Interpretive Tour	Tawnya Schoewe

### Interior Regions 6, 7, and 8

Park Code	System Name	Vehicle Type	2020 Passenger Boardings	Vehicle Ownership	Agreement Type	Purpose	NPS Contact Name
BAND	Bandelier National Monument	Shuttle/Bus/ Van/Tram	Did not operate	Non-NPS	Service Contract	Critical Access	Dennis Milligan
BRCA	Bryce Canyon Shuttle and Rainbow Point Shuttle	Shuttle/Bus/ Van/Tram	178,524	Non-NPS	Service Contract	Mobility to or within Park	Kevin Poe
DINO	Tram Transit	Shuttle/Bus/ Van/Tram	504,000	Non-NPS	Service Contract	Critical Access	Jeffrey Pate
GLAC	GLAC Hiker Shuttle	Shuttle/Bus/ Van/Tram	Did not operate	NPS	Cooperative Agreement	Mobility to or within Park	Patrick Glynn
GLAC	Glacier Park Boat Company -interpretive boat tours	Ferry/Boat	Did not operate	Non-NPS	Concession Contract	Interpretive Tour	Jennifer Evans
GLAC	Red Bus Tours	Shuttle/Bus/ Van/Tram	Did not operate	NPS	Concession Contract	Interpretive Tour	Jennifer Evans
GLAC	Sun Tours	Shuttle/Bus/ Van/Tram	Did not operate	Non-NPS	Concession Contract	Interpretive Tour	Jennifer Evans



Park Code	System Name	Vehicle Type	2020 Passenger Boardings	Vehicle Ownership	Agreement Type	Purpose	NPS Contact Name
GLAC	Visitor Transportation System (VTS)	Shuttle/Bus/Van/Tram	Did not operate	NPS	NPS Owned & Operated	Mobility to or within Park	Patrick Glynn
GLCA	Antelope Point	Ferry/Boat	Did not operate	Non-NPS	Concession Contract	Interpretive Tour	Gregory Owen
GLCA	Boat Tours	Ferry/Boat	Did not operate	Non-NPS	Concession Contract	Interpretive Tour	Gregory Owen
GLCA	Flatwater Tour	Ferry/Boat	Did not operate	Non-NPS	Concession Contract	Interpretive Tour	Gregory Owen
GLCA	SR276 Passenger Ferry	Ferry/Boat	1,974	Non-NPS	Service Contract	Transportation Feature	Gregory Owen
GRCA	Grand Canyon Railway	Train/Trolley	167,424	Non-NPS	Concession Contract	Mobility to or within Park	Pamela Edwards
GRCA	South Rim Bus Tours	Shuttle/Bus/Van/Tram	15,284	Non-NPS	Concession Contract	Interpretive Tour	Pamela Edwards
GRCA	South Rim Shuttle Service	Shuttle/Bus/Van/Tram	1,142,098	NPS	Service Contract	Mobility to or within Park	Pamela Edwards
GRTE	Jenny Lake Shuttle Boat	Ferry/Boat	207,047	Non-NPS	Concession Contract	Mobility to or within Park	Katy Canetta
LIBI	LIBI Bus Tours	Shuttle/Bus/Van/Tram	Did not operate	Non-NPS	Concession Contract	Interpretive Tour	Ken Woody
MEVE	Long House Trailhead Tram and Half-Day Ranger Guided	Shuttle/Bus/Van/Tram	1,557	Non-NPS	Concession Contract	Interpretive Tour	Allan Loy
ORPI	Ajo Mountain Drive Tour	Shuttle/Bus/Van/Tram	673	NPS	NPS Owned & Operated	Critical Access	Cynthia Sequanna
ROMO	Rocky Mountain National Park Visitor Shuttle	Shuttle/Bus/Van/Tram	409,565	Non-NPS	Service Contract	Mobility to or within Park	John Hannon
YELL	Historic Yellow Bus Tours	Shuttle/Bus/Van/Tram	140	NPS	Concession Contract	Interpretive Tour	Matthew Mankowski
YELL	Xanterra Parks & Resorts interpretive bus tours	Shuttle/Bus/Van/Tram	4,360	Non-NPS; NPS	Concession Contract	Interpretive Tour	Matthew Mankowski
YELL	Xanterra Parks & Resorts Interpretive Snow coaches Tours	Shuttle/Bus/Van/Tram	14,918	Non-NPS	Concession Contract	Interpretive Tour	Matthew Mankowski
YELL	YELL Boat	Ferry/Boat	Did not operate	NPS	Concession Contract	Interpretive Tour	Matthew Mankowski
YELL	YELL Snow Coaches	Shuttle/Bus/Van/Tram	24,631	Non-NPS; NPS	Concession Contract	Interpretive Tour	Matthew Mankowski
ZION	Zion Shuttle	Shuttle/Bus/Van/Tram	1,532,052	NPS	Service Contract	Critical Access	Jennifer Staroska



**Interior Regions 8 (Southern California and Southern Nevada), 9, 10, and 12**

Park Code	System Name	Vehicle Type	2020		Agreement Type	Purpose	NPS Contact Name
			Passenger Boardings	Vehicle Ownership			
CHIS	Island Packers	Ferry/Boat	44,011	Non-NPS	Concession Contract	Critical Access	John Hansen
CRLA	Crater Lake Boat Tour	Ferry/Boat	Did not operate	Non-NPS	Concession Contract	Interpretive Tour	Sean Denniston
CRLA	Rim Drive Trolley Tour	Shuttle/Bus/ Van/Tram	Did not operate	Non-NPS	Concession Contract	Interpretive Tour	Sean Denniston
DEPO	Reds Meadow Shuttle Bus	Shuttle/Bus/ Van/Tram	Did not operate	Non-NPS	Cooperative Agreement	Critical Access	Kevin Killian
EUON	NPS Shuttle	Shuttle/Bus/ Van/Tram	1,768	NPS	NPS Owned & Operated	Critical Access	Thomas Leatherman
GOGA/ ALCA	Alcatraz Cruises Ferry	Ferry/Boat	2,696	Non-NPS	Concession Contract	Critical Access	Alice Young
MUWO	Muir Woods Shuttle	Shuttle/Bus/ Van/Tram	20,000	Non-NPS	Cooperative Agreement	Mobility to Or Within Park	Darren Brown
NOCA/ LACH	Rainbow Falls Tours	Shuttle/Bus/ Van/Tram	Did not operate	NPS	Concession Contract	Interpretive Tour	Annelise Lesmeister
NOCA/ ROLA	Ross Lake Hiker Shuttle	Ferry/Boat	556	Non-NPS	Concession Contract	Transportation Feature	Annelise Lesmeister
PORE	Headlands Shuttle	Shuttle/Bus/ Van/Tram	Did not report	Non-NPS	Critical Access	Service Contract	Brannon Ketcham
PERL	Ford Island Tour	Shuttle/Bus/ Van/Tram	133,480	Non-NPS	Cooperative Agreement	Interpretive Tour	Daniel Brown
PERL	USS Arizona Memorial Tour	Ferry/Boat	595,279	Non-NPS	Cooperative Agreement	Interpretive Tour	Daniel Brown
PINN	Pinnacle Shuttle	Shuttle/Bus/ Van/Tram	Did not report	NPS	NPS Owned & Operated	Critical Access	Kevin Brothers
SEKI	Gateway Shuttle	Shuttle/Bus/ Van/Tram	Did not operate	Non-NPS	Cooperative Agreement	Mobility to Or Within Park	Joshua Handel
SEKI	Giant Forest Shuttle	Shuttle/Bus/ Van/Tram	24,177	Non-NPS	Cooperative Agreement	Critical Access	Joshua Handel
YOSE	Mariposa Grove Transportation Service	Shuttle/Bus/ Van/Tram	Did not operate	NPS	Service Contract	Critical Access	Jim Donovan
YOSE	Tram Tours and Hiker Shuttle	Shuttle/Bus/ Van/Tram	Did not operate	Non-NPS	Concession Contract	Interpretive Tour	Jim Donovan
YOSE	Winter Ski Shuttle	Shuttle/Bus/ Van/Tram	Did not operate	Non-NPS	Concession Contract	Mobility to Or Within Park	Jim Donovan
YOSE	YARTS: Yosemite Area Regional Transportation System	Shuttle/Bus/ Van/Tram	46,736	Non-NPS	Cooperative Agreement	Mobility to Or Within Park	Jim Donovan
YOSE	Yosemite Valley Shuttle	Shuttle/Bus/ Van/Tram	Did not operate	NPS	Concession Contract	Mobility to Or Within Park	Jim Donovan





## Interior Region 11 – Alaska

Park Code	System Name	Vehicle Type	2020 Passenger Boardings	Vehicle Ownership	Agreement Type	Purpose	NPS Contact Name
DENA	Bus Tours and Shuttle Service	Shuttle/Bus/ Van/Tram	10,621	NPS/Non-NPS	Concession Contract	Critical Access	Jim LeBel
GLBA	Airport Shuttle	Shuttle/Bus/ Van/Tram	Did not operate	Non-NPS	Concession Contract	Transportation Feature	Melanie Berg
GLBA	Day boat tour	Boat/Ferry	Did not operate	Non-NPS	Concession Contract	Interpretive Tour	Melanie Berg



## Appendix E – Change in Vehicle Types

**Table 10: Recategorization of vehicle types**

Note: Includes all fleet data regardless of 2020 active operational status

Sources: 2019 and 2020 NPS transit inventory data

Vehicle Type	2019 Vehicles	2020 Vehicles	Difference
<b>Ferry/Boat</b>	<b>106</b>	<b>118</b>	<b>+12</b>
NPS Owned	14	15	+1
Non-NPS Owned	92	103	+11
<b>Van/SUV/Sedan</b>	<b>15</b>	<b>6</b>	<b>-9</b>
NPS Owned	2	2	0
Non-NPS Owned	13	4	-9
<b>Passenger Van</b>	<b>1</b>	<b>126</b>	<b>+125</b>
NPS Owned	0	29	+29
Non-NPS Owned	1	97	+96
<b>Light-Duty Shuttle</b>	<b>55</b>	<b>27</b>	<b>-28</b>
NPS Owned	49	7	-42
Non-NPS Owned	6	20	+14
<b>Medium-Duty Shuttle</b>	<b>139</b>	<b>96</b>	<b>-42</b>
NPS Owned	49	71	+22
Non-NPS Owned	90	26	-64
<b>Heavy-Duty Shuttle</b>	<b>198</b>	<b>0</b>	<b>-198</b>
NPS Owned	76	0	-76
Non-NPS Owned	122	0	-122
<b>Light-Duty Transit (Bus)</b>	<b>27</b>	<b>0</b>	<b>-27</b>
NPS Owned	0	0	0
Non-NPS Owned	27	0	-27
<b>Medium-Duty Transit (Bus)</b>	<b>47</b>	<b>74</b>	<b>+27</b>
NPS Owned	34	34	0
Non-NPS Owned	13	40	27
<b>Heavy-Duty Transit (Bus)</b>	<b>63</b>	<b>279</b>	<b>+216</b>
NPS Owned	6	69	+63
Non-NPS Owned	57	210	+153
<b>School Bus</b>	<b>108</b>	<b>115</b>	<b>+7</b>
NPS Owned	2	7	+5
Non-NPS Owned	106	108	+2
<b>Snowmobile/Snow coach</b>	<b>67</b>	<b>20</b>	<b>-47</b>
NPS Owned	12	12	0
Non-NPS Owned	55	8	-47
<b>Tram/Golfcart</b>	<b>3</b>	<b>3</b>	<b>0</b>
NPS Owned	2	2	0
Non-NPS Owned	1	1	0
<b>Train/Trolley/Streetcar</b>	<b>19</b>	<b>20</b>	<b>+1</b>
NPS Owned	4	5	+1
Non-NPS Owned	15	15	0
<b>Aircraft</b>	<b>3</b>	<b>3</b>	<b>0</b>
NPS Owned	0	0	0
Non-NPS Owned	3	3	0
<b>Total</b>	<b>850</b>	<b>908</b>	<b>59</b>
NPS Owned	251	273	+22
Non-NPS Owned	599	635	+36



## Appendix F – Vehicle Replacement Assumptions

Uniform vehicle replacement costs and expected service lives were used to provide servicewide consistency in estimates of vehicle age, remaining service life, and recapitalization costs. The assumptions below provided the basis for the recapitalization analysis, which was also validated by regional staff to reflect variations in timelines, vehicle types purchased, and growth in vehicle fleets. These assumptions were updated for the 2015 inventory from previous inventories<sup>21</sup> to reflect the usage and operating characteristics of NPS vehicles (tables 10 and 11). In order to provide a more accurate replacement cost estimate, 2015 dollar amounts were inflated to reflect 2019 dollars. NPS vehicles are not used in the same way that city transit vehicles are used; they are typically not used for the entire year and are not used as intensively as transit vehicles in an urban environment. Vehicle cost estimates were mostly taken from the General Service Administration’s AutoChoice Database.

**Table 11: Vehicle replacement costs (in 2019 dollars) and expected life for nonelectric vehicles**

Notes: CNG=compressed natural gas; N/A=not applicable

Source: Transit standards<sup>22</sup> updated to reflect NPS typical usage and operating characteristics

Vehicle Type	Gas/Diesel/ Biodiesel/ Propane Replacement Cost	Gas/Diesel/ Biodiesel/ Propane Expected Life (years)	CNG Replacement Cost	CNG Expected Life (years)
Passenger Van	\$35,640	10	N/A	N/A
Light-Duty Shuttle	\$115,560	15	\$130,140	10
Medium-Duty Shuttle	\$158,760	15	\$166,320	10
Heavy-Duty Shuttle	\$158,760	15	\$170,640	10
Medium-Duty Transit	\$297,000	18	\$356,400	20
Heavy-Duty Transit	\$475,200	18	\$516,240	20
School Bus	\$136,620	18	N/A	N/A
6-12 Pax Electric Tram	N/A	11	N/A	11

<sup>21</sup> The 2014 inventory used replacement costs and expected life assumptions based on the Federal Transit Administration: Useful Life of Transit Buses and Vans – April 2007.

<sup>22</sup> Ibid.



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**Table 52: Vehicle replacement costs (in 2019 dollars) and expected life for electric vehicles**

Notes: N/A=not applicable

Source: Transit standards<sup>23</sup> updated to reflect NPS typical usage and operating characteristics

Vehicle Type	Electric-Hybrid Replacement Cost	Electric-Hybrid Expected Life (years)	Electric Replacement Cost	Electric Expected Life (years)
Passenger Van	N/A	10	\$108,000	10
Light-Duty Shuttle	\$146,880	15	\$426,600	15
Medium-Duty Shuttle	\$356,400	15	N/A	15
Heavy-Duty Shuttle	\$380,160	15	N/A	15
Medium-Duty Transit	\$534,600	18	\$540,000	18
Heavy-Duty Transit	\$653,400	18	\$810,000	18
School Bus	N/A	18	N/A	18
6-12 Pax Electric Tram	\$21,600	11	N/A	11

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A major recapitalization baselining effort was undertaken as part of the 2019 transit inventory. The National Park Service vehicle data was exported from the inventory to determine a calculated replacement year based on the life expectancy and age of each vehicle. From there, the Parks Transportation Allocation and Tracking System and Project Management Information System (PMIS) was reviewed for planned replacement and/or refurbishment projects (tables 12 and 13). Regional coordinators reviewed the plan and consulted on the draft recapitalization plan presented in this report.

The major takeaway from this effort was that the estimated costs were not accurate for NPS replacement and recapitalization planning. The 2020 inventory should collect more accurate data on planned replacement year, costs, and associated PMIS numbers to further inform the recapitalization analysis.

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<sup>23</sup> The 2014 inventory used replacement costs and expected life assumptions based on the Federal Transit Administration: Useful Life of Transit Buses and Vans – April 2007.



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**Table 6: Recapitalization totals by year**

Sources: Estimated recapitalization needs based on transit inventory data, transit standards, Project Management Information System, Parks Transportation Allocation and Tracking System, and region and park input

Year	Total Vehicles	Cost
2021	25	\$4,536,280
2022	33	\$13,392,000
2023	41	\$47,046,760
2024	28	\$6,130,640
2025	23	\$11,222,240
2026	23	\$22,033,440
2027	19	\$11,598,000
2028	11	\$6,475,280
2029	7	\$1,954,400
2030	2	\$293,760
2031	1	\$146,880
<b>Total:</b>	<b>213</b>	<b>\$124,829,680</b>

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## Appendix G – Air Quality and Emissions

Since 2017, the transit inventory has used an updated methodology to analyze the air quality and greenhouse gas impacts of NPS transit systems. The analysis uses the US Environmental Protection Agency’s (EPA) Motor Vehicle Emissions Simulator (MOVES) for estimating emissions by transit vehicles. MOVES is a state-of-the-science emissions modeling software that estimates airborne emissions from various on-road vehicles across several vehicle types at very fine scales. MOVES uses years of direct measurements to account for how different vehicles, fuel types, road types (e.g., urban vs. rural, highways vs. local streets), and emission processes (e.g., running, starting, and idling) contribute to air pollution. This process allows MOVES to calculate emissions from both on-road vehicles, such as transit buses, and off-road vehicles, such as waterborne vessels and trams. The EPA released a new version of MOVES in November 2020 (MOVES3).

Since MOVES is the EPA’s regulatory standard for emissions analysis, NPS units may use the results to engage directly with other local, state, and national air quality initiatives, as well as make informed programmatic decisions that improve resource management and visitor experience in the parks. For a discussion of the differences between the emissions modeling methods used in years prior to 2017, please see the *NPS Transit Inventory and Performance Report 2017*.

### Pollutants

The following pollutants are included in the 2020 air quality analysis:

#### *Carbon Dioxide (CO<sub>2</sub>)*<sup>24</sup>

Carbon dioxide is a colorless gas produced through chemical combustion, including burning fuels to power automobiles and homes. Typically, gasoline combustion emits more carbon dioxide than other fuels.

#### *Nitrogen Oxides (NO<sub>x</sub>) and Volatile Organic Compounds (VOCs)*

Nitrogen oxides (NO<sub>x</sub>) are a collection of gaseous molecules containing one nitrogen atom and a number of oxygen atoms. As with the other pollutants described here, fuel combustion emits nitrogen oxides. While upper-atmospheric nitrogen oxides can actually counteract the warming effects of greenhouse gases, ground-level NO<sub>x</sub> molecules react with other airborne chemicals to become particles that can cause respiratory conditions in humans.<sup>25</sup>

Volatile organic compounds are a broad category of organic molecules that evaporate at very low temperatures. Flammable solvents like paint thinners and some household cleaners, as well as other aromatics including vehicular fuels, all contain volatile organic compounds. State, local, and federal institutions tightly regulate volatile organic compounds as they are easily absorbed into human tissue and can have harmful health effects.<sup>26</sup>

Nitrogen oxides and volatile organic compounds can together form ozone (O<sub>3</sub>), a highly reactive gas. Stratospheric ozone, high up in Earth’s atmosphere, deflects harmful solar radiation away from

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<sup>24</sup> IPCC 2013, “Climate Change: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change.”

<sup>25</sup> US Environmental Protection Agency, “NO<sub>x</sub>: How Nitrogen Oxides Affect the Way We Live and Breathe.”

<sup>26</sup> Ibid.



Earth's surface. However, nitrogen oxides and volatile organic compounds interacting at the surface produce ground ozone, causing a variety of negative health effects. Ground-level ozone can also severely harm plants and wildlife, and because ozone can travel long distances by wind, rural areas may experience high exposure even with little O<sub>3</sub> production.<sup>27</sup>

#### *Carbon Monoxide (CO)* <sup>28</sup>

Carbon monoxide (CO) is a colorless and odorless gas released through burning fossil fuels, though the emissions quantities vary by fuel type. In large quantities, carbon monoxide can be extremely dangerous for animals and humans because it inhibits the absorption of oxygen into the bloodstream. While CO toxicity is ordinarily only a concern indoors, where such quantities easily accumulate, the elderly and those with certain cardiovascular are at risk of serious health impacts at higher outdoor concentrations. This often occurs at hot outdoor locations in the presence of numerous running motors, such as parking lots in summer.

#### *Particulate Matter (PM)* <sup>29</sup>

Particulate matter (PM) encompasses solid and liquid particles emitted into the air, including dust, soot, and aerosolized chemicals. Particulate matter can come from construction sites, roadway wear as tires and heavy vehicles move over them, and burning fuels. Diesel fuel combustion generally emits more particulate matter than other fuels, and driving over unpaved surfaces can emit PM<sub>10</sub> particles. Two categories of particulate matter concerning regulatory analyses of air quality include those with negative impacts on respiratory health—inhalable particles 10 micrometers and smaller (PM<sub>10</sub>)—as well as those 2.5 micrometers and smaller (PM<sub>2.5</sub>). Exposure to particulate matter can cause and aggravate respiratory conditions such as asthma; this is especially true of PM<sub>10</sub> particles. PM<sub>2.5</sub> particles are a major contributor to smog, which both obscures views and damages natural resources.

## **Results**

Due to the COVID-19 pandemic, there was a significant decrease in emitting activity (i.e., a decrease in vehicle miles traveled; VMT) in the 2020 system inventory. In addition, some systems were captured in the 2019 inventory but not in 2020 and vice versa. Thus, the 2020 results may differ from 2019. As data collection becomes more consistent over the next few years, these results are expected to stabilize, and results may be more directly compared year to year.

#### *Diverted Passenger Vehicle Trips and CO<sub>2</sub> Emissions Avoided*

Although transit systems contribute to emissions, transit in NPS units typically has a net positive effect on air quality, as well as the visitor experience. Transit use reduces the number of vehicle trips in parks—for example, transit buses carry more people per square foot of road space, relieving congestion on park roads and eliminating associated fuel-inefficient driving behaviors such as extended idling and stop-and-go. In addition to the air quality benefits of reduced fuel use per

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<sup>27</sup> US Environmental Protection Agency, “Basic Information about Ozone | Ozone Pollution | US EPA.”

<sup>28</sup> US Environmental Protection Agency, “Basic Information about Carbon Monoxide (CO) Outdoor Air Pollution | Carbon Monoxide (CO) Pollution in Outdoor Air | US EPA.”

<sup>29</sup> Ibid.



visitor, expanded transit use influences how visitors spend their time in the park and removes long lines of cars from viewsheds.

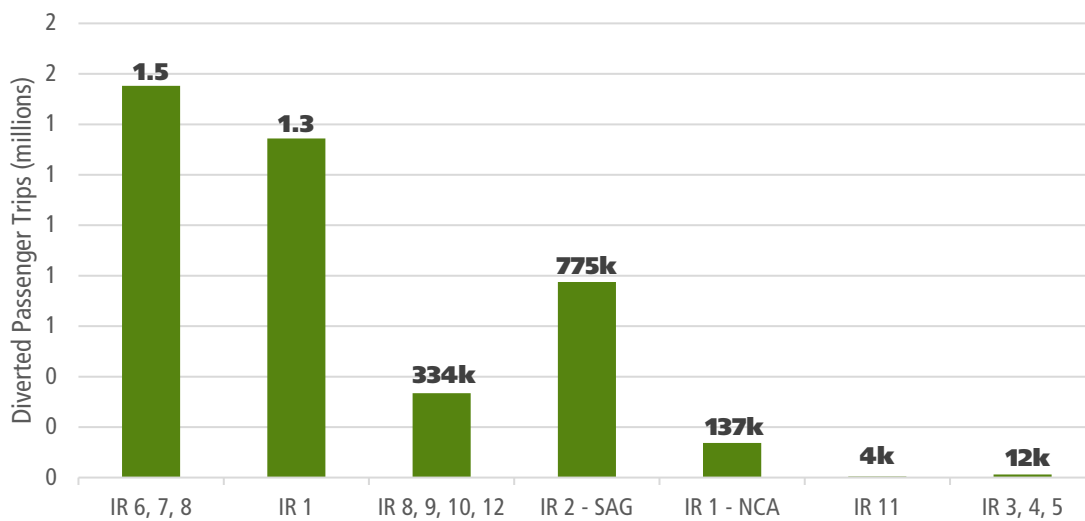
Figure 13 shows the estimated number of vehicle trips eliminated as a result of transit use in each region. NPS transit services eliminated an estimated 4.2 million passenger vehicle trips in 2020, which equates to 114 million fewer miles driven and a reduction in CO<sub>2</sub> emissions of nearly 44,000 metric tons. Regions with high transit use and more boardings divert more personal vehicles from the road.

The number of passenger vehicle trips diverted is calculated by dividing the total number of passenger boardings by the average occupancy of visitors' personal vehicles (assumed to be 2.6). Emissions avoided are calculated as the VMT avoided multiplied by a passenger vehicle emissions factor (EF<sub>p</sub>) for a given pollutant, assuming that the passenger vehicles use conventional gasoline fuel.

$$Emissions\ Avoided = EF_p * \frac{\left(\frac{total\ transit\ VMT}{total\ transit\ runs}\right) * total\ transit\ boardings}{2.6\ occupants\ per\ vehicle}$$

**Figure 13: Vehicle trips (in millions) avoided as a result of NPS transit systems**

Notes: IR=Interior Region; NCA=National Capital Area; NPS=National Park Service  
Source: 2020 NPS transit inventory data



**Table 14: Vehicle trips (in millions) avoided as a result of NPS transit systems**

Interior Region	IR 6, 7, 8	IR 1	IR 8, 9, 10, 12	IR 2	IR 1 – NCA	IR 11	IR 3, 4, 5
Diverted Passenger Vehicle Trips	1,552,624	1,344,060	334,117	775,269	137,465	4,085	12,181





### Criteria Pollutant Emissions Inventories

The following section details the emissions inventories for criteria pollutants and their precursors across the fleets operating in national parks. Vehicle fuel type and terrain type were observed to influence the emissions results. Diesel use results in a different pollution profile than alternative fuels, buses contribute differently than cars, heavy-duty ferries pollute differently than automobiles, and heavy engine loads on unpaved surfaces require more fuel and generate more road dust from brake and tire wear compared to paved roads. However, fewer vehicles burning fuel in has a net positive effect on local air quality in national parks.

Figure 14 shows the results of MOVES CO<sub>2</sub> emissions modeling for 2020 NPS transit system activity, aggregated to the regional level. The results are also split by ownership (NPS vs. non-NPS systems). Across all regions, NPS transit fleets emitted just under 2,000 metric tons of CO<sub>2</sub> in 2020.

**Figure 14: NPS transit system carbon dioxide emissions**

Notes: IR=Interior Region; NCA=National Capital Area; NPS=National Park Service

Source: 2020 NPS transit inventory data

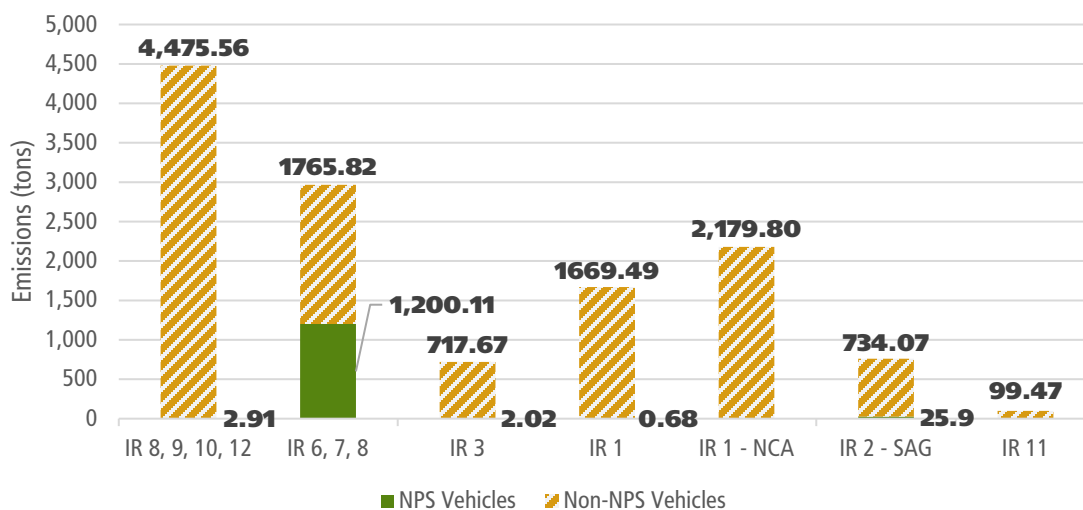


Figure 15 shows the results of MOVES NOx emissions modeling for 2020 NPS transit system activity, split by ownership. Across all regions, NPS transit fleets emitted 12.5 metric tons of NOx in 2020.

**Figure 15: NPS transit system nitrogen oxide emissions**

Notes: IR=Interior Region; NCA=National Capital Area; NPS=National Park Service

Source: 2020 NPS transit inventory data

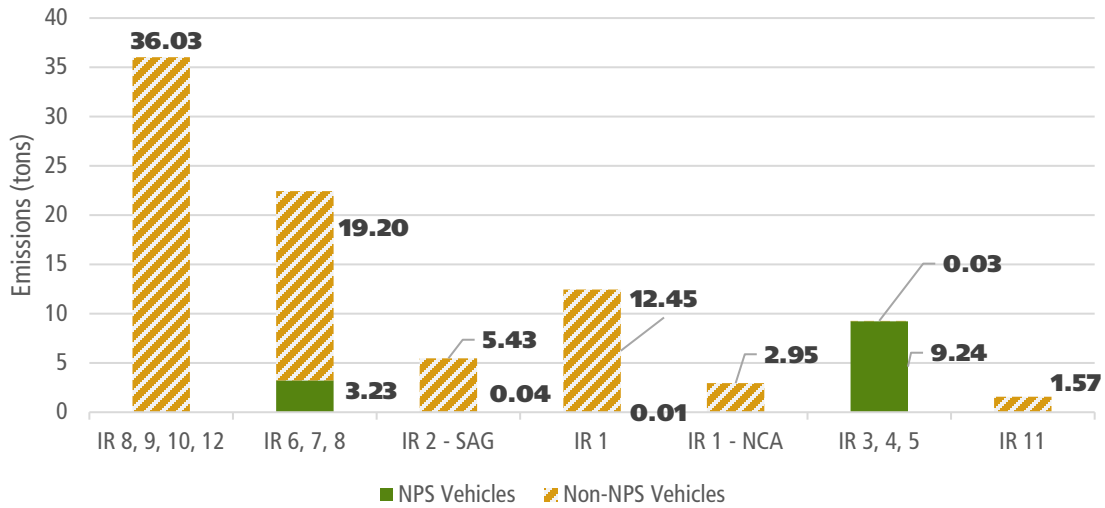
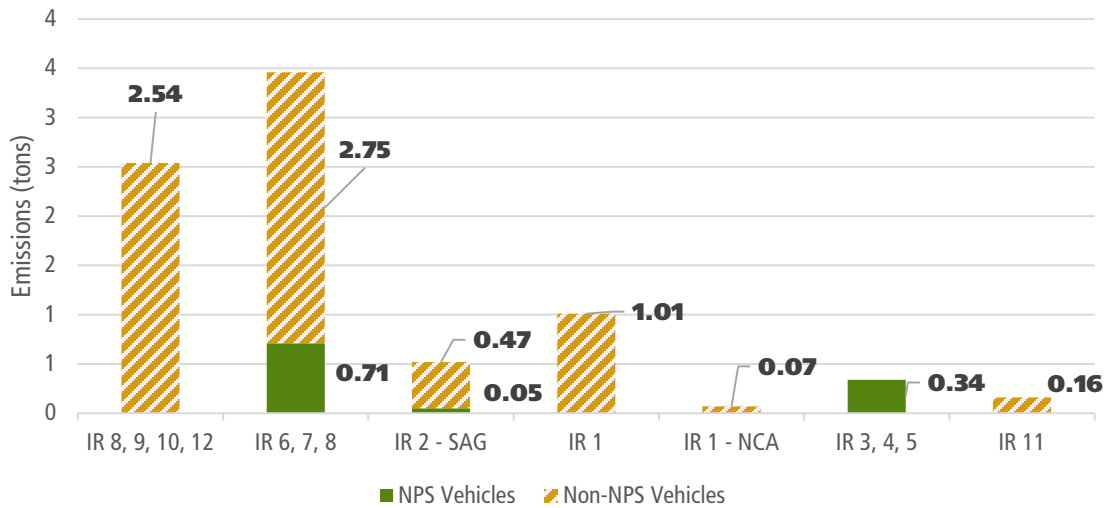


Figure 16 shows the results of MOVES volatile organic compound (VOC) emissions modeling for 2020 NPS transit system activity, split by ownership. Across all regions, NPS transit fleets emitted just over 1 metric ton of VOCs in 2020. Volatile organic compounds combine with other airborne compounds, including NO<sub>x</sub>, to produce ozone and photochemical smog. The NPS fleet in the Intermountain Region emits the highest amounts of VOC, as this region has a substantial proportion of vehicles powered by propane and marine diesel. This is also true of the non-NPS fleet in the Pacific West Region. Note that propane combustion becomes less chemically efficient at high altitudes (i.e., where less oxygen exists) and can therefore result in greater VOC, as well as CO emissions in certain regions—especially the Intermountain Region and parts of the Pacific West Region.<sup>30</sup>

**Figure 16: NPS transit system volatile organic compound emissions**

Notes: IR=Interior Region; NCA=National Capital Area; NPS=National Park Service.

Source: 2020 NPS transit inventory data.



<sup>30</sup> S. McAllister et al., “Chapter 2: Thermodynamics of Combustion”. *Fundamentals of Combustion Processes*, Springer (2011).

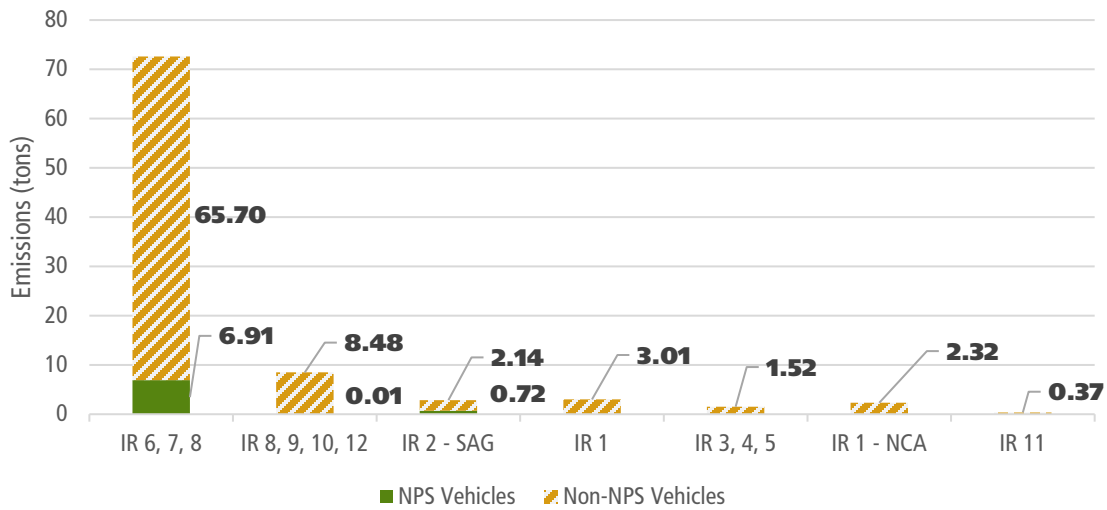


Figure 17 shows the results of MOVES CO emissions modeling for 2020 NPS transit system activity, split by ownership. Across all regions, NPS transit fleets emitted approximately 9 metric tons of CO in 2020. The Grand Canyon’s heavy use of compressed natural gas (CNG)-fueled buses and shuttles contributes significantly to IMR’s high relative CO emissions. Compressed natural gas buses emit substantially more CO than conventional fuels, but approximately 50% less NOx. As NOx is an ozone precursor, the latter characteristic makes CNG-fueled vehicles ideal for minimizing smog—a key consideration in parks with long-distance viewsheds. The large number of propane-powered transit vehicles operated at higher altitudes in IMR also contributes to increased CO emissions.

**Figure 17: NPS transit system carbon monoxide emissions**

Notes: IR=Interior Region; NCA=National Capital Area; NPS=National Park Service

Source: 2020 NPS transit inventory data



Ferries that run on marine diesel, as well as buses fueled by propane, emit significantly more particulate matter than vehicles powered by other fuels. Several parks in PWR include exclusively marine transit fleets, and the Pictured Rocks Cruises ferry fleet contributes majority of the Northeast Region’s particulate matter emissions. In the Intermountain Region, ferries at Glen Canyon and Grant Teton and the propane bus fleet at Zion increase PM emissions in this region.

Figure 18 shows the results of MOVES PM<sub>2.5</sub> emissions modeling for 2020 NPS transit system activity, split by ownership. Across all regions, NPS transit fleets emitted about 0.41 metric tons of PM<sub>2.5</sub> in 2020. Breathing air with high levels of PM<sub>2.5</sub> can result in adverse health impacts, including increased risk of cardiovascular disease and asthma.

**Figure 108: NPS transit system PM<sub>2.5</sub> emissions**

Notes: IR=Interior Region; NCA=National Capital Area; NPS=National Park Service

Source: 2020 NPS transit inventory data

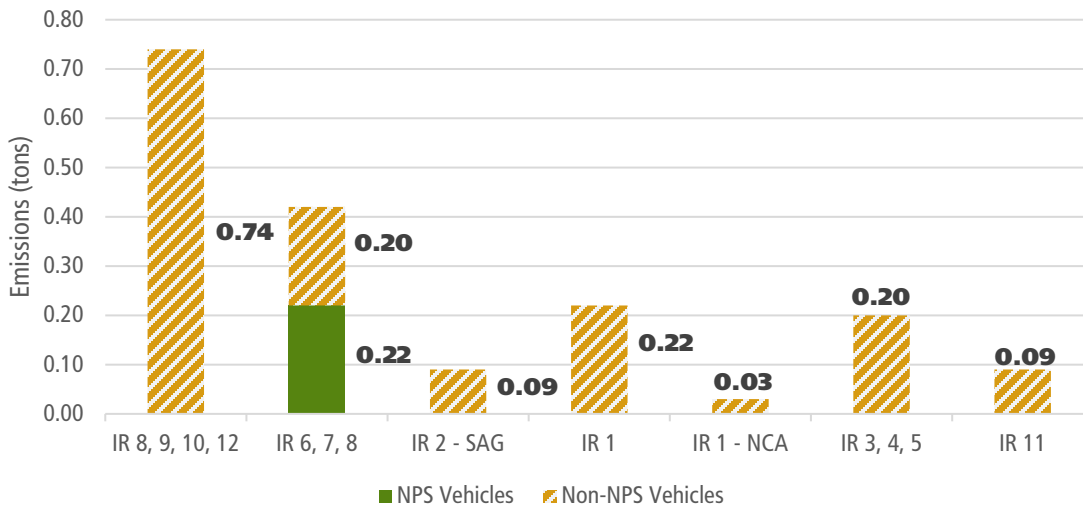
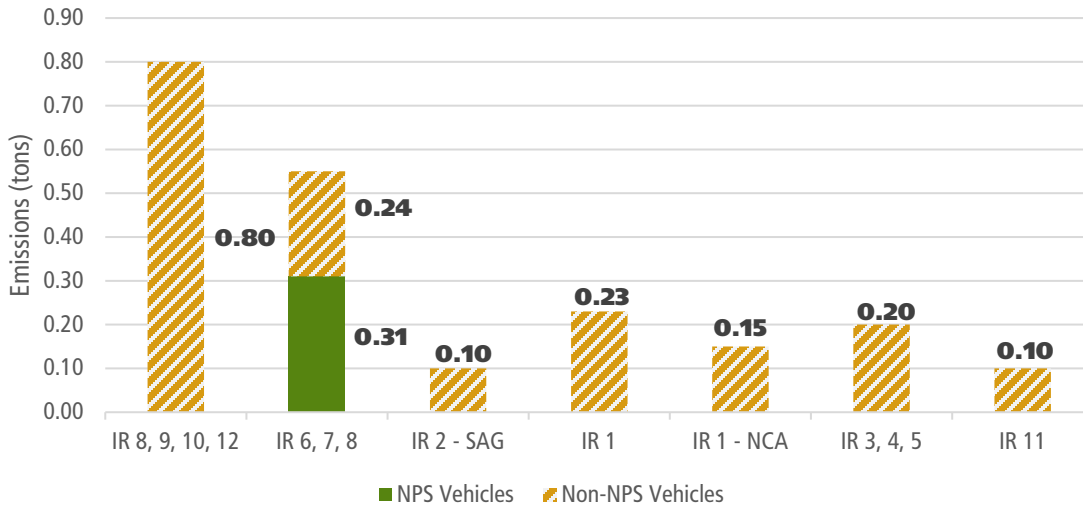


Figure 19 shows the results of MOVES PM10 emissions modeling for 2020 NPS transit system activity, split by ownership. Across all regions, NPS transit fleets emitted about 0.51 metric tons of PM10 in 2020. Some regions (e.g., PWR, IMR) produce more PM10 than PM2.5 in part due to transit systems operating on unpaved roads, which can result in release of larger particles as fugitive dust.

**Figure 119: NPS transit system PM<sub>10</sub> emissions**

Notes: IR=Interior Region; NCA=National Capital Area; NPS=National Park Service

Source: 2020 NPS transit inventory data



Across all pollutant types, the majority of emissions came from non-NPS vehicles rather than NPS vehicles. Additionally, the Intermountain and Pacific West Regions generally had the highest emissions compared to the other regions. CO<sub>2</sub> emissions were far greater than any of the other pollutants on the basis of mass, which is consistent with the Environmental Protection Agency’s 2017 National Emissions Inventory (NEI).<sup>31</sup> Nonetheless, emissions from NPS vehicles in 2020 had a minimal impact on the national inventory. In particular, VOC, PM<sub>2.5</sub>, and PM<sub>10</sub> emissions from NPS vehicles were negligible compared to any other sector and major emitting source in the national emissions inventory (e.g., agriculture, power generation).

<sup>31</sup> US Environmental Protection Agency. 2017 National Emissions Inventory Data: <https://www.epa.gov/air-emissions-inventories/2017-national-emissions-inventory-nei-data>.



## *Appendix H – Response to COVID-19 Operational Survey*

The 2020 National Transit Inventory included a series of questions about 2020 operations during the pandemic and 2021 plans at the time of data collection (March 2021). The following table is a summary of responses edited slightly for clarity and brevity.



**Table 5: COVID-19 operational survey**

Source: 2020 NPS transit inventory data

Unit	System Name	Did the system operate? If yes, normally or limited compared to 2019? Describe the impacts on ridership	Was the ATP COVID guide useful?	Physical and Operational Changes to Protect Drivers	Plans to Operate in 2021 and Additional Changes
BLRI	Sharp Top Mountain Shuttle	Yes. Limited. Van cut to 50% capacity. Ridership was greatly reduced.	Somewhat	<ul style="list-style-type: none"> <li>Reduced capacity, open windows, social distancing, masks, and increased cleaning. More frequent trips to accommodate visitors. Changes made by concessioner, guided by the park/USPHS.</li> <li>Attempted to use an open-air golf cart.</li> </ul>	Yes. Frequent runs with less capacity, following CDC guidelines.
BRCA	Bryce Canyon Shuttle and Rainbow Point Shuttle	<p>Yes. Limited. Bus capacities were reduced to 25%, resulting in a corresponding 75% reduction in ridership, however if by service you are referring to operational hours, the reduction by that definition of service was closer to 25% due to cancelling the Rainbow Pt Tour.</p> <p>Ridership was intentionally restricted. We all but required riders to wear the free facemasks that our contractor provided, as was the Contractor's right (we checked with NPS solicitor) as a purely contracted service.</p>	No	<ul style="list-style-type: none"> <li>Plexiglass box built around driver compartment.</li> <li>The contractor and NPS instituted changes in rigorous consultation with local and federal public health officials.</li> <li>Addition of bus monitors (1 person per bus) to hand out free facemasks and enforce restricted capacity so that the driver didn't have to.</li> <li>Installed automatic hand sanitizer dispenser.</li> <li>Removal of 50% of the seats, restriction of ridership to 25 individuals = 25%.</li> <li>Use of electrostatic sprayers armed with NaDCC to entirely disinfect every bus with additional less effective scrubbing with a bleach solution after completing every circuit = once per hour.</li> <li>Posters designed by NPS demonstrating how traveling cohorts should cluster with each other and social distance from strangers.</li> </ul>	Yes. We will continue with the Bryce Canyon Shuttle COVID-19 mitigations that a few other NPS transit systems have adopted key elements from. The only significant change we will be making from 2020 is that we are trading the staffing of bus monitors for the technology of an outdoor speaker system that allows the drivers to address the park visitor waiting at each bus stop with our COVID-19 safety messages before opening the doors and allowing the passengers to board. We have also increased our peak hours to running with up to 7 buses instead of the usual 5 as we keep ridership capped at 25 people until further notice.
CALO	CALO Ferry Service	<p>Yes. Limited. Shorter trips, passenger capacity went from 49 to 30, closed from March 20th to May 20th, Less service available due to rules and regulations by the State of North Carolina.</p> <p>Lost ridership during limited capacity. There were less riders due to being closed from March to May. Riders were annoyed because they had to wear mask on an open vessel.</p>	Yes	<ul style="list-style-type: none"> <li>Added a windshield on each boat for staff.</li> <li>All staff were always required to have masks on. Every employee's temperature was taken before operating, periodic testing of all employees.</li> <li>Marked sidewalks in front of ticket booth and at the loading site, disinfected boat daily, wiped boat seating area after each trip,</li> <li>All changes were done by the owner.</li> <li>Overall, the policy and physical changes worked great for Island Express Ferry Service, LLC</li> </ul>	Yes. IEFs continues to operate under the same guidance for 2020. They are following the State of North Carolina Covid-19 policies.
CARL	Electric Shuttle	Yes. Limited. The shuttle only operated from October 2019 - January 2020, there was no need for service in February or March before the park closed in March. Shuttle service did not resume for the remainder of 2020.			No
CHIS	Island Packers	<p>Yes. Limited. Concessioner was closed until June, and then permitted by Ventura County to operate at 40% (although they only operated at 30% until August), and then capacity increased to 50% in late October to present. Also, the Scorpion anchorage is the park's most popular destination and the area was closed for pier replacement. It was closed from November 2019 to February 2021.</p> <p>COVID affected ridership due to decreased vessel capacity, however Island Packers was able to sell available tickets due to steady demand for park visitation. Riders could not eat or drink inside the vessel, and overall, there were far fewer large groups and mainly same-household groups.</p>	Yes	<ul style="list-style-type: none"> <li>All required COVID protocols were mandated by Ventura County based on CA and federal guidelines. Park provided additional guidance.</li> <li>Operator made changes themselves.</li> <li>All employee's temperatures checked upon reporting to work, if employees feel ill they are told to stay home.</li> <li>Enhanced PPE usage (gloves and facemasks) and cleaning of vessels, contract tracing, staggering shifts, dedicated vessel crews, back up crews if someone falls ill, restricting personnel from bridge where practicable, visitors restricted and limited to specific areas, restricting outside access to onboard berthing to appropriate personnel, social distancing and no consuming food or drink inside the vessels.</li> <li>Passenger changes: reduced capacities, proper PPE worn and social distancing encouraged via markers on handrails, COVID protocols announced regularly while underway, no inside consumption of food or drink, hand sanitizer made available, protocols for turning away symptomatic passengers and evacuations for visitors who show signs while in park, enhanced cleaning of vessels, and added information upon booking tickets.</li> <li>Sharing with park all county correspondence, COVID protocols training for staff, crew continuously monitoring decks to ensure distancing occurs, optional table service to limit traffic at galley, reduced crew presence while maintaining safe staffing levels, providing PPE and resources to employees.</li> </ul>	<p>Yes. Operator plans to increase runs with planned capacity increases of 65%, most crew getting vaccinated as essential transportation workers, finding more work and tasks for employees who have been affected.</p> <p>All changes made in 2020 continue through 2021 until new guidance comes.</p>



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CUIS	Land and Legacies Tour	Yes. Limited. The Lands and Legacies Tour (LLT) operated from October 2019 to March 17th, 2020 then shut down for the remainder of the FY. Started limited operation April 12, 2021.	Yes	<ul style="list-style-type: none"> <li>Plexiglass to separate driver and passengers- concessioner installed.</li> <li>Only groups known to each other, mask mandates for all, open windows, cleaning protocols, hand sanitizer available.</li> </ul>	Yes. More frequent runs with less capacity because capacity is limited to those known to each other. Plexiglass barrier, first bench seat taped off.
CUIS	Cumberland Island Ferry	Yes. Limited. Ferry operated normally from October 2019 to March 16, 2020; March 17-June 25, 2020 the ferry did not operate; June 26, 2020 to April 02, 2021 the ferry operated at 2/3rds capacity; April 03, 2021 the ferry is running at full capacity.	Somewhat	<ul style="list-style-type: none"> <li>The Captain is in the wheelhouse away from any passengers.</li> <li>A mask mandate was put in place by the concessioner as soon as they began operating; capacity limits were set for the inside cabin space.</li> <li>There was a 2/3 capacity limit up until April 2021</li> </ul>	Yes. No changes- keep protocols in place.
CUVA	Cuyahoga Valley Scenic Railroad	Yes. Limited. They ran as normal until they discontinued operations on March 13, 2020, for the remainder of the fiscal year.	Not Aware	<ul style="list-style-type: none"> <li>Cancellation of service after March 13, 2021</li> <li>CVSR surveyed passengers in October after they participated in Fall Flyer excursions. Notable results were: When we asked, "How safe did you feel while boarding the train?" 95.78% of those who responded felt safe or extremely safe. When we asked, "How safe did you feel on the train?" 93.64% of those who responded felt safe or extremely safe. When we asked, "How safe did you feel while disembarking the train?" 93.38% of those who responded felt safe or extremely safe. When we asked, "Overall, how safe did you feel with CVSR's Covid-19 Safety protocols in place?" 93.07% of those who responded felt safe or extremely safe.</li> </ul>	<p>Yes. Shift to all online, pre-sale tickets; staff and volunteer temperature screenings when arriving for duty; passenger temperature screening; passengers asked COVID screening questions prior to boarding; volunteers and staff training in cleaning and sanitizing; Each train had an Environmental Technician assigned to it that cleaned and sanitized the equipment throughout the ride as well as performing deeper cleanings between trips; passengers boarded directly into their assigned car instead of walking through; masks required for all passengers, volunteers, and staff; Passengers restricted from walking throughout the train and required to remain in their assigned car.</p> <ul style="list-style-type: none"> <li>Distancing markers were installed at boarding stations.</li> <li>Capacity on all train cars was reduced to 50% (or less in some cases).</li> <li>Concession and edu-training car amenities were eliminated to prevent congregating and crowds.</li> <li>Table cars had several tables removed with the remaining tables spaced out to a 6-foot distance.</li> <li>Coach cars had plexiglass partitions installed between blocks of seats.</li> </ul>
DENA	Bus Tours and Shuttle Services	Yes. Limited. Diminished schedules. 50% capacity. Face coverings. Abbreviated season - July to Sept.	Somewhat	<ul style="list-style-type: none"> <li>Contractor installed a barrier between driver and passengers.</li> <li>Drivers required to wear face coverings. Passengers strongly encouraged.</li> </ul>	Yes. 50% capacity as of 3/16/21.
DINO	Tram Transit	Yes. Normally. People seemed to come out regardless of COVID restrictions; if business is open, they will come.	Somewhat	<ul style="list-style-type: none"> <li>Drivers were given masks.</li> <li>Additional drivers were needed to be hired.</li> <li>Social distance spacing occurred by blocking off every other row.</li> <li>Additional Park base funding had to be utilized for Shuttle Cleaning to cover the then-CDC requirements. The contract had to be added for cleaning; contractor hired more cleaners and drivers while the park provided supplies at substantial cost and impact to our budget.</li> </ul>	Yes. Reducing cleaning efforts based on latest CDC guidance for surfaces. Social distance staggering of seating.
EISE	EISE Shuttle	Yes. Limited. The EISE shuttle operated normally from October 1, 2019-March 15, 2020. and continued that posture for the remainder of the fiscal year.	Not Aware	<ul style="list-style-type: none"> <li>EISE shuttle operations were ceased beginning March 16, 2020 through the remainder of the fiscal year.</li> </ul>	There is the possibility that the shuttle system could become operational again (based on ever-changing guidance).
EUON	NPS Shuttle	Yes. Limited. We had normal operations until March 15. We stopped all shuttle operations in on March 16. We resumed in early October, limiting trips to family groups only. In mid-November we stopped operations again until the end of the calendar year. Reduced the number of users significantly.	Not Aware	<ul style="list-style-type: none"> <li>Our maintenance staff installed plexiglass in the shuttles to separate the driver from the passengers.</li> <li>We stopped our open Saturday program (which does not require reservations).</li> <li>Only allowing small groups that know each other.</li> </ul>	Yes. We plan to operate under the same restrictions as 2020, where we are allowing family groups at first and no open Saturdays programs. We may allow more passengers as some point but are still evaluating the risk. We will maintain the plexiglass installed in 2020. We have no other physical changes to the shuttle system.
FIIS	Sailors Haven Ferry	Yes. Limited. Delayed operating season (June-October). Ridership was reduced.	Not Aware	<ul style="list-style-type: none"> <li>Masks required on ferries by Concessionaire.</li> <li>Required distancing on gathering platforms.</li> </ul>	Yes. No new changes.
FIIS	Watch Hill Ferry	Yes. Limited. Did not operate in May or early June but resumed service in late June. COVID-related delays. Similar ridership, no reports of unwanted behavior.	Not Aware	<ul style="list-style-type: none"> <li>Masks required on ferries.</li> <li>Boarding procedure adjusted to ensure physical distancing.</li> </ul>	Yes. Plexiglass barriers, taping off rows and locations for pre-boarding.
FOMA	FOMA Ferry Service	Yes. Limited. Service limited due to Hurricane Dorian damage recovery to ferry boat dock and from COVID-19 pandemic closure of park. Overall, system only operated 20 days in FY20.	Somewhat	<ul style="list-style-type: none"> <li>N/A. Park shutdown for remainder of fiscal year.</li> </ul>	Yes. Planned changes for FY2021 include capacity reductions. Seating restrictions plans will be utilized to reduce ferry capacity for FY2021.
FOSU	FOSU Ferry Service	Yes. Limited. Park closure occurred mid-March through end of May. Fort Sumter Tours operation resumed early June with	Not Aware	<ul style="list-style-type: none"> <li>Captains operate from the wheelhouse and already protected from passengers. Vessel crew were protected through a variety of pro-active operational changes</li> </ul>	Yes. Capacities continue to be reduced to ensure 6' social distancing can be maintained. Number of trips that depart during high visitation

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		capacity limited to 39%. It also ran on a reduced schedule of 5-trips instead of 6-trips during what would normally be the high visitation season.  There were fewer riders overall. This reflects an overall downward trend in tourism reported by the City of Charleston's tourism and visitor's bureau.		that included additional cleaning/sanitizing, staff health check-ins before boarding, social distancing measures, and required mask wearing. <ul style="list-style-type: none"> <li>Seating was removed and spread out to promote social distancing. Hand sanitizer stations were set up. Concessioner submitted proposal for changes that was accepted by the park.</li> <li>New and increased cleaning/sanitizing procedures, hand sanitizing stations, social distancing, limited capacity, masks were required per City of Charleston ordinance.</li> </ul>	season is reduced to ensure sufficient time for cleaning/ sanitizing between trips. Masks are required. Seats have been removed and spread out. Hand sanitizing stations are set up.
GLAC	Visitor Transportation System (VTS)	No			Yes. We have designed a vinyl barrier to separate the driver, purchased touchless hand sanitizer dispensers to be mounted in each bus, and have put in place a mandatory mask policy for riders of the system. Additionally, we plan on operating at limited capacity to allow for some distancing of rider groups. We are working through the process of incorporating a ticketed system for the VTS, which will give us more control of the number of riders we have. Glacier National Park owns our fleet of transit buses and are planning on self-delivering the system this year.
GLCA	Antelope Point	No			Yes. TBD on CDC guidance with concerning mask and distances. Limiting the number of passengers is a possibility.
GLCA	Boat Tours	No			Yes. TBD on CDC guidance with concerning mask and distances. Restricting number of passengers.
GLCA	Flatwater Tour	No			Yes. TBD on CDC guidance with concerning mask and distances. Restricting number of passengers.
GLCA	SR276 Passenger Ferry	Yes. Normally.	Yes	<ul style="list-style-type: none"> <li>DOT employees stayed in the wheelhouse while passengers were on the Ferry.</li> <li>Riders were asked to stay in their vehicles or with their travelling group</li> </ul>	Yes. Same as 2020.
GOGA	Alcatraz Cruises Ferry	Yes. Limited. The system operated normally through the mid-March 2020. Once the shelter in place for COVID-19 was put into place, the Island was closed to public tours until August 15th. On August 15th restarted passenger service, at a very limited capacity. December 4th the Island closed once again due to COVID-19 through the end of the year.  Fewer riders due to COVID restrictions on capacity, riders much less apt to cluster together.	Somewhat	<ul style="list-style-type: none"> <li>Physical barriers were put into place to keep the operators and guests at a safe distance from each other. These changes were suggested by the CDC &amp; State of CA, required by the Park.</li> <li>Operational safeguards were put into place to distance the operators from the guests due to social distancing guidelines. These changes were suggested by the CDC &amp; State of CA, supported by the Park.</li> </ul>	Yes. Strict passenger limits, less frequent trips. Covering seats with wipeable materials, erecting barriers, and signage, using social-distancing markers.
GRCA	Grand Canyon Railway	Yes. Limited. Service was suspended from March 20, 2020 through June 15, 2020 and train occupancy was reduced to 35% of normal when operations resumed in June. Ridership impacted by suspension of service and reduced train occupancy.	Not Aware	<ul style="list-style-type: none"> <li>Train employees had to wear face coverings.</li> <li>Passengers had to physically distance.</li> <li>Passengers were required to wear face coverings and train capacity was reduced to 35% of normal.</li> </ul>	Yes. Same as 2020.
GRCA	South Rim Shuttle Service	Yes. Limited. The system did not operate from mid-March to Sept 5, 2020. Once service resumed, only two of the four routes were in operation. The buses operated at significantly reduced capacity, so there were more buses operating per route.  Since there was no service from mid-March to Sept 5, ridership was decreased. It was also decreased due to reducing capacity (only 15 passengers allowed per bus versus 70 in a normal year)	Not Aware	<ul style="list-style-type: none"> <li>Contractor installed driver shields/doors.</li> <li>Entering and exiting through the rear door only, face masks required to ride a shuttle bus, hand sanitizer dispensers installed on each bus, limiting capacity to 15 passengers, roping off seats to encourage physical distancing</li> </ul>	Yes. Spring 2021 service will be the same as autumn 2020.
GRTE	Jenny Lake Shuttle Boat	Yes. Limited. Social distancing entailed closing off 'every other row' between parties. This resulted in a 30-40% reduction in passenger capacity each run. However, demand remained high and the total number of passengers accommodated was not significantly lower than 2017-2019 averages. Scenic cruises were cancelled in height of season to devote all vessels to full time shuttle operations.	Not Aware	<ul style="list-style-type: none"> <li>Concessioner implemented COVID mitigations that included plexiglass barrier at register, and mandating face coverings as a concessioner policy.</li> <li>Concessioner implemented COVID mitigations that included social distancing, face coverings, increase surface disinfection/cleaning.</li> <li>Every other row was roped off on vessels to promote social distancing.</li> <li>Concessioner implemented COVID mitigations, including physical distancing markers for visitors in line, face coverings, etc. Cash was not accepted/credit cards only.</li> </ul>	Yes. The Concessioner has a similar plan to 2020 for 2021 operations. The concessioner may increase capacity on the boats (which are open air) and keep rows open, with the intention of reducing the lines on each side, where its harder to enforce social distancing, and present a longer duration of exposure (1 hour) in comparison to the 7-10 minute boat ride.

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				<ul style="list-style-type: none"> <li>No surveys were conducted specific to the pandemic. Some visitor comments online included opinions on the Concessioner's COVID mitigations. (some described it as effective, some described it as not effective, some didn't think it was necessary).</li> </ul>	
GUIS	GUIS Ferry Service	Yes. Limited. Overall, less service available. The season start was delayed until May 15 due to COVID closures. The park then closed again for Hurricane Sally in Sept 2020 which damaged both vessels and ended the season. FL Saw a capacity limit on board the vessels of 50%. This did not affect overall ridership though as the boats were running at only 30% capacity during 2019.	Somewhat	<ul style="list-style-type: none"> <li>Both parties made changes due to COVID. The Concessionaire prepared a very detailed and thorough mitigation guide and the park limited capacity and required masks at all times when encountering visitors or other staff.</li> <li>Limited capacity and social distancing while on board were implemented.</li> </ul>	Yes. Park currently plans to maintain the limited capacity, social distancing, and mask requirements. Hurricane damages will require alternative schedules and landing sites. Boats are still being repaired so start time has already been delayed.
GUIS	Ship Island Ferry	Yes. Limited. Season start was delayed first by park COVID closures and then by damages to Ship Island facilities from Tropical Storm Cristobal. Once started, boats were operating under 50% capacity. Season abruptly ended in September due to additional facility damages from tropical systems. Fewer riders due to limited capacity. Riders did not like the limitations.	Somewhat	<ul style="list-style-type: none"> <li>Both parties. Limited interaction between staff and visitors on board. Social distancing enforced while on board.</li> <li>Different boarding and disembarking procedures to avoid clustering of visitors.</li> <li>Six-foot patterns established and only online reservations, so no paper copy tickets.</li> <li>Informal surveys-most people did not like the limitations on capacity. Most understood the reasoning behind the changes.</li> </ul>	Yes. Still planned to start with limited capacity and mask requirements. Start date delayed until at least the end of May due to ongoing hurricane repairs. No paper tickets (only online reservations and ticketing), limited capacities and mask requirements. Six-foot distancing markings and limited seating on each deck
HAFE	HAFE Shuttle Transport	Yes. Limited. Buses didn't run due to COVID from March until last week in November. Due to COVID and the buses not running ridership was down. Most people who visited the park walked.	Somewhat	<ul style="list-style-type: none"> <li>We installed plexiglass barrier for the drivers and taped off seating to limit number of riders per trip. We put up signs about COVID restrictions and safety</li> <li>We cleaned the buses in the mornings and during the driver's lunch breaks and at the end of their shift.</li> <li>We taped off seats to limit the number of riders per trip and offered them mask if they didn't have them. We put up signs about COVID restrictions and safety.</li> </ul>	Yes. We are following CDC recommendations for hauling riders. We are following CDC recommendations for COVID. plexiglass barriers, taping off seats
HOFR	FDR Tram	No			<p>Yes. The park is currently closed to visitors due to the limited space of the historical sites and the inability of the park to provide a "COVID safe" tour of the sites. When/If the park opens safely for visitors, safety SOPs will be developed for the cleaning and disinfecting the vehicle. More frequent runs will be allowed to reduce the number of passengers allowing for proper social distancing.</p> <p>The park is investigating plexiglass barriers between rows of seats and visitors separated in the rows (by individuals or families. Since the tram is open air, it does present a better environment than if it were enclosed. Other procedures could be instituted such as taping off rows to ensure proper distancing.</p> <p>The 2 shuttle buses listed are no longer in the park property system and both were disposed of through GSA Excess. Funds were available through CAT III to purchase a 12-passenger van to replace the buses but due to COVID and not operating the shuttle, funds were withdrawn to be made available again in FY 21. Once funds are available, the park will purchase the van for future operations.</p>
ISRO	Isle Royale Seaplanes	Yes. Normally. More riders than normal due to other transportation not operating.	Not Aware	<ul style="list-style-type: none"> <li>Mask Use, cleaning of aircraft.</li> </ul>	Yes. Normal operations save for Mask Use and Continued aircraft cleaning between flights.
ISRO	MV Ranger III	Yes. Limited. No public service. Only essential staff. Ridership was down 400%	Not Aware	<ul style="list-style-type: none"> <li>NPS Staff only, more cleaning, hand sanitizer, social distancing, keeping crew from passengers.</li> </ul>	Yes. 50% capacity, social distancing, mask requirements, cleaning, etc.
KEMO	KEMO Shuttle Bus	Yes. Limited. Stop work order began in March 2020 due to COVID-19, Shuttle bus ran on weekends from Oct 1 2019 - March 2020	Somewhat	<ul style="list-style-type: none"> <li>Plexi glass was installed by NPS.</li> <li>NPS ensures that bus was disinfected after every trip.</li> </ul>	
LOWE	Historic Trolley	Yes. Limited. No service from mid-March 2020 through June 2020. Limited service from July through mid-September 2020 (5 days-per week, instead of 7). No more than one trolley operating per day (instead of 2 or 3). Much fewer riders overall. No noticeable changes to behavior	Not Aware	<ul style="list-style-type: none"> <li>Increased cleaning protocols made by the park.</li> <li>Closed seating to increase social distancing, made by the park.</li> </ul>	Yes. Same as 2020.

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MEVE	Long House Trailhead Tram and Half-day Ranger Guided	Yes. Limited. Operated from June to September for a shorter time, schedule was based on demand from sales and passenger capacity was limited to 50%. Overall, less use and less service. Reduced demand for half-day tours, there were less riders and less riders per vehicle to adhere to distancing protocols. Most riders adhered to COVID-19 protocols such as facial coverings.	Yes	<ul style="list-style-type: none"> <li>The concessioner implemented facial coverings, distancing to the extent practicable, and the vehicles were cleaned between runs.</li> <li>Facial coverings were recommended, vehicle passenger capacity was reduced for distancing, and the vehicles were cleaned between runs.</li> </ul>	Yes. Continue reservation system, runs based on reservations, facial coverings, distancing, and reduced passenger capacity.
MUWO	Muir Woods Shuttle	Yes. Limited. The system ran as normal between October 2019 and March 2020. In March 2020, the system was suspended due to COVID. There has been no service since that time, but the park is currently in the process of restarting service for summer 2021 with limited capacity.	Yes	<ul style="list-style-type: none"> <li>Our service provider has installed driver plexiglass, and other mitigation for the driver. When the system restarts, we will limit capacity by approximately 50%.</li> </ul>	<p>The system will be restarted managed by the Muir Woods Reservation system, which is standard. When the system restarts, we will limit capacity of the shuttle by approximately 50% to start, and adaptively manage as the year progresses.</p> <p>Plexiglass to protect drivers and taping off rows will continue to be included.</p>
NAMA	Bug Bus Tours Washington DC	Yes. Limited. Operations were halted due to COVID-19 from March until July. Beginning in July there was a revised schedule of operations Thursday - Monday with limited stops. Much less riders in 2020 due to COVID-19.	Somewhat	<ul style="list-style-type: none"> <li>All riders were required to wear masks along with all staff members. Only every other row of seating was available for seating for social distancing purposes.</li> <li>The concessioner only offered riding tours with no hop on hop off as is normally offered. The buses were also cleaned and sanitized between uses.</li> </ul>	Yes. Same operations as in 2020 with increased days of operations back to 7 days a week. No new changes are being planned at this time, but close attention paid to CDC, local, and NPS guidance.
NAMA	DC Circulator	Yes. Limited. The system operated in a limited basis during 2020. From January 1, 2020 to March 18, 2020 the route operated regular hours. From the period of March 19, 2020 to September 19, 2020 the route did not operate per mandate from the Mayor of the District of Columbia as part of the District's Emergency Order to address quarantine and social distancing due to COVID-19. On September 20, 2020-December 22, 2020 we operated the National Mall Route per regular hours. From December 23, 2020 till December 31, 2020 the route did not operate per mandate from the Mayor of the District of Columbia to address holiday additional measures to promote quarantine and social distancing.  Ridership drop throughout the DC Circulator system by 89%. This impacted all route of the service.	Not Aware	<ul style="list-style-type: none"> <li>DC Circulator instituted backdoor boarding on all its routes including the National Mall Route, as well as, free rides. Since March 18, 2020 to date the DC Circulator has not charge fares to riders as part of the measures taken to promote distancing and support essential travel services. Riders were limited to access to the front of the bus to speak to operators.</li> <li>The Mayor also instituted limited service throughout all the DC Circulator service and suspension of the Mall route to curbe any entertainment activities.</li> <li>Towards the end of December 2020, 1/3 of the fleet at the time had installed operator compartment barriers. By the end of April 2021 all buses will have the compartment installed.</li> </ul>	Yes. No changes are being considered at this time.
OZAR	Akers Ferry	Yes. Limited. The Ferry was closed from April - May 9, 2020 due to park COVID closure and then periodically throughout the season due to river flood stage. Yes, there was less service available.  When the park reopened in May 2020, park visitation was high and remained so throughout the season. However, float visitors typically are not Ferry users. Ferry users tend to be local citizens and they did not utilize the Ferry as per usual.	Somewhat	<ul style="list-style-type: none"> <li>Concession operated. Concessioner made changes. Generally, just an increased awareness to maintain socially distance. Physical changes were already in place due to the nature of the operation. The Ferry operation takes place outdoors and social distancing is typical of the routine operation. The operator is outdoors but the visitor remains in their car throughout river crossing.</li> </ul>	Yes. Social distancing will remain in place and mask wearing will be implemented when social distancing is not possible.
PERL	Ford Island Tour	Yes. Limited. Operations closed in March 2020 due to COVID.	Not Aware	<ul style="list-style-type: none"> <li>Park and partner closed, and shuttle did not operate.</li> </ul>	Yes. Masks are required, physical distancing is maintained. Limited capacity on each tour.
PERL	USS Arizona Memorial Tour	Yes. Limited. System was shut down from March 17, 2020 - July 10, 2020	Not Aware	<ul style="list-style-type: none"> <li>US Navy required visitors to wear masks.</li> <li>Park and US Navy limited schedules and limited capacity of boats to 1/3 of normal to keep physical distancing.</li> </ul>	Yes. Masks are required, physical distancing is maintained. Limited capacity on each tour.
PIRO	Pictured Rocks Cruises	Yes. Limited. Only filled vessels to half capacity. Slightly less riders - turned over the boats more times a day.	Somewhat	<ul style="list-style-type: none"> <li>Opened all the windows on the vessel to have a steady breeze</li> <li>Half capacity on the tours and cleaning the vessel halfway through the operation</li> <li>Closed off every other seat onboard operating at half capacity</li> <li>The concessionaire put a restriction on themselves to wear masks for everyone involved and run their operation at half capacity.</li> </ul>	Yes. Same as 2020.
ROMO	Rocky Mountain National Park Shuttle	Yes. Limited. Reduced capacity of shuttle, 20% of normal capacity, no hiker shuttle was run, times remained the same. Less due to limited capacity due to state guidelines.	Somewhat	<ul style="list-style-type: none"> <li>The was panels installed in the driver areas of the shuttle to separate the driver from passengers.</li> <li>Reduced capacity and spacing of riders throughout the shuttle.</li> </ul>	Yes. Same as implemented in 2020

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SEKI	Giant Forest Shuttle	Yes. Limited. Winter service operated normally in November/December 2019 and January 2020. The service did not operate at all in summer 2020. It normally runs from Memorial Day to Labor Day.	Somewhat		The system is scheduled to return in summer 2021. Capacity limits (likely no more than 50 percent of seated capacity). Only two of our four routes will be running. Those two routes will operate with about twice as many vehicles as usual, in an attempt to keep up with demand. We will focus on providing access to our primary destinations (the Sherman Tree and Giant Forest Museum). Planning on installing plexiglass barriers.
SHEN	Rapidan Camp Tour	Yes. Limited. was only in operation in October 2019. No tours were provided in 2020 due to COVID safety restrictions.	Not Aware		As of this date, it is not determined if we be able to operate Rapidan Tours. If COVID safety guidelines allow, we hope to resume tours for fall of 2021.
SLBE	Manitou Island Transit	Yes. Limited. Manitou Island Transit just operated from October 26 - November 2, 2019 in FY2020.	Not Aware		Unknown. Manitou Island Transit is working on their COVID plan at the time of data collection.
STEA	Scranton Limited & Live Steam Excursions	Yes. Limited. There was less service available because we were unable to operate during our peak season due to COVID restrictions both state and federal. We only operated pre-COVID October, November and December of 2019. Less riders overall.	Not Aware	<ul style="list-style-type: none"> <li>The park changed the number of people allowed in the locomotive cab. Only two people are allowed in a locomotive cab and they must wear a mask.</li> </ul>	Yes. less capacity per passenger coaches, additional cleaning, taping off seats/ rows, perhaps protective films to place over historic surfaces so cleaning will not damage the material.
STLI	Statue of Liberty Ferries	Yes. Limited. In FY 20 STLI was closed from March 17, 2020 to July 20, 2020 due to COVID-19. STLI operated in a limited fashion using an off-peak (Winter) schedule throughout the rest of FY 20.	Yes	<ul style="list-style-type: none"> <li>Masks, S Distancing, reduced capacities, temp checks, increased and enhanced cleaning, all contractor made</li> <li>Signage and social distancing stenciling.</li> <li>Reduced capacities, social distancing, masks required, encouraged to travel on open air decks of the vessel. Contractor made</li> <li>While the Operator's mitigation efforts were comprehensive and effective the large drop in ridership was also a mitigation factor. Vessel capacity was limited to 50% of normal but ridership was at 10-15% of normal. State and local outreach encouraged out of state and international visitors to forgo visiting STLI during the pandemic.</li> </ul>	Yes. STLI ferries remain limited to 50% through FY 21. More boats in the fleet are added to the schedule as ridership returns. Drivers operate vessels from an enclosed wheelhouse. Visitors are required to wear masks and remain socially distant.
TAPR	TAPR Bus Tour	Yes. Limited. We finished our bus tour season at the end of October 2019. COVID hit in March 2020 and we discontinued bus tours. The season would have started end of April 2020. Bus tours have been cancelled for 2021.	Not Aware		Bus tours will not resume until we can safely operate the tours safely for staff and visitors alike.
VAFO	History of Valley Forge Trolley Tour	Yes. Limited. Limited tour dates were offered due to COVID. Tours were not offered during the months of Jan - September due to COVID.	Not Aware		Regarding whether we plan to offer tours in 2021, we can't right now but we hope to in the future. To be determined based on the guidance & recommendations at the time that we resume.
YELL	Historic Yellowstone Bus Tours	Yes. Limited. We did not operate the Historic Busses during May through October of 2020. The information provided is for limited use of October 2019.	Not Aware		Yes. Mask always required while in the vehicle. Guest temperatures will be taken prior to boarding. No passengers will be permitted to ride in the front of the vehicle with the guide. Sanitizing vehicle whenever changeover of passengers occurs. Barriers will be installed between the driver and passenger compartment. Each row of seats will be barriered off as these vehicles have a separate door for each row of seats. Only three social bubble groups of up to 4 will be permitted per bench seat.
YELL	Xanterra Parks & Resorts Interpretive Bus Torus	Yes. Limited. We did not operate tours from May through December 2020. The information provided is for the months of October 2019, December 2019. January 2020, February 2020 and March 2020.	Not Aware		Yes. Our current plan is to use a limited number of minibuses during the summer of 2021 unless social bubble restrictions are removed. Our Historic Yellow Bus fleet will provide most tour opportunities for summer 2021.  Mask always required while in the vehicle. Guest temperatures will be taken prior to boarding. No passengers will be permitted to ride in the front of the vehicle with the guide. Tour offerings will be limited. Sanitizing vehicle whenever changeover of passengers occurs. Barriers will be installed between the driver and passenger compartment. Only social bubble groups will be seated with 6 feet of distance between non-social bubble groups.
YELL	Xanterra Parks & Resorts Interpretive	Yes. Normally. COVID did not affect our FY 2020 winter season as the winter season operated between mid-December 2019 to early March 2020.	Not Aware	<ul style="list-style-type: none"> <li></li> </ul>	Yes. Mandatory masking, less capacity, social distancing between social bubbles, plexiglass barriers between driver and passenger compartments, and temperature checking.

Unit	System Name	Did the system operate? If yes, normally or limited compared to 2019? Describe the impacts on ridership	Was the ATP COVID guide useful?	Physical and Operational Changes to Protect Drivers	Plans to Operate in 2021 and Additional Changes
	Snowcoaches Tours				
YELL	YELL Boat	No			Yes. Six-foot distancing. Face coverings required. Temperature checks. Barriers between passengers and crew. Closing seats to allow for six foot distancing.
YELL	YELL Snow Coaches	Yes. Normally. Season was ending as Covid-19 was ramping up - YELL snow coach tours ended in March 2020 for the season.	Yes		Yes. Numerous mitigations measures were put in place for the following season snow coach season (Dec 2020 - March 2021). All tours must adhere to current CDC guidance, limited snow coach capacity, limited indoor facility space, facemask requirements while onboard, plexiglass dividers between drivers and guests, info. collect to ease contact tracing, pre-trip screening for COVID exposure, etc. Limited capacity while onboard snow coaches, some vehicles had plexiglass barriers installed, mask requirement while on board.
YOSE	YARTS: Yosemite Area Regional Transportation System	Yes. Limited. Reduced seating availability in buses from 48 seats to 30; required advanced reservation for 30 seats; provided additional capacity for 8 "walk-up," unreserved seats. Passengers were required to wear face masks and stay 6 feet apart. Annual ridership declined from ~115,000 to 47,000. Nobody was monitoring rider behavior.	Yes	<ul style="list-style-type: none"> <li>Cooperator required passengers to wear masks and mandated physical distancing among those who were not already traveling together.</li> <li>The NPS closed the park for three months (March, April, and May) so as not to attract long-distance travel, pursuant to the local and state public health official recommendation and guidance to stay home.</li> <li>Physical distancing among parties who were not already traveling together.</li> </ul>	Yes. YARTS will continue to require advance ticket reservations, masks, and distancing. These operational requirements will remain in effect until the infection and hospitalization rates subside. No changes from practices imposed in 2020.
ZION	Zion Shuttle	Yes. Limited. revised schedules, and limited seating capacity. There were less seats available and a reduced number of riders.	Somewhat	<ul style="list-style-type: none"> <li>Plastic curtains were installed to provide a barrier between boarding/deboarding passengers. This was approved by the park and installed by the contractor. Buses disinfected twice daily.</li> <li>Passenger seats were removed by the contractor to lower the number of passengers that could ride and to demonstrate social distancing. No standing was allowed.</li> </ul>	Yes. More frequent runs with limited seating as in 2020. Masks required per CDC guidance.