



# Transportation Innovation

## FEDERAL LANDS TRANSPORTATION PROGRAM FACT SHEET

With visitation at unprecedented levels, the NPS is exploring innovative transportation solutions to mitigate congestion, provide visitors with multimodal transportation alternatives, and develop new infrastructure like real-time visitor information.

Proterra E2 Electric Bus at Zion National Park. Source: RATP Dev America



Transportation systems play an important role in helping the National Park Service (NPS) achieve its mission of providing safe and enjoyable access to the nation's parks, while at the same time preserving and protecting precious natural and cultural resources.

The importance of transportation services and infrastructure to the NPS is growing as visitation rises. Between 2009 and 2018, annual park visits grew from 283 million to 318 million annually, an increase of 11 percent.

### Current Transportation Innovations

Transportation innovations are already underway in the NPS. Alternative bus fuels, electric buses, vehicle charging stations, real-time information, and bike share are available for visitors at multiple parks.

**Advanced vehicle technologies** such as clean fuels and real-time tracking can reduce traffic congestion, improve visitor experience, and reduce impacts on natural resources. The NPS has adopted several innovative technologies across parks.

- » Compressed natural gas shuttle bus service offered is offered on the South Rim of Grand Canyon National Park. It produces fewer harmful emissions for people and the environment.
- » Electric vehicle charging stations have been installed for public use at the Grand Canyon, Olympic, Everglades, Edison, Biscayne, Big Cypress, Death Valley, Gettysburg, Delaware Water Gap and Cape Cod. The NPS, the National Park Foundation, and BMW of North America, LLC partnered on the electric vehicle charging stations.
- » Electric buses have been added to the fleets at Yosemite and Zion National Parks, with Zion receiving supporting funds through the Clean Cities National Parks Initiative.
- » Real-time shuttle tracking at Acadia and Bryce Canyon National Parks offers real-time information for visitors.

**Innovative tools and processes** such as improvements to park operations and infrastructure create transportation opportunities.

- » The Congestion Management Toolkit provides multiple options for parks seeking to relieve congestion and improve visitor experience.
- » The Active Transportation Guidebook shares methods and examples for parks to enhance active transportation to and within national parks.
- » The Collaborative Visitor Survey helps parks better understand visitor transportation needs and provides pre-approved and consistent survey questions.

Access to and within the National Park System has been a defining experience for generations of visitors. The National Park Service coordinates the planning and implementation of transportation systems that improve the visitor experience and care for national parks by: **1) Preserving natural and cultural resources 2) Enhancing visitor safety and security 3) Protecting plant and animal species 4) Reducing congestion 5) Decreasing pollution.**



Automated Gate at Rocky Mountain National Park. Source: NPS



Dockless Bikes at Yosemite National Park. Source: NPS

The NPS is committed to being a leader in pursuing strategies that can help make park units more enjoyable, cleaner, quieter, and more sustainable for present and future generations.

- » Automated gates, such as those installed at Rocky Mountain National Park, reduce congestion at entrance stations.
- » Parking meters installed at Indiana Dunes National Park, Golden Gate National Recreation Area, and the National Mall have reduced parking lot congestion and provided revenue.

**Personal mobility solutions** are evolving to become more flexible, which enables broader deployment across a more diverse set of landscapes.

- » Dockless bike share using mobile app technology in Yosemite National Park will increase bicycle mobility without a reliance on the stations that are required by traditional bike share programs.
- » Dockless scooters currently being used in and around the National Mall have the potential to provide flexible personal mobility for NPS visitors.
- » Thirty NPS-sponsored bikeshare stations and six kayak-share stations at the Mississippi National River and Recreation Area has supported partners in providing personal mobility options for visitors that connect to a larger regional transportation system.

### Emerging Transportation Technologies

New technologies are creating disruption in the transportation industry. Advancements in vehicle technologies, expanding data management, interconnected digital ecosystems, and shifting preferences to shared mobility will affect visitor transportation choices. These emerging technologies may offer more efficient transportation alternatives and real-time information for parks, while bringing new challenges to park operations.

Autonomous shuttles are rapidly being developed by many established and startup vehicle manufacturers. Their self-driving capabilities provide opportunity to potentially improve the efficiency of transporting visitors in high traffic locations by running on optimized schedules, add to the safety of passengers, and reduce the energy demand of transporting visitors. These improvements will contribute to a better experience for NPS visitors.

Machine learning and predictive analytics will allow new mobility options and pre-trip guidance for travelers. Traffic monitoring systems can display the current location and status of all incidents from multiple sources, including social media. Additionally, with advancements in the collection of vehicle data, fleet managers will be able to implement a risk-based approach to preventive maintenance. Enhanced accessibility from better analytics will enable more visitors to experience the natural and cultural resources of the national park system.

### Looking Ahead – Transportation Issues for the NPS Over the Next 20 Years

How Will New Technology Impact Visitor Experience?	How Will the NPS Respond to New Technology?
<ul style="list-style-type: none"> <li>• What will the future of transit within parks look like if personal vehicles are not used for travel within parks?</li> <li>• How will shared vehicles impact the amount of driving by visitors and the demand for parking?</li> <li>• Will visitor experience be enhanced through technology advances or hindered?</li> <li>• How might real-time information on park conditions change visitor use patterns?</li> </ul>	<ul style="list-style-type: none"> <li>• Will new technologies increase the demand for intrusive visual infrastructure?</li> <li>• Will more electric vehicles mean that parks must increase the use of solar, wind, or electric grid power availability?</li> <li>• How will technology and changing demographics impact staffing and funding needs?</li> <li>• Will new transportation choices and increased visitor mobility change visitor demand for scenic driving?</li> </ul>