



The Greening of Our National Parks

How Electric Vehicles Can Reduce Emissions in U.S. National Parks and on Our Public Lands

By Myriam Alexander-Kearns and Nidhi Thakar October 14, 2015

“One of the most precious values of the national parks is their ability to teach us about ourselves and how we relate to the natural world. This important role may prove invaluable in the near future as we strive to understand and adapt to a changing climate.”

– Jon Jarvis, Director of the U.S. National Park Service, 2009¹

For more than 100 years, national parks have provided a haven for Americans seeking to escape congested cities burdened with noise and air pollution. Names such as Yellowstone, Redwood National Park, the Badlands, and Arches National Park evoke images of towering mountains, wildflowers, free-flowing rivers, and lush tree canopies. However, these treasured areas are becoming polluted from passenger vehicle emissions—which account for 40 percent of emissions that originate in national parks—as well as from ozone and smog from other sources, including coal-fired plants situated upwind from national parks.² The Obama administration’s efforts to reduce these forms of pollution—such as the Clean Power Plan,³ announced in August—will go a long way toward ensuring that the air we breathe in our national parks is clean. But as visitors to these pristine places, many of us still want to do our part to reduce our carbon footprint.

Increasing the use of electric vehicles, or EVs, is a common-sense way to reduce vehicle emissions in national parks and on our public lands.⁴ Currently, however, national parks contain only a limited number of the EV charging stations necessary to recharge these vehicles for long trips. Many national parks span tens if not hundreds of thousands of acres and are located in more remote areas, making the use of EVs even more challenging. The National Park Service, or NPS, has made great strides over the past decade to do its part in reducing park emissions by replacing existing vehicles with EVs and making it easier for the public to use EVs in national parks by installing needed charging infrastructure. However, the park service should take additional steps to accelerate its transition to clean burning vehicles and to encourage greater use of EVs in national parks.

Clean Cities National Parks Initiative and other federal partnerships for cleaner air

Since 1999, the NPS and the Department of Energy have collaborated through the Clean Cities National Parks Initiative to promote transportation projects that reduce dependence on petroleum, reduce tailpipe emissions, and educate park visitors on the benefits of reduced vehicle emissions.⁵ Across the United States, visitors to national parks encounter EV charging stations; electric and hybrid electric vehicles incorporated into NPS fleets; and opportunities to learn about the environmental benefits of electric transportation.⁶ With more than 292 million visitors annually, the national park system also provides a venue for visitors to experience firsthand the fact that EVs can transport them to prime vacation spots.⁷

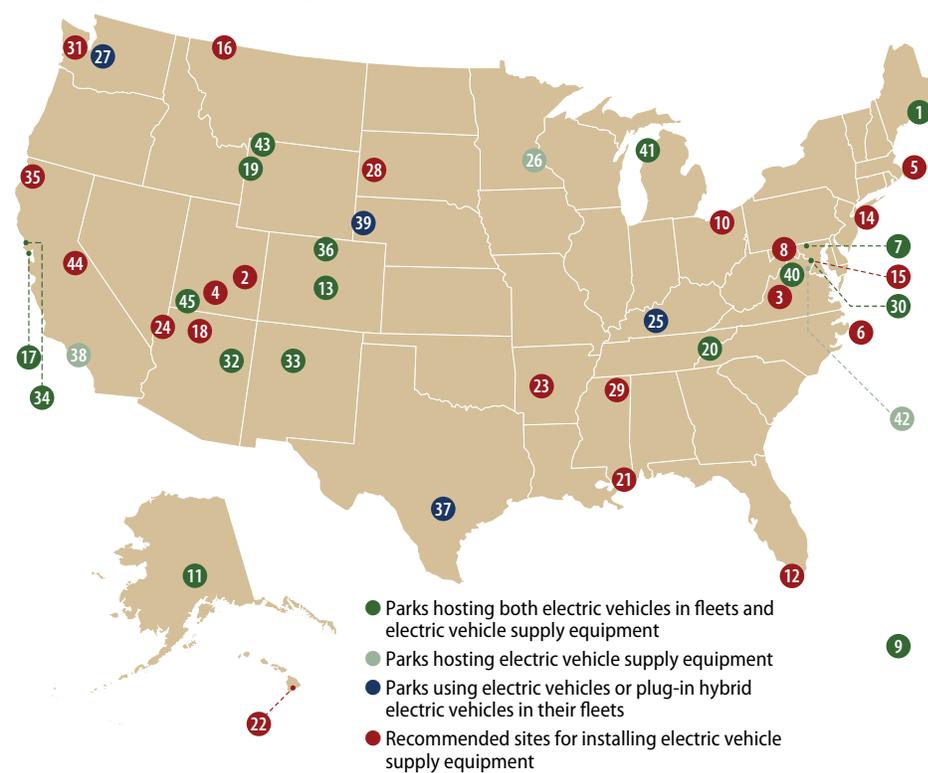
The effort to make transportation in parks more environmentally friendly is also a key tenet of the NPS' 2012 Green Parks Plan,⁸ which commits the NPS to reducing its carbon footprint by its centennial in 2016. According to the plan, "The NPS will transform our fleet and adopt greener transportation methods."⁹ To accomplish this, the plan includes objectives such as evaluating new technology for use in fleets and using low-emission and low-petroleum-consuming vehicles. Currently, 21 parks host EV charging stations, while 20 parks—with some overlap with those that host chargers—have replaced petroleum-powered vehicles in their fleet with EVs.¹⁰ In Great Smoky Mountains National Park, for example, a fleet overhaul that will replace gasoline pickup trucks with electric vehicles and install public charging stations is expected to reduce emissions in the park by approximately 40 million tons of carbon dioxide annually.¹¹

Other parks have already seen reduced emissions and petroleum use from their fleets. In Teton County, Wyoming, home of Grand Teton National Park and Yellowstone National Park, 62 percent of greenhouse gas emissions come from ground transportation.¹² Through initiatives that include the installation of public EV charging stations and the use of plug-in hybrid EVs in NPS fleets, the region cut greenhouse gas emissions by 43,056 tons from the previous year as of June 2015.¹³

On a programmatic level, the Department of Energy's National Renewable Energy Laboratory, or NREL, is helping the NPS understand the steps necessary to electrify its fleet and how to raise awareness and promote electric transportation in the parks.¹⁴ NREL offers support through the Clean Cities program and its network of local coalitions and has helped develop policy that advocates broader deployment of EVs and charging stations throughout the national park system. Each park establishes a relationship with its local Clean Cities coalition. The Department of Energy and the NPS have been successful in introducing EVs and EV charging stations in national parks by providing equipment, technical assistance, education, and training to the parks. Together, NREL and the supporting Clean Cities coalitions also created the Green Rides Toolkit, a series of resources to help parks better convey to the general public the clean fuel technologies that have been adopted onsite.¹⁵

FIGURE 1

National park units that host electric vehicles and electric vehicle supply equipment



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| 1 Acadia National Park, Maine | 22 Hawai'i Volcanoes National Park, Hawaii |
| 2 Arches National Park, Utah | 23 Hot Springs National Park, Arkansas |
| 3 Blue Ridge Parkway, North Carolina and Virginia | 24 Lake Mead National Recreation Area, Arizona |
| 4 Bryce Canyon National Park, Utah | 25 Mammoth Cave National Park, Kentucky |
| 5 Cape Cod National Seashore, Massachusetts | 26 Mississippi National River and Recreation Area, Minnesota |
| 6 Cape Hatteras National Seashore, North Carolina | 27 Mount Rainier National Park, Washington |
| 7 Catoctin Mountain Park, Maryland | 28 Mount Rushmore National Memorial, South Dakota |
| 8 Chesapeake and Ohio Canal National Historical Park, Maryland | 29 Natchez Trace Parkway, Mississippi |
| 9 Christiansted National Historic Site, Virgin Islands | 30 National Mall and Memorial Parks, Washington, D.C. |
| 10 Cuyahoga Valley National Park, Ohio | 31 Olympic National Park, Washington |
| 11 Denali National Park and Preserve, Alaska | 32 Petrified Forest National Park, Arizona |
| 12 Everglades National Park, Florida | 33 Petroglyph National Monument, New Mexico |
| 13 Florissant Fossil Beds National Monument, Colorado | 34 Point Reyes National Seashore, California |
| 14 Gateway National Recreation Area, New York and New Jersey | 35 Redwood National Park, California |
| 15 George Washington Memorial Parkway, Virginia and Washington, D.C. | 36 Rocky Mountain National Park, Colorado |
| 16 Glacier National Park, Montana | 37 San Antonio Missions National Historical Park, Texas |
| 17 Golden Gate National Recreation Area, including Muir Woods National Monument, California | 38 Santa Monica Mountains National Recreation Area, California |
| 18 Grand Canyon National Park, Arizona | 39 Scotts Bluff National Monument, Nebraska |
| 19 Grand Teton National Park, Wyoming | 40 Shenandoah National Park, Virginia |
| 20 Great Smoky Mountains National Park, North Carolina and Tennessee | 41 Sleeping Bear Dunes National Lakeshore, Michigan |
| 21 Gulf Island National Seashore, Mississippi | 42 Wolf Trap National Park for the Performing Arts, Virginia |
| | 43 Yellowstone National Park, Wyoming |
| | 44 Yosemite National Park, California |
| | 45 Zion National Park, Utah |

Authors' note: Electric vehicle supply equipment includes charging stations, conductors, grounding equipment, and other charging infrastructure.

Sources: U.S. Department of Energy, "Clean Cities: Clean Cities Parks Map," available at http://www1.eere.energy.gov/cleancities/images/clean_cities_parks_map.jpg (last accessed October 2015); Wolf Trap Foundation for the Performing Arts and General Motors, "Wolf Trap Foundation for the Performing Arts and General Motors Encourage Arts Lovers to Go Green this Summer," Press release, June 22, 2011, available at <http://www.prweb.com/releases/2011/6/prweb8593721.htm>; Donna Childress, "More Charging Stations Popping Up In National Park System For Electric Vehicles," National Parks Traveler, January 15, 2015, available at <http://www.nationalparkstraveler.com/2015/01/more-charging-stations-popping-national-park-system-electric-vehicles26160>; Seattle Electric Vehicle Association, "Charge for Change," available at <http://www.seva101.org/C4C/default.html> (last accessed October 2015).

National parks as natural showrooms

Installing charging stations in parks and adopting EVs for park fleets offers the NPS a unique opportunity to educate the public on these emerging, clean vehicle technologies. National parks serve as beautiful, natural showrooms that can educate people already drawn by an appreciation for the environment and concern for conserving these treasured places.

Additionally, providing EV charging infrastructure for public use makes national parks more accessible to the growing number of EV owners in the United States. In many cases, the installation of EV infrastructure is meeting needs that park patrons have already expressed. Zion National Park, for example, installed five public charging stations in response to requests from EV drivers who wanted to commute to the park but had nowhere to charge their vehicles.¹⁶

How can the federal government speed the deployment of EVs and charging stations on our public lands?

The Obama administration has challenged the federal government—the single largest energy user in the United States—to cut its greenhouse gas emissions by 40 percent from 2008 levels by 2023.¹⁷ While the Obama administration has made good progress through recent regulatory actions that promote clean air, it can and should do more. The Clean Cities National Parks Initiative is a quintessential example of how cross-agency coordination can help the federal government meet its aggressive goals to cut greenhouse gas emissions. To further facilitate the NPS to reach its goal of reducing its carbon footprint before the 2016 centennial and reduce emissions from public lands, the administration should take the following steps.

Expand the Clean Cities National Parks Initiative to apply to Bureau of Land Management public lands and Forest Service lands

The Clean Cities National Parks program has been successful in updating NPS vehicle fleets with EVs and installing charging stations at national parks to support the NPS and public EV deployment. However, many Americans also visit, recreate, and vacation on lands managed by the U.S. Forest Service and the Bureau of Land Management, such as Lake Tahoe; Moab, Utah; and the George Washington National Forest. Like national parks, these areas are often remote and cover many acres of land, creating an even greater need for EV charging stations for visitors who wish to reduce their carbon footprint in the wild by driving their EVs to these areas. Also, because Bureau of Land Management and Forest Service staff must often drive farther distances when patrolling or staffing these areas, the increased use of EVs would help keep vehicle emissions low.

Double the number of national park system units with EV charging stations

To date, the NPS has installed EV charging stations in 21 out of 470, or roughly 4 percent, of national park units. The NPS should double the national park units with EV charging capabilities in advance of its centennial. Based on visitor attendance, proximity to existing EV charging stations in national parks, and proximity to major metropolitan areas, the NPS should target the 21 sites across the country listed in the text box for new charging stations.

Provide reduced park entrance fees for electric vehicles

Many parks currently provide discounted entrance fees for high capacity, noncommercial vehicles.¹⁸ The NPS also offers an annual pass at a discounted rate, which provides visitors unlimited access to more than 2,000 federal recreation sites.¹⁹ To help commemorate the NPS' centennial and encourage visitors to use clean burning vehicles in the national park system, the NPS should provide reduced entrance fees for EVs or an annual EV park pass.

Expand the use of energy savings performance contracts, or ESPCs, to cover the installation of charging stations for EVs

ESPCs are contracts between energy service companies and the federal government that allow the government to make efficiency upgrades to federal facilities with no upfront capital costs or congressional appropriations.²⁰ ESPCs make it possible for the federal government to use its energy savings over the life of the contract, which can be up to 25 years, to repay the purchase costs.²¹ Projects have traditionally included upgrades to heating, ventilation, and air conditioning; water conservation improvements; and energy conservation upgrades.²² The energy savings to the NPS from installing EV charging stations in national parks to support vehicle fleets that would no longer require gasoline would be used to pay for these infrastructure upgrades. ESPCs have been a successful tool to increase energy savings for the federal government and should be expanded to apply to EV charging stations.

21 proposed sites for electric vehicle charging stations

- Arches National Park
- Bryce Canyon National Park
- Blue Ridge Parkway
- Cape Cod National Seashore
- Cape Hatteras National Seashore
- Chesapeake and Ohio Canal National Historical Park
- Cuyahoga Valley National Park
- Everglades National Park
- Gateway National Recreation Area
- George Washington Memorial Parkway
- Glacier National Park; Grand Canyon National Park
- Gulf Islands National Seashore
- Hawai'i Volcanoes National Park
- Hot Springs National Park
- Lake Mead National Recreation Area
- Mount Rushmore National Memorial
- Natchez Trace Parkway
- Olympic National Park
- Redwood National Park
- Yosemite National Park

Conclusion

The NPS' commitment to reducing greenhouse gas emissions in the park system is commendable and should be expanded further to accelerate the deployment of EVs and EV charging stations in national parks and on other public lands. The federal government must lead by example and continue to take aggressive action to combat climate change and cut carbon emissions, and the Clean Cities National Parks Initiative is an avenue for meeting this goal. The NPS' centennial in 2016 further provides an opportunity for the park service to reaffirm its commitment to sustainable transportation as it transitions into the next century.

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Endnotes

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