Federal Lands Transportation Program

National Park Service
U.S. Department of the Interior

National Park Service
Transportation Reauthorization Resource Paper

30 May 2013

Table of Contents

Introduction	3
Theme 1: Restore and Maintain Core Transportation Infrastructure	4
Category I: Paved Roads and Bridges	7
Category II: Complete the "Missing Link" of the Foothills Parkway	8
Category III: NPS Alternative Transportation Systems	9
Theme 2: Transportation Needs Beyond the Capacity of the Core Program	11
Proposed Legislative Changes	13
Investing in the NPS Transportation System	16
Innovative Transportation Finance	16
Endnotes	16

Appendix A: NPS Transportation System Conditions and Needs	APP — 1
Category I: Roads/Parking/Bridges/Tunnels Needs	APP — 4
Category II: Complete Unfinished Parkways	APP—10
Category III: Alternative Transportation, ITS, and Trails	APP—12
Appendix B: NPS Transportation System Background	APP—19
NPS Transportation Mission	APP—19
NPS Transportation Accomplishments	APP—20
Objectives and Performance Measures	APP—22
Trends	APP—23
Number and Types of Parks	APP—25
Visitation	APP—25
The Economic Importance of NPS	APP—27
Climate Change	APP—28
Transportation in Signature NPS Initiatives	APP—30
Innovative Transportation Finance	APP—31
NPS Transportation Funding Trends	APP—34
Preparing for Emergency Relief and Recovery	APP—36
Appendix C: Management Systems, Data Collection and Planning	APP—37
Assets & Funding Venues	APP—37
NPS Life-Cycle Costs and the Capital Investment Strategy (CIS)	APP—37
Pavements and Bridges	APP—38
Safety	APP—39
Congestion	APP—41
Traffic	APP—42
Long Range Transportation Planning	APP—42
Reduction in Air, Noise, and Visual Pollution	APP—42
Appendices Endnotes	APP—43

Introduction

Our National Parks are a mainstay of the American experience, providing tremendous natural, cultural and historic value. The National Park is an American invention that plays an important role in the life of the country. Author and environmentalist Wallace Stegner called the parks "America's Best Idea." The national park system:

- Preserves our natural and cultural heritage and shares it with each new generation;
- Contributes to the economy and cultural identity of local communities;
- Enhances the quality of life for all Americans;
- Reflects our Nation's commitment to conservation; and,
- Is this generation's gift to future generations.

America's national park system draws visitors from across the nation and around the world. In 2012, 283 million visitors[1] enjoyed the scenic wonders, learned about important events in our nation's history, and visited monuments to our nation's heroes. An efficient transportation system comprised of roads, bridges, parking lots, ferry systems and shuttles is pivotal to the "balancing act" between providing access for millions of annual visitors and protecting the natural and cultural resources that make up the park system.

Because of the intrinsic value the System provides to all Americans, the care of these great lands and resources – and preservation of the public's access to them – is a **Federal responsibility**.[2]

The National Park Service (NPS) transportation system is made up of infrastructure and services spread across the entire country. This system is intended to support the NPS mission by providing safe and enjoyable access for the public to America's treasured places while at the same time protecting and preserving park resources (Mission addressed in Appendix B).

However, like much of the transportation infrastructure of the United States, the NPS transportation system is deteriorating. At current funding levels, the percentage of the NPS roads and bridges that are in good condition is declining, and the NPS is struggling to sustain its alternative transportation systems. Meanwhile, traffic safety problems and congestion are as much a factor in the national parks as in any state or city and warrant increased attention. Action is needed to address these immediate problems, while at the same time preparing for the future. Recent and current funding levels severely limit the development of new or expanded systems and services to provide public access to park resources.

Together with its partner, the Federal Highway Administration (FHWA), the NPS has worked to address these challenges. With the support of the Federal Lands Transportation Program (FLTP), the NPS continues to improve on its sound asset-management approach that both preserves its transportation system and protects its natural and cultural resources.

This document describes the condition, challenges, and needs of the NPS transportation system to be considered and addressed in the reauthorization of the *Moving Ahead for Progress in the 21st Century Act* (MAP-21) [Public Law 112-141].

For the upcoming reauthorization of the Federal surface transportation program, the NPS has developed two broad "themes" to define and support its proposal for managing transportation assets and services within the 401 park sites and more than 84 million acres that comprise the NPS. Furthermore, the document includes recommendations for legislative changes to improve the management of the NPS Transportation System.

The NPS is requesting a total of $970 million per year. The NPS core program under Theme 1 recommends $770 million per year, and Theme 2 recommends $200 million per year. The details of this request are enumerated in the following sections.

Theme 1: Restore and Maintain Core Transportation Infrastructure — Sound Asset Management $770 million/year:

Category I:		
	Paved Roads	**$450 million/year**
	Paved Parking Areas	**$120 million/year**
	Bridges	**$120 million/year**
Category II	**Parkways**	**$10 million/year**
Category III	**Alternative Transportation**	**$70 million/year**

Analyses informed by industry best practices, developed by the FHWA and endorsed by the NPS, have shown that "Sound Asset Management"— the systematic process of operating, maintaining, and upgrading assets — is the most cost effective method for maintaining a network of transportation assets. The lifecycle strategy of maintaining assets in "good condition" is to meet the NPS mission by providing users and visitors with comfortable, safe, and efficient transportation.

A system of assets in "good condition" is easier to maintain and allows the best opportunity for sound asset management. When assets are in good condition, a cost effective network life-cycle strategy can be applied, thereby protecting and extending the use of NPS facilities. Based on an extensive and robust use of asset management systems developed over the past 15 years, NPS and FHWA transportation program managers know the assets and services that

comprise its transportation system, the condition of that system and the actions required to bring the system up to the level of good condition and maintain it into the future. This approach is paying dividends by helping the NPS and FHWA establish performance-based success measures and apply performance-based decision making to determine the most cost-effective ways to utilize and apply available funds.

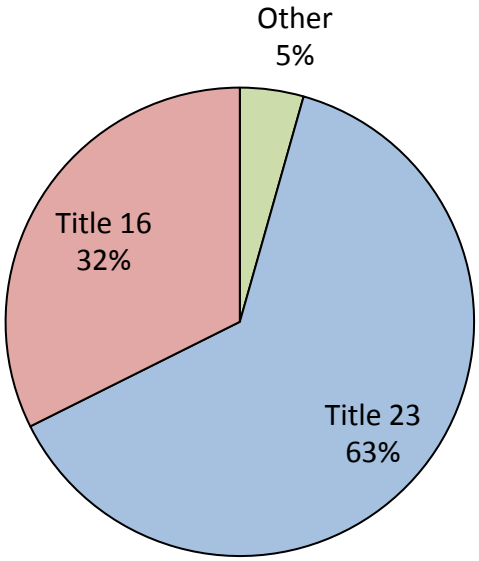
Summary of NPS Transportation Funding Prior to MAP-21

Immediately prior to MAP-21, the nation's surface transportation funding was authorized under the *Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users* (SAFETEA-LU).[3] During the years of SAFETEA-LU, 2006 through 2012, the NPS was authorized or awarded (from all sources) a total of $3.3 billion for transportation.[4]

These funds came primarily from two sources: U.S.C. Title 23 (Highway) provided approximately two-thirds of the funding; and U.S.C. Title 16 (Department of the Interior, NPS) programs provided roughly one-third of the funding (See Figure 1 below).

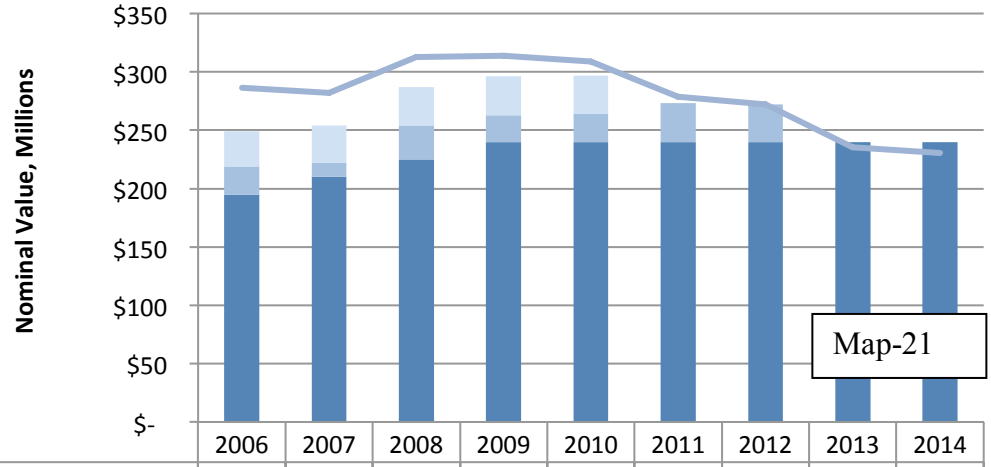
The NPS invests heavily in its transportation systems; however, the strain this puts on NPS programs under U.S.C. Title 16 is great, since expenditures on the transportation systems compete with mission-critical needs in other infrastructure areas. U.S.C. Title 16 funds are used, in part, to support NPS transportation operations [eligibility restrictions under U.S.C. Title 23], maintenance and repair and rehabilitation projects. Other funding sources, such as the U.S.C. Title 49 TRIP Program, donations, and other programs provided roughly five (5) percent of total NPS transportation funding.

Figure 1: Source of NPS Transportation Obligations, Authorizations, and Awards (2006 - 2012) by Title



Both nominal and real funding (in 2012 dollars) from U.S.C. Title 23 has declined since 2010. Although MAP-21 funding levels for the Federal Lands Transportation Program (the Park Roads and Parkways Program under SAFETEA-LU) remain at the 2009-2012, the real value of this funding has eroding to pre-SAFETEA-LU levels, as shown in Figure 2 below. At the same time, NPS visitation has increased, the deferred maintenance backlog for transportation assets has increased, and construction costs and legislated requirements have expanded.[5]

Figure 2: SAFETEA-LU and MAP-21 NPS Authorizations and Awards



	2006	2007	2008	2009	2010	2011	2012	2013	2014
Earmarks (Authorizations)	$30	$32	$33	$33	$33	$-	$-	$-	$-
Discretionary Programs (Awards)	$24	$12	$29	$23	$24	$33	$32	$-	$-
PRPP/FLTP (Authorizations)	$195	$210	$225	$240	$240	$240	$240	$240	$240
Total (Real 2012 $)	$286	$282	$313	$314	$309	$278	$272	$235	$230

The loss in funding is driven largely by the flat extension of the FLTP at $240 million per year and the restructuring of funding sources under MAP-21. MAP-21 is absent of Congressional earmarks, eliminates funding programs such as Transit in Parks, Public Lands Highway Discretionary, and Scenic Byways, and eliminates the eligibility of Federal Land Management Agencies (FLMAs) for the Ferry Discretionary Program.[6] All told, changes between MAP-21 and SAFETEA-LU resulted in a roughly $63 million per year loss in funding for the NPS transportation system, a 14 percent decline.

At the same time, the 2012 sequestration and budget reductions have reduced NPS programs (under U.S.C. Title 16) by at least six percent, and transportation projects will have to compete that much harder for limited funding.

The NPS transportation asset portfolio is funded over its life-cycle through a combination of funding programs, primarily authorized in U.S.C. Title 16 and U.S.C. Title 23. This includes considering the total cost of facility ownership of the infrastructure we manage and using U.S.C.

Title 16 funding to address the day-to-day maintenance and operations activities as must be done in order to achieve each assets full service life.

For this reason, the NPS has leveraged the power of asset management systems (both the NPS maintenance management system—the Facility Management Software System—and U.S.C. Title 23 required management systems) to create a maintenance and investment strategy that improves our ability to achieve these goals. The NPS has developed the Capital Investment Strategy (CIS) as a funding prioritization mechanism for evaluating and prioritizing fiscal resources committed to NPS facilities. The CIS will align project funding (U.S.C. Title 23, U.S.C. Title 16 and other) with a commitment to meeting the ongoing life-cycle operations and maintenance requirements of facilities in which we invest. The CIS will also ensure a financially sustainable future for the highest priority, most treasured NPS assets—as well as mission-critical infrastructure.

The NPS has also begun a long-range transportation planning process that has assisted with the establishment of key servicewide goals and NPS-specific performance measures beyond standard transportation ones. In addition, this planning effort will set servicewide goals for all modes of travel to parks, establishing baseline conditions for critical transportation investments, determining high priority, long-term transportation needs for the agency, and establishing financial strategies to most efficiently and effectively meet those needs.

Planning costs are included in the cost of implementing our condition, parkway completion and alternative transportation goals because we consider these expenses part and parcel of managing our transportation assets.

The following three (3) categories make up Theme 1, where a sound asset management approach leads to specific and measurable performance levels, and identifies the funds required to attain them.

Category I: Paved Roads and Bridges ($690 million/year)

Paved Roads	$450 million/year
Paved Parking Areas	$120 million/year
Bridges and Tunnels	$120 million/year

Performance Goals:

- Paved roads and paved parking area condition: improve Pavement Condition Rating of 85; equivalent to a Facility Condition Index (FCI) of 0.08[7]
- Bridge and tunnel condition: maintain Bridge Health Index at 0.92; equivalent to a FCI of 0.08.

Cost to Attain: $690 million annually.

The FHWA concluded that the performance metrics listed above for road and bridge condition allows the NPS to utilize the most cost effective techniques—mainly preventive maintenance and light rehabilitation treatments to maintain road and bridge conditions over time. In some cases, the repair of structurally deficient bridges and addressing critical paved road safety needs may require more expensive treatments which are included in our assessment. As a demonstration of the benefits of utilizing sound asset management approaches to the NPS paved road network, the NPS and FHWA have analyzed the opportunity cost of delaying improvements to the paved road network. (See Appendix A for details.)

Roadway Safety

Performance Goals:

- The completion of a fully functional transportation safety management system is our first priority for transportation management systems. This includes completion of a comprehensive traffic count program.
- Continue to incorporate important safety improvements and implement crash reduction strategies in transportation projects on NPS roadways.

Cost to Attain: Incorporated into the cost of achieving all other performance measures.

A pilot safety management system being implemented in the Northeast Region (NER) has allowed the NER to define specific Safety Emphasis Areas, and to identify target areas and specific strategies that have the most significant impacts on reducing crashes and improving safety. This pilot approach has allowed the NER to establish a safety performance goal of a 20% reduction in serious crashes and to establish monitoring procedures to assess the effectiveness of their safety improvement strategies toward achieving this goal.

The NPS is building on the successes illustrated in the NER safety management system pilot to augment our development of a national Transportation Safety Management System (TSMS) and to establish reasonable and attainable performance goals for roadway safety throughout the NPS.

Category II: Complete the "Missing Link" of the Foothills Parkway ($10 million/year)

This recommendation addresses just a portion of the incomplete Foothills Parkway at Great Smoky Mountains National Park, in eastern Tennessee. The Foothills Parkway was authorized by the Congress in 1944. Only three (3) of the eight (8) segments of the Foothills Parkway totaling 22.5 miles of the entire 72-mile corridor are completed and open to the public. Since 1966, work has been done to open an additional 16-mile segment. Under SAFETEA-LU, continued work was accomplished for Section E and Section F of the Foothills Parkway.

With support from the American Recovery and Reinvestment Act of 2009 (ARRA) [Public Law 111-5], the NPS, with FHWA, constructed additional missing portions of this segment bringing

the total work completed for this segment to $146 million. When this segment (Sections E and F) is completed, it will open the entire 16 miles. Given the financial limitations of what can be accomplished during the next reauthorization period, the remaining 33 miles of the parkway would be deferred until later.

Cost to Attain: The NPS recommends spending $60 million over the six years ($10 million/year) of the reauthorization bill to complete Section E and F and open this 16-mile segment of the Foothills Parkway.

Category III: NPS Alternative Transportation Systems ($70 million/year)

Alternative Transportation	$40 million/year
Intelligent Transportation Systems	$15 million/year
Trails	$15 million/year

Strategic and Performance Goals for alternative transportation are enumerated on page 10 for transit, and on page 11 for ITS and trails.

Alternative transportation systems (ATS) encompass all modes of surface transportation beyond traditional roadways and private vehicles, including motorized and non-motorized land and water-based transportation systems. These systems include alternative-fuel buses (running on fuels like propane, electricity, and natural gas), trolleys, water taxis, ferry boats, canal boats, and aerial tramways. In addition, ATS encompasses Intelligent Transportation Systems (ITS) such as traffic advisory systems, and facilities for non-motorized modes of transportation, such as trails.

NPS ATS needs have largely been unmet and have fallen short of the recommendations enumerated by the U.S. Department of Transportation (DOT) Federal Highway and Federal Transit Administrations in the congressionally mandated *Federal Lands Alternative Transportation Systems Study*, completed in August 2001. The study recommended that the NPS invest $60 million/year from 2001 to 2010 and increase funding to $95 million/year from 2011 to 2020 for both land and water based systems. Furthermore, the needs exceed what was outlined in this DOT report to the Congress, as it did not include ITS and non-motorized trails needs.

In addition, the Paul S. Sarbanes Transit in Parks (TRIP) program was repealed under MAP-21. Under SAFETEA-LU, of the approximately $162 million awarded by the Federal Transit Administration through the TRIP program, the NPS was received approximately $62 million in direct support, which was supplemented by an additional $46 million awarded to NPS partners. The repeal of the TRIP program results in a significant net loss of support (approximately $18 million/year) for transit, ITS and trails. Under MAP-21, the Federal Lands Transportation Program and the Federal Lands Access Program (FLAP) are insufficient to make up for this loss since these programs are focused primarily on road and bridge improvement needs.

A. Sustain Existing Transit Systems and Provide Cost Effective Service Enhancements

The NPS requires $40 million per year to sustain and enhance (through cost-effective service enhancements)[8] ATS transit systems in the national parks. A comprehensive ATS inventory was conducted by the Volpe National Transportation Systems Center in 2012 and 2013 (See Appendix A). The inventory shows the NPS has 147 alternative transportation systems in 72 park units; 52 of these alternative transportation systems provide the sole access to an NPS site because of lack of roads, resource/management needs and geographic constraints.

Strategic Goal: Address a growing deferred transit system maintenance backlog including the need to reduce the number of aging and unsafe facilities and equipment needs beyond industry life-cycle replacement guidelines of both land and water systems.

Performance Based:
Consistent with current authorizing legislation, the NPS is to develop a transit management system.[9] The metrics that will be developed will include appropriate use of the facility condition index (FCI) as applied to whole transit systems in addition to discrete parts of these systems. Examples of possible metrics under discussion include:

- Reducing the number of vehicles and water fleets that have exceeded industry service life standards. This will improve safety for visitors and reduce operational costs.
- Focusing 85 percent of annual funding on existing systems and approximately 15 percent on system enhancements.

Cost to attain: $40 million annually

B. Plan and Deploy Intelligent Transportation Systems

As part of the Alternative Transportation Program (Category III), NPS uses Intelligent Transportation Systems (ITS) as cost effective methods to accommodate increased demand rather than more costly construction alternatives. ITS deploys low cost communication and transportation control technologies such as parking lot demand management systems, traveler information systems, automatic entrance fast pass gates, variable message signs and many other transportation operation strategies.

In 2011, a comprehensive inventory was conducted by the Volpe National Transportation Systems Center of ITS usage by federal land units across the nation. The survey found that 136 NPS units reported having traveler information systems in place and/or were using social media outlets to convey traffic and other information critical to improving the visitor experience and planning. NPS units account for nearly 70 percent of such information services across all FLMAs, and NPS is seeking to build upon these prior successes with further implementations going forward. (See Appendix A for details.)

Strategic Goal: Continue to invest in ITS strategies to cost-effectively help manage visitor demand on NPS lands such as travel and traffic management, incident management and real-time transit and weather condition information.

Performance Based:

- Invest 75 percent per year toward expanding ITS applications and approximately 25 percent toward maintaining existing systems.

Cost to attain: $15 million annually

C. Restore Front Country Trail Needs

Front Country trails connect facilities and sites in a way that allows visitors to leave their cars behind. Popular over-looks, tourist destinations, and local communities can all be linked together by front country trails. They are the most heavily used trails in the system and are frequently paved. Front country trails also provide an interface between different transportation modes and many times serve as the primary transportation facility linking visitors (including disabled visitors) with the resources they've come to see and experience. Front country trails in poor condition can be hazardous and may prevent access to park areas that may otherwise be available.

Strategic Goal: Improve trails and establish a program to provide a steady stream of repair, rehabilitation and reconstruction funding to care for front country trails throughout the system, to provide connectivity between modes and to local communities.

Performance Based: Improve front country trails in serious or poor condition with an FCI of 0.42 (Poor) to an FCI of 0.10 (Good) for the safety and enjoyment of the public, and meet Architectural Barriers Act requirements.

Cost to Attain: $15 million annually

Theme 2: Address Transportation Needs Beyond the Capacity of the Core Program ($200 million/year)

In addition to the funds required to keep the NPS transportation system and services functioning, the NPS faces some project funding challenges that are beyond the capacity of the current core program. These projects are of such a size as to exceed the funds available annually to the Regions in which these projects are located and, in some cases, exceed the funds currently available to the entire NPS transportation program on an annual basis. These types of projects have also been grouped to illustrate more clearly the various issues that go beyond the capacity of the current NPS transportation core program.

Group A: Rehabilitation of Large and/or Unique Transportation Assets

Periodically, NPS facilities deteriorate to the point that major re-investment is required to continue to operate them. Where such transportation needs can be addressed by breaking a large project into segments or phases, this can be managed over time. However, there are some big projects that cannot be managed this way. Large bridges, watercraft and other "big ticket" items that must be repaired or replaced at one time fall into this category.

A primary example of this type of project is the needed rehabilitation of the Arlington Memorial Bridge over the Potomac River in Washington, DC. Its uniqueness as a cultural resource, its engineering complexity, and the daily traffic requirements made on it by non-recreational visitors have driven its rehabilitation price to a range from $130 million to $240 million (depending upon the extent of deterioration and scope of rehabilitation). Furthermore, the Arlington Memorial Bridge is designated an emergency evacuation route for the nation's capital.

Group B: Functional Obsolescence of NPS Facilities

Costs related to ownership and maintenance of the road network can extend well beyond simple repair of deteriorated pavements and drainage facilities. Many NPS roads were built decades ago, when the number of visitors was far smaller, fewer Americans owned vehicles, and there were almost no larger vehicles such as tour buses or recreation vehicles visiting the nation's parks.

When the time comes to reinvest in the rehabilitation of older roads that have reached the practical end of their service life, it is often necessary to invest substantial funds to meet more modern design requirements. While maintaining the often-historic nature of its many narrow and winding roads, the NPS roads and bridges often need careful reconstruction to accommodate modern day traffic volumes and vehicle types.

A recent estimate by NPS transportation professionals identified critical segments constituting hundreds of miles of roadway where upgrades to functional capacity need to be performed. These are costly treatments when compared with the preventive maintenance and light rehabilitation techniques needed to simply maintain overall road condition. Examples of these projects include Yellowstone National Park, Colonial Parkway (Colonial National Historical Park), Delaware Water Gap National Recreation Area, Arches National Park, Blue Ridge Parkway, and Great Smoky Mountains National Park.

Group C: Projects of Significant Interest

From time to time, there are projects of national interest that could threaten the wellbeing of the NPS transportation system if they caused funds to be diverted from the Core program. One such project relates to the restoration of the Everglades and is one of the current administration's—including both the previous and current Secretary of the Department of the

Interior—highest environmental restoration priorities. In the past, initiatives such as this have received special congressional appropriations. To date, no such funding has been identified.

Examples of these projects include completion of the Foothills Parkway (different phases with varying costs), Natchez Parkway multi-use trail ($102 million), Tamiami Trail ($285 million), and the Manassas National Battlefield Bypass ($183 million).

Proposed Legislative Changes

The passage of MAP-21 resulted in a net reduction of Federal transportation funds for the National Park Service. While essentially maintaining the SAFETEA-LU annual funding level for the NPS in the new Federal Lands Transportation Program (FLTP), MAP-21 eliminated the Transit in Parks (TRIP) program, the Public Lands Highway Discretionary and federal land agency eligibility under the Ferry Boat Discretionary program, and the National Scenic Byways program and portions of the Transportation Enhancements program (new FHWA Alternative Transportation program).

The NPS transportation program has also had to meet the challenges with new legislative constraints imposed by MAP-21, including a five (5) percent cap on expenditures for management systems, data collection, and planning, and a $10 million ceiling on environmental mitigation by all Federal Land Management Agencies (FLMAs).

Another provision in MAP-21 requires FLMAs to prohibit the use of bicycles on public roads under their jurisdiction if the posted speed limit is 30 mph or above and there is a multi-use trail within 100 yards.

In addition to proposing new funding, the NPS is recommending statutory changes to make management of the National Park Service Transportation system more efficient, so that we can fulfill the NPS transportation mission and better serve the visiting public. The following legislative changes are proposed:

1. Add an explicit requirement that the Secretary over each FLMA be consulted by the Secretary of Transportation on the management and administration of the FLTP. No one Secretary shall override another Secretary's authority. In the spirit of formal agreements between FHWA and the FLMAs that have long been used to cooperatively and collaboratively create, maintain, and improve the transportation system and governance now in use, the NPS asks for a philosophical shift from the approach that was imposed by the MAP-21 legislation.

2. Environmental protections. Review and revise recent changes to procedures for the review and approval of environmental impact/protection to ensure that the mission of the FLMAs is not compromised. Specifically, include in the legislation in the Federal Lands Transportation Program section language to address the review and approval of

environmental impact/protection documents for U.S.C. Titles 23 and 49, requiring concurrence by the appropriate Federal Land Management Agency Secretary. Such actions must not be delegated to another Federal agency or State. This approach cuts red tape and will improve the efficiency, effectiveness and stop duplication of costs to deliver construction projects compliance.

3. Eliminate the five (5) percent cap on management systems, data collection, and planning. This limitation and shift in administrative oversight has added overhead costs to the management of the program, placed an arbitrary limitation on the work required to implement the new, mandated performance-based procedures, and is unnecessary for the professional management of the program. The NPS can provide historic and projected rates for such management items that will better explain and justify the resources needed to comply with ongoing operations and any new reauthorization directives.

4. Eliminate the $10 million ceiling on environmental mitigation. Like the 5% cap, no analysis or justification was offered to explain this action. Given the missions of the various FLMAs and the requirements placed on them to protect resources and to address the safety of the traveling public, this is a contradictory action that arbitrarily limits the cost-effective inclusion of achievable solutions in on-going projects.

5. Repeal the prohibition on bicycle use of public roads. No State has such a provision. And, as with the two previous items, no justification or explanation was provided for enactment of this directive that might suggest that there is a definitive, broad concern across the entire transportation system that FLMAs manage. Under current law, it will require legislative changes to 36 USC to implement this action.

6. Make adjustments to the Federal Lands Access Program:

   Background: As noted, MAP-21 reduced and restructured the programs and the total funds available to the NPS from U.S.C. Title 23. Two new programs were created, the Federal Lands Transportation Program (FLTP) and the Federal Lands Access Program (FLAP). Under MAP-21, the FLTP makes available $240 million/year to the NPS; the other FLMA's share another $60 million/year. The FLAP provides $250 million/year to State and local governments for their Federal lands access transportation facilities and related activities. While the FLTP is the sole source of U.S.C. Title 23 funds for Federal lands

highways, the FLAP funds are in addition to more than $7 billion annually available to State and local governments for such facilities.

a. We recommend that the ratio for the allocation of U.S.C. Title 23 funds between the FLTP and FLAP be adjusted as follows:

Current Ratio:	FLTP: 55% (NPS = 44%)	FLAP: 45%
New Ratio:	FLTP: 90% (NPS = 73%)	FLAP: 10%

b. Adjust FLAP funding to provide a core program (much like NPS and U.S. Fish and Wildlife) for the U.S. Forest Service;

c. Adjust the FLAP formula to provide a more appropriate distribution of funds. The current formula only addresses 33% of the FLMA visitation with 80% of the funds. Perhaps more importantly, it does not support the priorities and needs for the FLMA transportation systems;

d. Change the program requirements so that connecting projects with FLMA-owned and/or maintained facilities may be funded by FLAP, and allow projects that are contiguous that transverse and/or that are adjacent to a boundary to count as the match regardless of ownership;

e. The NPS business model for financially successful and sustainable transit systems includes nongovernmental agencies. Allow for the eligibility of nongovernmental agencies that own and maintain systems that serve Federal lands to receive FLAP funds;

f. Provide a uniform definition of high-use Federal recreation sites and Federal economic generators that can be equitably applied for any FLMA site on a per visit and per capita basis; and,

g. Identify in the legislation a FLMA representative to participate in the deliberations of each Programming Decision Committee as a member of an FLMA advisory team.

7. Restore NPS Authority to Establish Multi-Year Program of Projects. Since 1983, the NPS has had the authority to define transportation program and project priorities. This is based on the effective partnership with FHWA that mutually builds an annual multi-year program of projects based on sound asset and engineering practices. MAP-21 altered this long-standing, effective process. The NPS requests that its authority to prioritize, select and build our multiyear program of projects be restored.

Investing in the NPS Transportation System

There are many positive outcomes to a $970 million annual funding level for six (6) years. This level of investment:

1. Addresses a national Federal responsibility in time for the National Park Service Centennial - 100th Anniversary of the founding of the NPS, achieving significant national-level goals for the agency.

2. Meets the public's demands by providing a safer, efficient, and effective transportation system.

3. Safeguards a $30 billion road and bridge infrastructure[10] investment by implementing sensible asset management strategies. FHWA analysis indicates that the cost of maintaining roads in *good* condition through preventive maintenance is less than one third the cost of allowing roads to deteriorate to the point that they require rehabilitation.

Innovative Transportation Finance

The NPS has, under current statutory authority, applied most available methods of innovative financing. The deployment of additional innovative financing techniques would require congressional support and legislation, and in some cases would require state and local government support for such methods as value capture.

A recent paper, *NPS Transportation Innovative Finance Options* generated by the Volpe National Transportation Systems Center found that the NPS is severely constrained in the number of options available given the need to pass authorizing legislation to implement the many innovative financing techniques available to state and local governments.

For the United States, the National Parks are a key attraction. America's parks reflect the country's pride and commitment to its heritage and natural resources. To keep competitive the park infrastructure including transportation must be in good condition.

Endnotes

[1] This reflects current visitor use statistics for 374 of the nearly 401 units included in the National Park System. Statistics are not available for some areas; for example, those with joint administration of Federal and non-Federal lands.

[2] Report of the National Surface Transportation Policy and Revenue Study Commission, *Transportation for Tomorrow*, December 2007. The Commission identified 108 surface transportation programs under SAFETEA-LU and recommended consolidation and elimination of these programs to ten (10) core programs. The Commission believes the Federal government is responsible for transportation access to Federal lands [p.30].

[3] The Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) was enacted August 10, 2005 [Public Law – 109-59] and was extended through a series of Continuing Resolutions until September 30, 2012 and the enactment of MAP-21.

[4] During this period, the American Recovery and Reinvestment Act (ARRA) provided an additional $318 million for NPS Transportation, however, this is not a stable fund source and is not included in this discussion.

[5] MAP-21 presents as paradox, the law mandates expanded data collection and management systems yet the law places a five (5) percent cap on the amount of funds that can be used for bridge inspections, long range planning and data collection [§1119; 23 USC 201(c)(7)].

[6] Although the MAP-21 initiated the Federal Lands Access Program to benefit the public by improving access to federal lands, funding from this program will go to state and local partners and will not offset the losses to NPS transportation funding from eliminated programs.

[7] Good FCI ≤ 0.08; Fair FCI > 0.08 and ≤ 0.20; Poor FCI > 0.20. These categories were developed with the FHWA.

[8] Reduced funding under MAP-21 is in large part due to the repeal of the TRIP program. The NPS new or expanded alternative transportation systems are evaluated on a case-by-case basis, based on: a) whether or not the project addresses an existing system deficiency, b) if the project is based on a demonstrated urgent or emergency need, and c) whether or not a proposed system expansion contributes to safety, system efficiency, and reduced operational costs.

[9] Under MAP-21 Section 20019 [49 U.S.C. Section 5326] the Federal Transit Administration will establish a national transit asset management system to define "state of good repair;" set objective standards for measuring the condition of capital assets (including equipment, rolling stock, infrastructure, and facilities); and establish performance measures for state of good repair, under which all FTA grantees will be required to set targets.

[10] The $30 billion reflects the current replacement value of primarily roads and bridges and does not factor other assets associated with alternative transportation facilities and trails.

Appendices

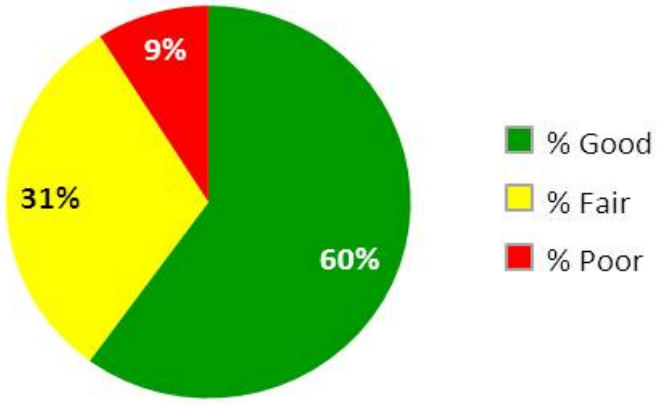
Appendix A: NPS Transportation System Conditions and Needs

The NPS transportation system provides essential public access to parks, provides visitor mobility within parks, and allows the staff to conduct park operations. This transportation system includes:

- 5,500 miles of publically accessible paved roads (of which 1,100 miles are parkways)
- 4,100 miles of publically accessible unpaved roads
- 1,442 publically accessible bridges
- 63 publically accessible tunnels
- 147 alternative transportation systems in 72 park units
- 17,872 miles of trails, of which 5,012 miles (28%) are paved

The 2012 publically accessible paved road network Pavement Condition Rating (PCR), an FHWA-developed, industry-standard condition metric, is 82, indicating a network-wide *fair* condition for its pavements. The ideal condition under sound asset management practices would be to improve the system and maintain it at a PCR of 85 (the lowest PCR still in *good* condition) which allows for a network of paved roads which can be efficiently maintained with pavement preservation and a complete array of maintenance and rehabilitation strategies.

Figure A-1: Percentage of Road miles in *Good*, *Fair*, and *Poor* Condition as Modeled in 2014



While the paved road network is not in *good* condition, its recent deterioration has (a) been slowed by the application of pavement management and pavement preservation programs, and (b) temporarily reversed due to funding from the American Recovery and Reinvestment Act (ARRA). However, absent additional funding, the network condition will continue to decline, future efforts to revitalize it will be even more expensive, and park visitors will be subjected to rougher roads.

The NPS publically accessible parking areas pavements are in *fair* condition at a PCR of 66, which is approaching a PCR of 60, the threshold for *poor* condition. The NPS recommends that parking area pavement network be improved to a PCR of 85 so that it can be maintained using best-practice pavement preservation techniques.

The bridge inventory is still in *good* condition with an industry standard Bridge Health Index of 0.92, though that places it on the border of *fair* condition. The inventory condition has declined only marginally since 2005. However, the NPS bridge inventory is aging and presents a "wave" of bridges built in the 1940s, 1950s, and 1960s that will be firmly in the second half of their service lives and will require increasingly greater funds to maintain and reconstruct.

Congressionally mandated parkways make up another aspect of NPS roads and bridges. The Foothills Parkway and the Natchez Trace Multi-use Trail will provide for improved visitor experience. The Foothills Parkway was authorized by Congress in 1944. It is feasible for portions of it to be completed and opened to the public in the next six (6) years.

The NPS has 147 alternative transportation systems (ATS) in 74 parks; some of these systems provide the only visitor access to those parks. These ATS require maintenance and capital investments beyond what local revenues can provide. In this way, NPS ATS are similar to public transportation systems across the nation.

The NPS has developed and deployed intelligent transportation systems, generally traveler information systems, in more than 130 park units. These systems provide visitors with information about road conditions, parking availability, special events, and more. Given that the NPS is constrained both financially and due to protection of natural and cultural resources, ITS offer the ability to increase the carrying capacity of the NPS transportation system when construction of new capacity is limited.

The NPS also has a network of more than 5,000 miles of trails. These trails provide access to natural and cultural resources within park units and therefore are integral to the NPS mission of visitor experience. Often trails provide access beyond what is available via motor vehicles due to resource protection needs.

The NPS transportation system represents a substantial public investment. The estimated replacement value of all NPS surface transportation assets is $37.7 billion, representing approximately 20 percent of the value of all NPS assets. Recent authorized funding levels have

not been sufficient to conduct the maintenance need to keep all existing assets in *good* condition; within each asset category there are assets in need of reinvestment and refurbishment. The estimated accumulated deferred maintenance deficit approaches $8.4 billion (See Table A-1 below).

Category	Approximate Quantity	Estimated Replacement Value ($M)	Approximate Deferred Maintenance ($M)	Approximate % in Fair, Poor or Serious Condition
Paved Roads*	5,500 miles	$22,100	$4,400	38%*
Trails (Front Country)	5,012 miles	$2,500	$240	21%
Constructed Waterways	130 miles	$150	$20	17%
Paved Parking Areas*	150 million sq. ft.	$3,200	$1,000	77%
Road Bridges**	7 million sq. ft.	$3,800	$500	26%
Trail Bridges	900,000 sq. ft.	$350	$25	20%
Road Tunnels	1.5 million sq. ft.	$1,400	$50	18%
Trail Tunnels	500,000 sq. ft.	$200	$5	13%
Marina/Waterfront Systems	2.3 million feet	$2,800	$600	17%
Railroad Systems	700,000 feet	$900	$40	22%
Transit Systems	147 systems	$n/a	$n/a	n/a
TOTAL	--	**$37,400**	**$6,880**	--

* These values include both pavement and non-pavement costs (e.g., guardrail and retaining wall).
** These values include the Arlington Memorial Bridge.

Table A-1: Inventory, Replacement Value, Deferred Maintenance and Condition of National Parks Service Surface Transportation Assets in 2012

In summary, 90%[1] of park roads are in either *good* or *fair* condition and the bridge network is in *good*, though close to *fair* condition[2] allowing for a combination of maintenance and rehabilitation activities to be used to maintain the network: preventive maintenance activities to be used to keep *good* assets *good*, light rehabilitation to improve those in *fair* condition, and still reserving some funding for heavier rehabilitation and functional improvements (e.g., road widening, safety improvements, etc.) when warranted. Most paved parking areas are in *fair* to *poor* condition, indicating that an extensive rehabilitation program is necessary to improve that network to *good* condition so that it may take advantage of best practice rehabilitation methods.

Category I – Roads/Parking/Bridges/Tunnels Needs ($690 million/year)

Paved Roads	**$450 million/year**
Paved Parking Areas	**$120 million/year**
Bridges and Tunnels	**$120 million/year**

Pavement Needs. The Federal Highway Administration (FHWA) analyzed several options using professional standards and industry procedures. Table A-2 (below) lists the options for improving roadway pavement conditions over the six-year period following the reauthorization of MAP-21. For each option, annual and six-year funding levels, the overall network condition by the end of the six years, and the percentage of *good, fair*, and *poor* miles of roadway pavement are shown.

Pavement Funding Options	Annual Funding Level	Six Year Total Funding	Performance Measures in 2020			Condition Rating Distribution in 2020 (percent of miles)		
			Average PCR	Pavement FCI	Pavement DM	Good %	Fair %	Poor %
1	$450M	$2.70B	85	0.08	$2.0B	60	35	5
2	$340M	$2.04B	82	0.12	$3.0B	45	49	6
3	$180M	$1.08B	78	0.14	$3.5B	31	60	9
4	$0M	$0	71	0.19	$4.8B	10	73	17
End FY2014			82	0.12	$3.0B	60	31	9

Table A-2: Options for Improving Roadway Pavement Conditions

As of the end of MAP-21, FHWA has modeled NPS paved roads to have a Pavement Condition Rating (PCR) of 82. The NPS recommends an annual funding level of $450 million[3] - Option One – which will improve the network PCR to 85, provide a network average of *good*, reduce the number of *poor* miles, and allow the network to be maintained primarily through preventive maintenance and light rehabilitation strategies (the FHWA estimates NPS paved road replacement costs to be approximately $22 billion). Note that all paved road funding scenarios represent funds both for the pavements and also for non-pavement portions of paved road rehabilitation, items such as guardrails, retaining walls, and environmental mitigation.

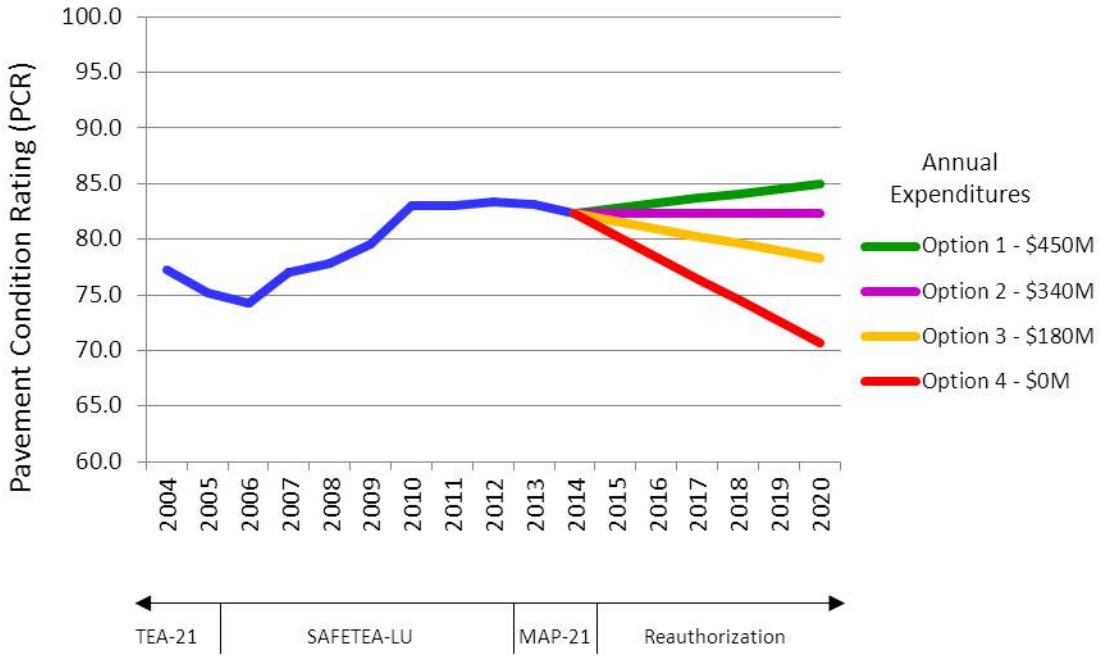


Figure A-2: Paved Road Pavement Condition Rating (PCR) Under Varying Expenditure Scenarios

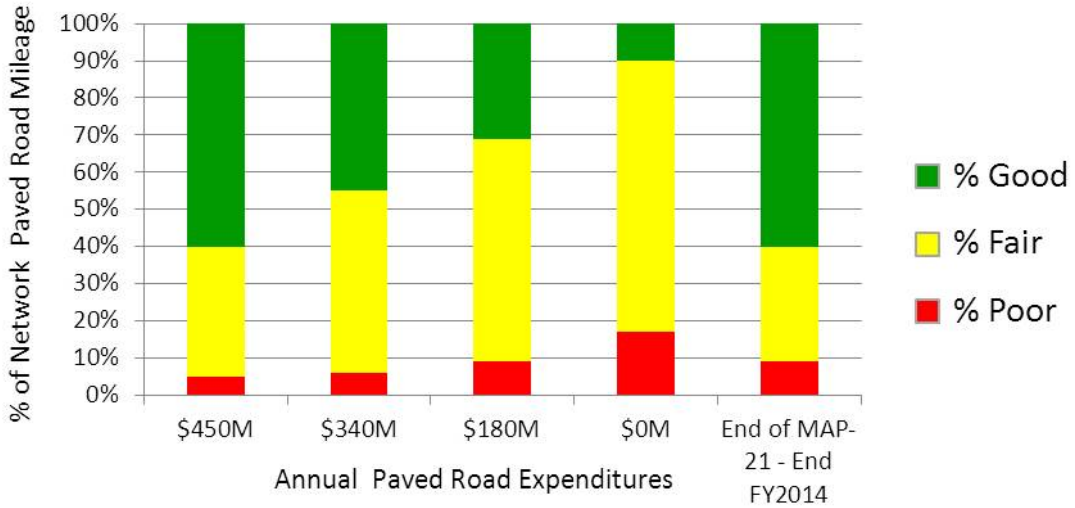


Figure A-3: Paved Road Condition In 2020 For Different Expenditure Scenarios

The line graph and the bar chart (above) demonstrate the expected year 2020 condition of the NPS paved road network under different scenarios. Option One ($450 million/year) not only results in a PCR of 85 and an FCI of 0.08, but also provides a pavement network with approximately 95% in good and *fair* condition, which will halve the current number of miles in *poor* condition and greatly reduce the backlog of paved road maintenance. Option Two ($340 million/year), which maintains the network in its modeled 2014 condition, also provides 94%

good and *fair* condition road miles. However this option has more miles in *fair* condition than Option One does, removing those miles from the ability to be managed using preventive maintenance, and does not decrease the maintenance backlog.

Option Three ($180 million/year) is a continuation of MAP-21's current nominal funding. At this level, the paved road network will deteriorate, the opportunities for preventive maintenance will be reduced and the maintenance backlog will significantly increase. This option is further discussed in the Pavement "Opportunity Analysis" section, below. Option Four, no funding, demonstrates that the network will deteriorate significantly, perhaps beyond the ability of future expenditures to revitalize.

The FHWA has also performed an analysis of NPS paved parking areas, with a replacement value of $3.2 billion. At the end of MAP-21, FHWA has modeled NPS paved parking areas to have a PCR of 66.2, which indicates *fair* to *poor* paved parking area network condition. An annual funding level of $120 million[4] per year will improve the network PCR to 85 – an average of *good* - and would allow the network to be maintained primarily through preventive maintenance and light rehabilitation strategies. The ratio of maintenance needs to replacement value is 3.7%, demonstrating the *poor* condition of the paved parking area network. Note that the $120 million/year includes non-pavement portions just as the $450 million/year for paved roads does.

Pavement "Opportunity Analysis." As an alternative, paved road funding continues roughly at MAP-21 levels until 2020 (Option three - $180 million/year). At that point, the PCR will have deteriorated from 82 (the PCR in 2014) to 78 in 2020, with significantly fewer *good* roads and more *fair* roads. And, the annual cost to rehabilitate the network will be an inflation-adjusted $760 million/year for the following six years (2020 to 2026).

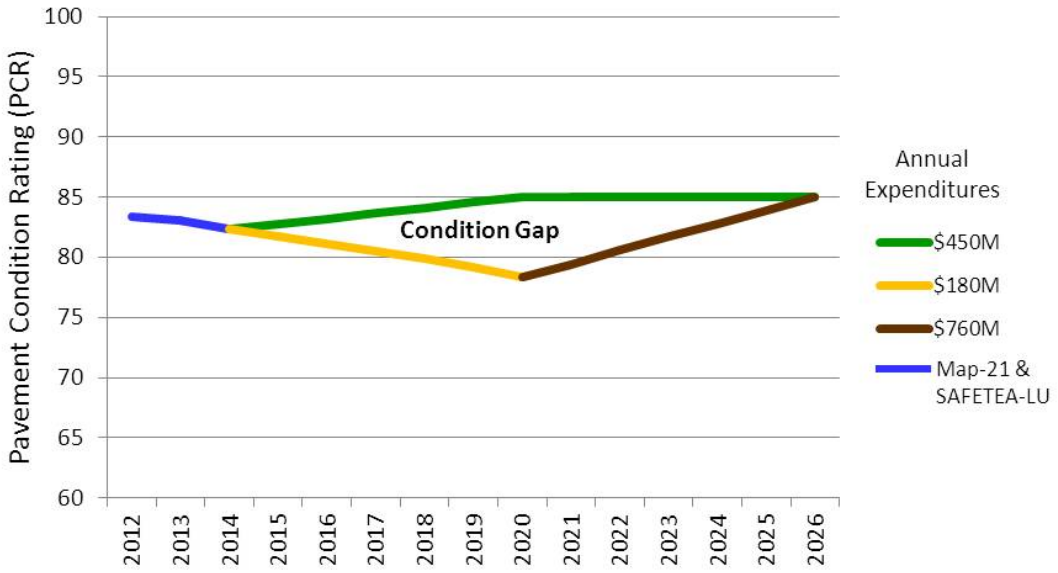


Figure A-4: Paved Road Opportunity Gap between Scenarios

The additional funding requirement will be compounded by the lesser quality of the network during the period 2014 to 2026 – the "Condition Gap" noted in the figure. Secondly, the deteriorate-and-rebuild scenario is fully dependent upon a possible future funding stream that is significantly greater than the current funding requests. Third, deploying a $760 million/year program, much of which will be focused on heavy rehabilitation, could be constrained by natural and cultural resource issues and may result in visitor dislocation due to the need for extensive heavy rehabilitation activities.

Bridge and Tunnel Needs. The FHWA analyzed several options using professional standards and industry procedures. The table below lists three options for funding bridge and tunnel conditions over the six-year period following the reauthorization of MAP-21. For each option, annual and six-year funding levels are listed along with the overall network condition by the end of the six years.

Bridge and Tunnel Funding Options	Annual Funding Level	Six Year Total Funding	Performance Measures in 2020	
			Bridge Health Index	Facility Condition Index
1	$120M	$720M	92.0%	0.08
2	$60M	$360M	90.0%	0.10
3	$0	$0	85.0%	0.15

Table A-3: Options For Funding Bridge and Tunnel Conditions over 6-Year Period

The overall FCI for bridges is *good*. However, 42 bridges are "structurally deficient" and several others need to be rehabilitated. The current funding level under MAP-21 has been between $15 and $25 million annually. FHWA estimates a total backlog of needs of $400 million for both motor vehicle bridges and tunnels, and an infrastructure replacement cost of approximately $5.0 billion[5].

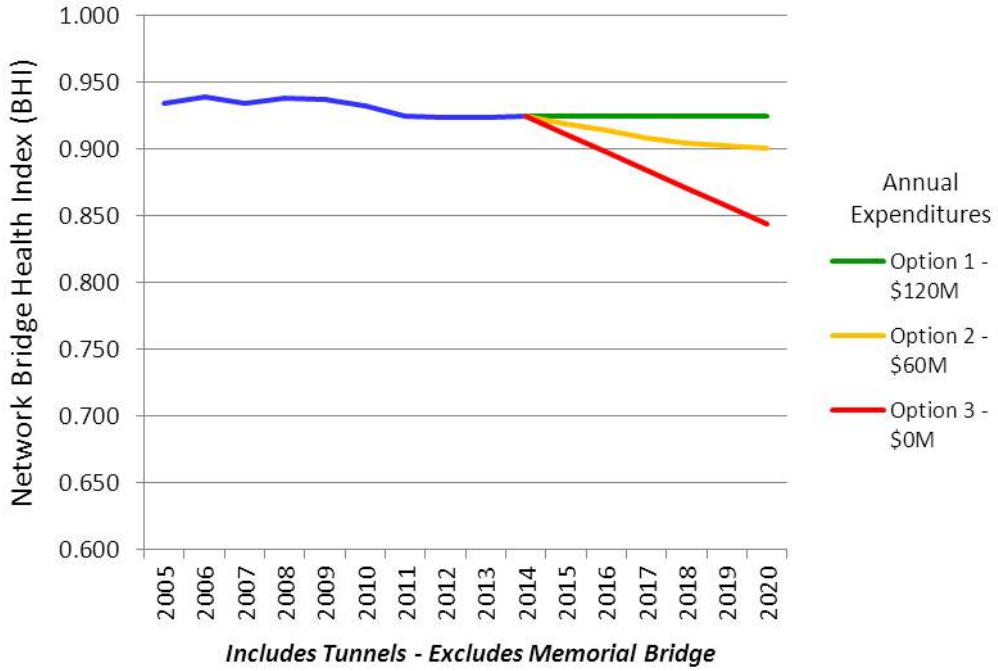


Figure A-5: Bridge Health Under Different Expenditure Scenarios

If funding were committed at $120 million a year (Option One in Figure A-5 above), the NPS would be able to rehabilitate or replace many of its existing structurally deficient bridges, and continue to maintain a network in *good* condition. Option Two ($60 million/year) would see the bridge and tunnel network deteriorate into the *fair* range (with a Bridge Health Index of 0.90) and would open the possibility of load posting or closing bridges which are necessary to the mission of the NPS. Currently, some bridges that are structurally deficient and have been prioritized as being of lesser importance than others are being considered for closure so that the funds required for their rehabilitation can be used elsewhere.

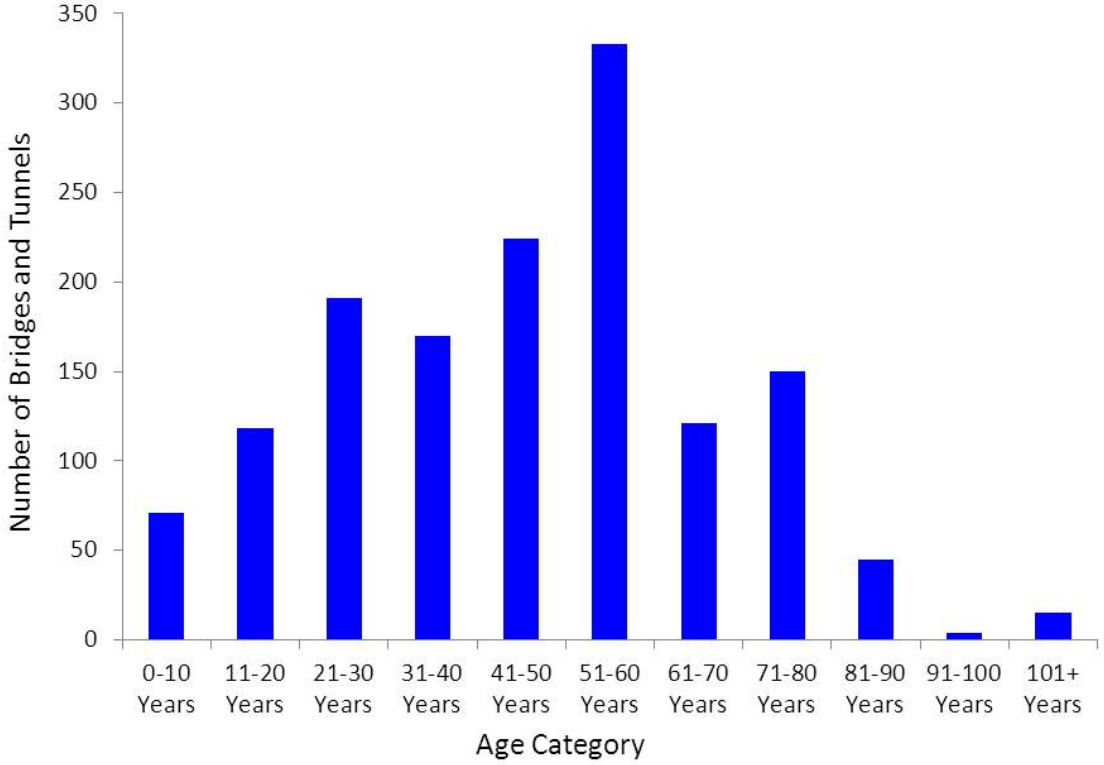


Figure A-6: Bridges and Tunnels by Age Category

Figure A-6 above illustrates the age of structures owned and operated by the NPS. As the bridge population ages over the coming decades, there will be a significant increase in the number of bridges in need of rehabilitation or reconstruction. Currently 62 percent of NPS bridges are more than 40 years old; as the ordinary service life of a bridge is 75 years, these bridges are more than halfway to the end of their service lives when they will require complete rehabilitation or replacement. Because of the age of the NPS bridge and tunnel system, each year more bridges will become structurally deficient even as the NPS is able to rehabilitate or replace existing structurally deficient bridges.

Please note that the analyses, table and charts provided do not include the reconstruction needs of the Arlington Memorial Bridge. The estimated cost for rehabilitation of the Memorial Bridge ranges from $125 million to $240 million. As this cost dwarfs the needs of any other structure, the Memorial Bridge has been removed from the analyses shown for the NPS bridge and tunnel network. The needs of the Memorial Bridge are discussed in the box below.

Memorial Bridge

The Arlington Memorial Bridge was built in 1932 and symbolically reconnected the North and the South. Since that time it has been used for countless ceremonial processions and is used frequently by visitors to make the iconic walk across the Potomac River to and from Arlington Cemetery. It has also become a commuter route for 55,000 vehicles a day. Memorial Bridge serves as an important emergency evacuation route for the nation's capital.

The Memorial Bridge is structurally deficient and has reached the end of its useful service life. While repairs – often emergency repairs – can keep the Bridge in service for perhaps 10 more years, continued deterioration will cause its ability to carry loads to decrease. This means that the bridge will not be able to carry as much traffic. The Potomac River crossings are already often congested; removing the capacity provided by the Memorial Bridge will only exacerbate this situation.

The Memorial Bridge requires extraordinary rehabilitation. Its uniqueness as a cultural resource and its engineering complexity has driven its rehabilitation cost to a range from $125 million to $240 million (depending upon the extent of deterioration and scope of rehabilitation). Reconstruction of this bridge will also cause significant traffic dislocation and a significant sum will be required to mitigate that effect.

Additionally, this money must be available over a short period of time, two or three years. Unlike a large-scale road rehabilitation project that may be performed over several years, a bridge that already carries significant traffic has to be rehabilitated as a single shorter-term project.

Because of its cost, the Memorial Bridge has been removed from the analyses shown for the NPS bridge network. The only practical way to include the Bridge in a funding request is to identify it as a single item with money available in a short time frame.

Category II: Complete Unfinished Parkways ($10 million/year)

Parkways

Over the past 85 years, the Congress has established several parkways, which include the Chickamauga-Chattanooga Route 27 Bypass, the Baltimore-Washington Parkway, Cumberland Gap National Historic Park Tunnel, George Washington Memorial Parkway, Natchez Trace Parkway and the Foothills Parkway at Great Smoky Mountains National Park. All of the parkways have been completed except the latter two that are in various stages of development.

Parkway Accomplishments

The parkway portion of the Natchez Trace Parkway was completed in 2006 after 67 years of construction in Tennessee, Alabama and Mississippi. The Natchez Trace Parkway is considered one of the most scenic and beautifully designed parkways in America and is now designated as an "All American Road" scenic byway. However, the multi-use trail associated with the Natchez Trace Parkway is not completed. Portions of the trail are not linked to parking and other transportation facilities.

The Foothills Parkway was authorized by the congress in 1944. Of six such congressionally mandated parkways, it is the only one yet to be completed. Only three segments totaling 22.5 miles of the entire 72-mile corridor are completed and open to the public. Since 1966, work has been done to open an additional 16-mile segment. Under SAFETEA-LU, work continued on Section E of this segment of the Foothills Parkway. And, with support from the American Recovery and Reinvestment Act of 2009 [Public Law 111-5], the NPS, with FHWA, constructed additional missing portions of this segment. Now, there remains one portion of this segment to be built – the so-called "missing link." When completed, it will open the entire 16 miles.

Parkway Options

- Approximately $102 million (for approximately 46 miles) is needed to complete three sections (Jackson, Natchez and Tupelo) of the multi-use trail on the Natchez Trace Parkway.
- Approximately $107 million is needed to complete sections E (9.7 miles) and F (6.4 miles) of the Foothills Parkways, and to begin Section B (14.1 miles).
- Approximately $60 million is needed to complete Sections E and F of the Foothills Parkway.

Parkway Needs

The NPS recommends spending $10 million a year (Option One in the table below) to complete Sections E and F of the Foothills Parkway. This will allow visitors to make use of the 16-mile segment that has been under construction since 1966. Congressional authorization for the Foothills Parkway started in 1944.

Parkway Options	Annual Funding Levels ($M)	6-Year Total Funding (through 2020)	Performance Measures/Goals			
			Completion Period (Years)	Remaining Cost at the End of 6 Years ($M)	Natchez Trace	Foothills
1	$10M	$60M	6	$240	0%	33%
2	$25M	$150M	6	$150	50%	50%
3	$50M	$300M	6	0	100%	100%

Table A-4: Options For Funding Congressionally Mandated Parkways

Category III: Alternative Transportation, ITS, and Trails ($70 million/year)

Alternative Transportation Systems	**$40 million/year**
Intelligent Transportation Systems	**$15 million/year**
Trails	**$15 million/year**

NPS Alternative Transportation Needs and System Inventory

Alternative transportation systems (ATS) encompass all modes of travel within a park, including land and water-based transportation. These systems include alternative-fuel buses (running on fuels like propane, electricity, and natural gas), trolleys, water taxis, canal boats, and aerial tramways. In addition, ATS encompasses Intelligent Transportation Systems (ITS) and facilities for non-motorized modes of transportation, such as trails.

ATS are designed to fit into the natural setting of park and protect park resources, including the natural soundscape and wildlife. ATS has been determined to be critical in terms of protecting resources, addressing growing congestion and improving visitor experience.

The NPS transit system is comprised of a diverse fleet of vehicles powered by both conventional and alternative fuels. The NPS-owned fleet (264 vehicles) is comprised of all fuel types, with 66.3 percent of all vehicles classified as alternative fuel vehicles. The much larger (562 vehicle) Non-NPS owned fleet is comprised of 14.1 percent alternative fuel vehicles.

The NPS developed a definition of NPS transit systems to ensure consistent data collection across the nation and over time. Only units with systems that met these three criteria were considered for the inventory:

1. Moves people by motorized vehicle on a regularly scheduled service;

2. 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 authorizations are not included); or NPS owned and operated; and

3. All routes and services at a given unit that are operated under the same business model by the same operator are considered a single NPS transit system.

Overall, NPS transit costs are growing faster than operating revenues. Funding to support alternative transportation not only included the repealed TRIP program, but transportation and entrance fees (which are capped), recreation fees, park base funding and a small percentage from the Federal Lands Transportation Program.

Current funding is inadequate to meet operating, maintenance and life-cycle replacement needs based on rising inflation, wage rates, insurance, fuel costs and vehicle and water fleet costs.

The NPS ATS face considerable challenges. The Paul S. Sarbanes Transit in Parks (TRIP) program was repealed under MAP-21. Out of approximately $162 million awarded by the Federal Transit Administration under the TRIP program, the NPS was awarded approximately $62 million in direct support and supplemented by an additional $46 million in grants to NPS partners.

The NPS and its ATS partners are faced with a growing deferred maintenance backlog, including less safe equipment that is beyond industry life-cycle replacement standards. The loss of the TRIP program creates a significant capital funding shortfall for the NPS in meeting its annual $10 million ATS capital needs.

Current NPS funding policies require 100% of ATS operations and maintenance costs be covered at the "farebox" (or park entrance gate); this is a requirement that isn't shared by comparable, subsidized rural and small urban transit systems The current $20 million/year in funding derived primarily from NPS transportation and entrance fees for ongoing ATS operations and maintenance is projected to be inadequate to cover annual expenses beginning in 2014.

NPS ATS investment needs have historically been unmet and have fallen short of the recommendations enumerated by the U.S. Department of Transportation Federal Highway and Federal Transit Administrations in the congressionally mandated *Federal Lands Alternative Transportation Systems Study,* completed August 2001. The study recommended that the NPS invest $60 million/year from 2001 to 2010 and increase this to $95 million/year from 2011 to 2020.

In 2012, the NPS completed its ATS Financial Analysis of 27 NPS-funded ATS systems, and a National NPS Transit Inventory[6] in order to inform several service-wide initiatives and deliverables, and improve communications of the current state of NPS transit both internally and with the public.

The ATS Financial Analysis summarizes, and forecasts key NPS funding needs for 27 systems that receive funding primarily from federal funds to provide public transportation services. The NPS National NPS Transit Inventory provides key inputs into Long-Range Transportation Plans (LRTPs), fact sheets, performance management processes, alternative transportation contact directories, and overall transportation decision-making. The inventory will also aid the service in both fielding inquiries from, and disseminating information to fellow FLMAs and legislative bodies.

The 2012 inventory documented 36.3 million annual passenger boardings across all NPS transit systems. Approximately 80% of these boardings are attributable to the 10 most-used transit systems (Table A-5 below). Notably, according to an analysis of the Federal Transit

Administration's National Transit Database, the size of the largest NPS transit systems is significant. The two most-used NPS transit systems – the Statue of Liberty Ferries and the Grand Canyon South Rim Shuttle Bus– experience as many annual boardings as some mid-size municipal transit systems (Memphis [Tennessee] Area Transit Authority and Ann Arbor [Michigan] Transit Authority, respectively).

#	System Name	Region	2012 Boardings	Business Model
1	Statue of Liberty Ferries	NER	9,301,507	Concessions Contract
2	Grand Canyon South Rim Shuttle Bus Service	IMR	6,177,000	Service Contract
3	Zion Canyon Shuttle	IMR	3,461,665	Service Contract
4	Yosemite Valley Shuttle	PWR	3,175,039	Concessions Contract
5	Alcatraz Cruises ferry	PWR	3,061,494	Concessions Contract
6	USS Arizona Memorial Tour	PWR	1,460,000	Cooperative Agreement
7	Giant Forest Shuttle	PWR	1,439,534	Cooperative Agreement
8	Fort Sumter Ferry service	SER	626,220	Concessions Contract
9	Rocky Mountain Bear Lake & Moraine Park shuttle	IMR	460,000	Service Contract
10	Acadia Island Explorer	NER	458,268	Cooperative Agreement

Table A-5: Top 10 most-used NPS Transit Systems and Business Models in 2012, by Boardings

The NPS 2012 National Transit Inventory identified 147 discrete transit systems spanning 72 of the 401 units of the NPS System. NPS transit systems are diverse, with shuttle/bus/van/tram systems making up the largest share of all system types (44%), and followed by boat/ferry systems (34%), planes (9%), snowcoaches (10%), and trains/trolleys (3%).

Additional findings from the NPS 2012 National Transit Inventory include:

- 52 systems provide sole access to an NPS site because of resource/management needs and geographic constraints;
- 97 systems operate under concession contracts;
- 12 systems are operated by a local transit agency under a specific agreement with the NPS;
- 890 vehicles are used to provide NPS transit services, including 264 vehicles owned or leased by the NPS; 56 vehicles operate in systems with intermixed NPS and Non-NPS owners; and

- 66% (264) of NPS-owned vehicles operate on alternative fuel, while 14% (562) of Non-NPS-owned vehicles operate on alternative fuel.

As shown on the map below (Figure A-7), NPS transit systems are also geographically diverse, with systems in place in more than half of the 50 states:

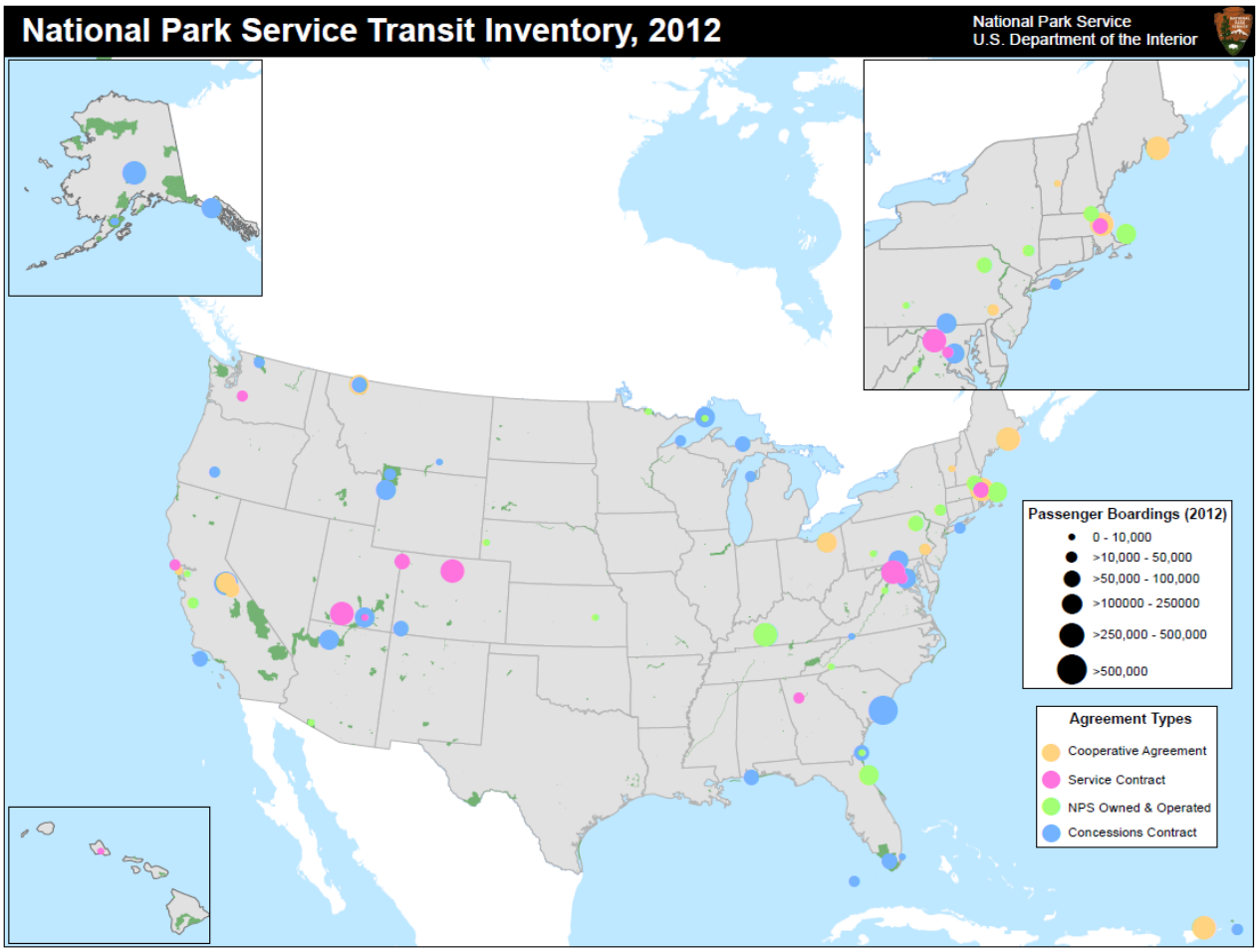


Figure A-7: Map 1 — National Park Service Transit Inventory, 2012

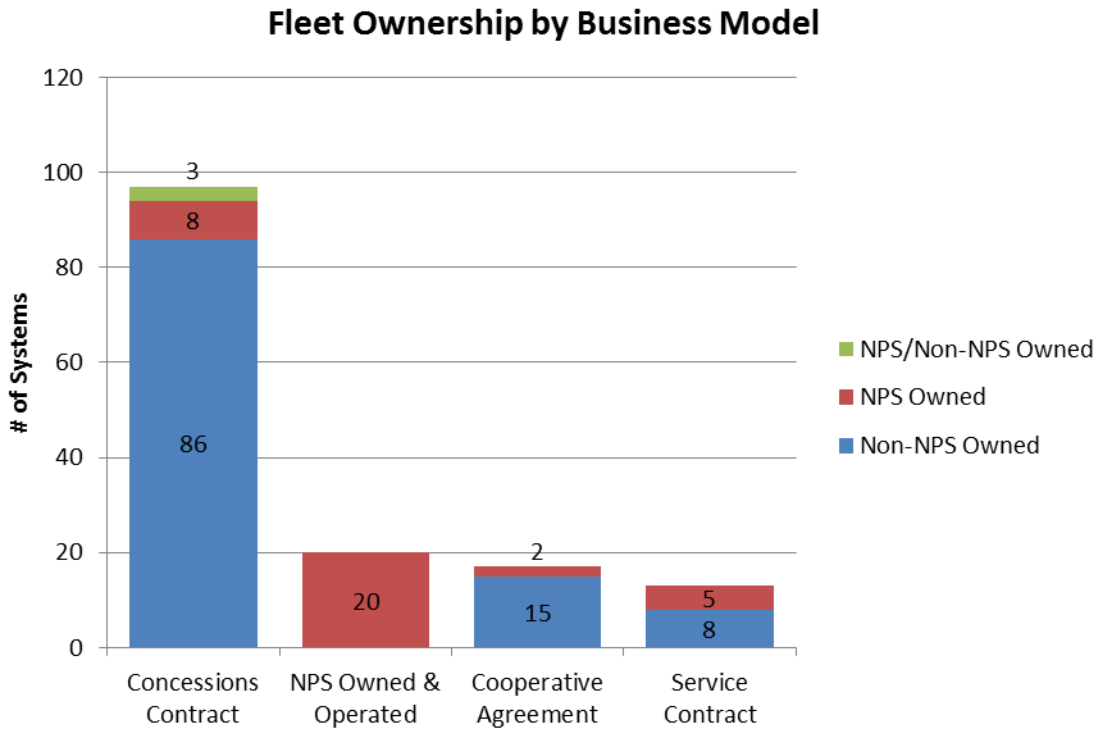


Figure A-8: Fleet Ownership by Business Model

Finally the inventory documented a wide variety of funding sources used by the NPS to move people by transit in FY2012. Under each of the 97 concession contracts, concessioners pay a franchise fee to the NPS to operate and collect a concession fee from park visitors (11 concessioners utilize vehicle fleets owned in full or in part by the NPS). To pay operating costs, 24 systems used base funds, 18 systems used transportation fees, and 8 systems used FLREA funds in FY2012. To pay capital costs (including leasing costs), 12 systems used TRIP grants and 6 systems used FLHP Category III funds in FY2012. The costs to visitors under each of the contracting mechanisms vary widely, depending upon the services provided and the operating characteristics (i.e.- tour vs. public transportation). Table A-6 below reflects a few systems that use multiple sources of funding.

Category	Funding Source	Number of Systems
Concessions	Franchise Fee	97
Operations	Base Funds	24
	Transportation Fee	18
	Partner Sources	16
	FLREA	8
Capital	TRIP	12
	FLHP Category III	3

Table A-6: Multiple Sources of Funding For NPS Transit Systems

Intelligent Transportation Systems (ITS) ($15 million/year)

Over the past 20 years, ITS has transformed transportation safety, infrastructure, operational performance, and service delivery. Many ITS technologies can assist in mitigating common transportation difficulties afflicting public lands units today. These issues are problematic because they both threaten to detract from the visitor experience and negatively impact environmental resources. They include overcrowding, congestion, parking problems, lack of traveler information, public safety, and resource protection.

The importance of ITS is that is provides a lower cost alternative to major construction. ITS basically deploys low cost communication and transportation control technologies to ground transportation. The NPS has successfully implemented parking lot demand management systems, traveler information systems, automatic entrance fast pass gates, variable message signs and many other transportation operation strategies.

The use of social media applications is seeing the most vigorous activity among all ITS technologies today. Popular social networking sites such as Facebook and Twitter have permitted units to share both interpretive and traveler-related information to visitors at off-site locations. For conditions which can change on short-term notice, disseminating information through social media applications can be especially valuable, as mobile devices are becoming an increasingly common means of accessing this data.

NPS has long been at the forefront of deploying ITS technologies on Federal lands. A 2005 baseline inventory identified 59 NPS units with ITS applications across the nation. This report discussed the state of ITS in the NPS in the mid-2000s, specifically the variety of ways in which parks approached the planning and use of ITS and future prospects for ITS in the agency. The report offered recommendations on advancing ITS technologies in the NPS, both within individual park units and as an agency-wide program.

The NPS recommends spending $15 million/year to maintain existing ITS and to develop new ITS in accordance with the ITS baseline study referenced above.

The table below (Table A-7) provides a breakdown of FLMA units reporting traveler information systems in place and/or utilization of social media outlets.

PUBLIC LANDS UNITS REPORTING TRAVELER INFORMATION / SOCIAL MEDIA (2011)						
UNITS REPORTING				PRIMARY SOCIAL MEDIA APPLICATIONS		
FLMA	# Units	Regional Use*		FLMA	Most Frequent	Second Most
Total	**197***	**32**		All FLMAs	Twitter	Facebook
NPS	136	10		NPS	Twitter	Facebook
Other FLMAs	61	22		Other FLMAs	Facebook	YouTube, Flickr
* **Total Units** includes 32 FLMA regional or national offices						

Table A-7: Use of Social Media or Traveler Information Systems by Public Lands Units - 2011 Survey

The NPS has developed a full inventory of ITS at NPS units as of 2011. In total, 62 NPS units have ITS deployments, which account for nearly two-thirds of all ITS on all Federal public lands. The predominant purpose for ITS on NPS lands is for travel and traffic management, followed by incident management.

Trails ($15 million/year)

Of the 17,872 miles of trails throughout all units of the National Park System, most are natural surfaced trails in backcountry settings. However, 5,012 miles are front country trails[7] and are an important element of the national parks transportation system, often connecting built facilities to popular over-looks, other tourist destinations, and local communities. Front country trails also provide an interface between different transportation modes and many times serve as the primary transportation facility linking visitors with the resources they've come to see and experience.

In addition, front country trails can provide an alternative to private motor vehicle access to many park units. Over 1000 miles of NPS front-country trails are paved, helping to disperse users and allowing visitors who bicycle or walk to have a more first-hand park experience.

- 21% of Front Country trails[8] throughout the NPS (1,070 miles out of total front country total of 5,012) are in a *poor* or "seriously deficient" condition, signaling the need for major repair and rehabilitation.

- 17% of all trails throughout the National Park Service (3,011 miles out of a total of 17,872) are in a *poor* or "seriously deficient" condition, signaling the need for major repair and rehabilitation.[9]

The NPS recommends spending $15 million a year to improve front country trails in serious or *poor* condition from an FCI of 0.42 (*poor*) to an FCI of 0.10 (*good*) for the safety and enjoyment of the public.

Appendix B: NPS Transportation System Background

NPS Transportation Mission

The Organic Act of 1916 is the foundation for what the NPS stands for since the beginning. From: The National Park Service (NPS) Organic Act of 1916:

> "The service thus established shall promote and regulate the use of the Federal areas known as national parks, monuments, and reservations hereinafter specified by such means and measures as conform to the fundamental purpose of the said parks, monuments, and reservations, which purpose is to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations."

In 1916, the population of the United States was 102 million. Today, the population of the U.S. exceeds 315 million, roughly triple the 1916 level; the projected population for 2050 is projected to be 400 million. Similarly, visitation to NPS sites has increased dramatically during the NPS's nearly 100-year-history, from thousands of visitors in 1916 to a forecast of some 285 million visitors in 2013. International visitation is growing as well. The demand on the NPS transportation system has grown significantly, and will continue to grow into the future.

The national park system comprises 401 sites covering more than 84 million acres in nearly every state, the District of Columbia, American Samoa, Guam, Puerto Rico, and the Virgin Islands. These areas include national parks, monuments, battlefields, military parks, historical parks, historic sites, lakeshores, seashores, recreation areas, scenic rivers and trails, parkways, and the White House. In every case, visitors need to be provided access, compelling the NPS to address transportation in order to fulfill its primary mission.

Meanwhile, providing access is instrumental, and providing it in a manner that leaves the resource unimpaired is critical to the mission of the National Park Service.

Federal Lands Transportation Program and the NPS

Since 1926 the NPS has had a strong partnership with the FHWA in the planning, design, construction and maintenance of the Park Service's transportation facilities. In accordance with congress's efforts to meet the federal government's responsibility for transportation in federal lands, SAFETEA-LU continued a legacy of program authorizations that started in 1982.[10] Although the funding was increased over prior years it was not sufficient to fully address road and bridge conditions, complete congressionally mandated parkways, expand alternative transportation services, employ intelligent transportation systems (ITS) or restore trails.

Additionally, the former Park Roads and Parkways Program (PRPP) under SAFETEA-LU did not fully realize the amounts authorized by SAFETEA-LU due to the obligation ceiling on highway trust fund spending under Title 23, Section 1102(f). The result was the loss of $20 million of PRPP funds each year from the SAFETEA-LU authorized levels. This equated to a $100 million shortfall over the life of SAFETEA-LU, and resulted in the deferral of 5 to 15 construction projects that would otherwise have been completed.

During 2009, the NPS benefitted from an additional $170 million from the Federal Lands Highways Program American Recovery and Reinvestment Act (ARRA) appropriation (P.L. 111-5), and an additional $148 million from the NPS ARRA appropriation. More than 50 major road and bridge rehabilitation projects were funded. This one-time boost in funding allowed the NPS to maintain the condition of its road network during the SAFETEA-LU period.

Subsequent to SAFETEA-LU, two years of continuing resolutions maintained PRPP funding at approximately the $240 million authorized level. In 2012, the Federal transportation program was reauthorized, and the FLHP and PRPP were reorganized by the Moving Ahead for Progress in the 21st Century (MAP-21) act (P.L. 112-141).

MAP-21 created a new Federal Lands Transportation Program (FLTP) incorporating the PRPP, and provided $240 million per year to the NPS for two years. MAP-21 repealed many programs, some of which had previously provided funding for NPS transportation projects, including the Paul S. Sarbanes Transit in Parks Program (TRIP), and the Public Lands Highway Discretionary, Transportation Enhancements, and the National Scenic Byways Programs. The net result is a reduction (of approximately $1 billion) in Federal funding for the NPS transportation system over the life of SAFETEAU.

If the program funding levels remain flat ($240 million authorized annually), the NPS transportation system will continue to experience a slow but steady decline in condition. Without additional funding, road and bridge conditions will continue to decline, congressionally mandated projects will still not be completed, improved transportation access and services for park visitors will not be achieved, transit and ITS will not be deployed to reduce congestion, and trails will not be restored.

NPS Transportation Accomplishments

SAFETEA-LU investment has resulted in improvements in the efficiency, effectiveness and condition of the NPS Transportation System. Please refer to the NPS companion brochure **"National Park Service Accomplishments in Transportation 2006-2012"**.

Roads—At the beginning of SAFETEA-LU, the NPS was able to preserve and rehabilitate 3.5 percent of its roads annually. The implementation of a preventive maintenance program has almost doubled the number of miles treated each year to 7 percent. During the ARRA, the NPS was able to preserve and rehabilitate more than 10 percent of its road network annually. A total of 2,553 of centerline miles were improved under SAFETEA-LU.

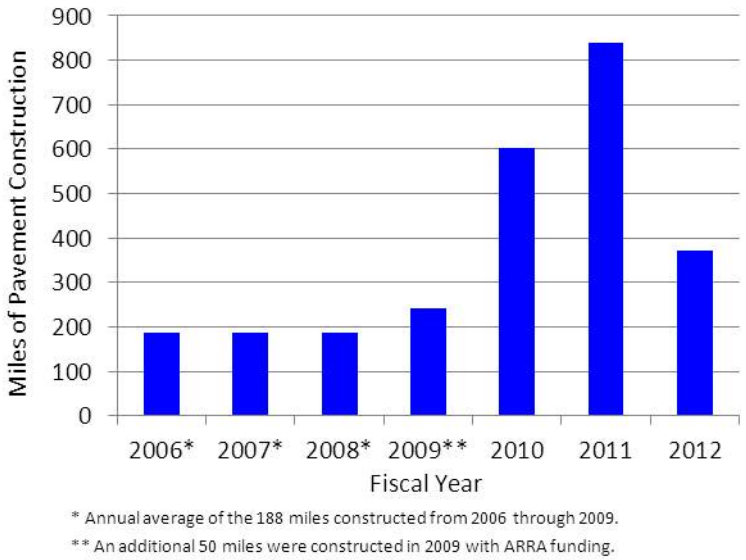


Figure B-1: Paved Road Miles Preserved and Constructed in SAFETEA-LU

Bridges—260 bridges were rehabilitated and several were replaced, resulting in 97% of the NPS bridges being structurally sound.

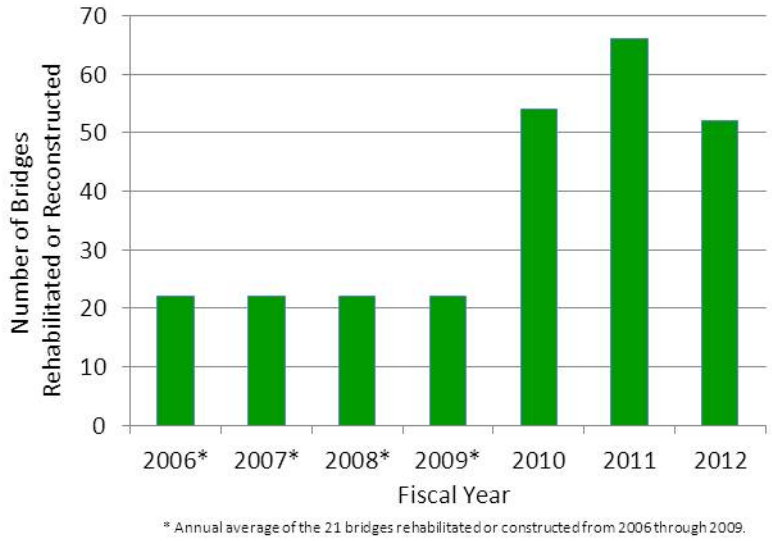


Figure B-2: Bridges Rehabilitated and Constructed in SAFETEA-LU

Parkway Completions—Four out of six congressionally mandated parkways have been completed. Natchez Trace Parkway is complete with the exception of a multi-use trail. Only three of eight sections of the Foothills Parkway are complete.

Leveraged Federal Dollars—From the inception of the alternative transportation program in 1998, federal lands transportation funds have leveraged millions in funds through partnership agreements, service and concession contracts supporting mostly non-capital and operating expenses.

Reduction of Air, Noise, and Visual Pollution—The NPS Transportation Program directly benefits the environment through fuel conservation and reductions in noise and air pollution. High- occupancy vehicles - particularly those that use clean fuels - have eased congestion and reduced air and noise pollution.

Transportation Partnerships—The NPS has expanded its transportation partnerships strategy which now includes 109 out of 147 alternative transportation system affiliations between the NPS and other public and private (by concessions or contract) transportation partners. The NPS is the recipient of substantial investment from its partners in other capital investments and operating costs serving both park and regional recreational travel needs.

Objectives and Performance Measures

The NPS has developed three objectives and related performance measures to assess and monitor overall transportation system performance and maintenance:

- Transportation Asset Condition: To improve the overall condition of the park transportation system by efficient and effective use of limited resources.

- Transportation Safety: To provide safe transportation infrastructure and services for visitors and NPS staff, and to reduce accident rates through increased awareness and implementation of accident reduction strategies.

- Visitor Experience: To provide transportation services that are convenient and enjoyable for the visitor while consistent with the mission of the NPS to protect and preserve the park resource.

Some of the performance measures and indices in use include the following:

- Facility Condition Index (FCI). Measures the cost of deferred maintenance versus replacement cost. Indicates the condition of individual facilities or major components of transportation facilities.[11]

- Pavement Condition Rating (PCR). Measures overall pavement condition either for a segment of road or the total network. The PCR contains as one of its components the International Roughness Index, which is a national and international pavement metric.

- Bridge Health Index (BHI). Measures overall bridge condition for either a single bridge or the total network. The BHI is a national and international metric used by more than 45 States and several countries.

- Percentage of Structurally Deficient Bridges. Demonstrates the percentage of bridges in the network that have immediate or short-term heavy rehabilitation or replacement needs. Structurally Deficient bridges are generally in poor condition due to both deferred maintenance and reaching the end of their service lives.

- Funding Level Indexed to Facility Condition. Indexes roadway and bridge conditions to a funding level to indicate progress toward transportation condition goal.

- Program Delivery Costs. Establishes measures for program expenditures in the areas of planning, design and engineering, construction, construction supervision, and program administrative costs.

Additional metrics are under development for NPS alternative transportation systems. Under a new authorizing legislation the NPS primary objective is to develop a transit management system. The primary metrics that will be developed will be appropriate use of the facility condition index (FCI) as applied to whole transit systems in addition to discrete parts of said systems.

Trends

Identifying national trends and changes in the visitor characteristics and use in our National Parks is essential in enabling the NPS and our transportation partners to focus transportation resources where they are most needed. Key trends and indicators affecting the NPS into the near and long-term future include:

Shifts in Demographics and Visitor Use. The U.S. population is growing, urbanizing, aging, and diversifying. The combination of adverse economic conditions, rising gasoline prices, and an increased preference for urban living, combined with a growing public health and environmental consciousness, explain a shift of people out of their cars and onto transit and non-motorized transportation modes, especially in urban environments.

Concurrent with, and related to, these demographic and travel trends, Americans' recreation and leisure activity preferences continue to change. They have fewer large blocks of free time and are spending less of their discretionary income on leisure activities away from home. Total annual visits to federal and state parks have held steady over the past 20 to 30 years and declined slightly on a per capita basis. NPS visitation mirrors these trends, with roughly constant visitation nationally since the mid-1980s, but with notable regional variation.

Increasing urbanization and suburbanization near park units will contribute to increased non-recreational use of NPS transportation facilities. This effect already influences traffic volumes in parks around the country as non-recreation visits, which include commuter and other through traffic, continues to grow.

Age, race, and ethnicity—separately and together—have implications for transportation, resource protection, and visitor experience. The United States is becoming multigenerational, and multicultural, which will require physical and programmatic access improvements. Universal design principles and practices provide guidance for the investments required to ensure physical and programmatic inclusion for persons with a growing range of linguistic, mobility, sensory, and developmental abilities.

Better communication through mainstream, ethnic, and social media and more convenient and seamless coordination with regional transit systems can improve connections between national parks and their current, and potential, visitors. The aging and diversification of the U.S. population necessitates that the NPS develop universally designed communication materials and transportation options.

There is an increasing interest in transit among domestic and international travelers, especially for recreational purposes, interest and investment in active transportation is on the rise. Efforts to remove or mitigate transportation barriers to NPS units have the potential to increase visitation from these fast-growing population segments.

The effects all have important implications for the demands placed on NPS transportation systems. They impact not only the level of visitation to individual sites and national park units, but also visit length, travel mode to and through parks, and associated demand and wear on transportation assets.

Advancements in Technologies. Rapid advances in technology are affecting the transportation sector, generally for the better. The NPS will position itself to benefit from innovations in infrastructure technology that will speed up and lower the cost and impacts of transportation construction and improve the safety and durability of finished products.

Sophisticated travel technology in personal and fleet vehicles, and mobile and hand-held devices offer new opportunities for communication between a park unit, gateway community, and its mobile visitors and residents, providing new and up-to-the-minute platforms for traveler information. Road conditions, traffic conditions, safety hazards, closures, and on-the-go travel planning will improve safety and travel management techniques and technologies.

Evolution in communication technologies offers the NPS opportunities for enhancing visitor experience, making it safer, and more efficiently managing transportation systems and networks.

Funding and Financial Sustainability. The NPS transportation asset portfolio is funded over its life-cycle through a combination of funding programs, primarily derived from U.S.C. Title 16 and U.S.C. Title 23 legislative sources. While the NPS and its program partners have historically used available funding optimally to operate, maintain, and improve the transportation portfolio, inadequate funding levels have resulted in a deferred maintenance backlog of over $11.6 billion.

In order to most effectively target available funding on the highest priority needs, the National Park Service has developed a servicewide Capital Investment Strategy (CIS) for evaluating and prioritizing capital investment projects. The CIS will be implemented in FY 2015. At its foundation is an ability to support financial sustainability goals for high priority assets, leveraging the full power of asset management systems to ensure that project funding is aligned with a commitment to life-cycle operations and maintenance requirements.

Number and Types of Parks

Park units are found in diverse locations, from remote areas to urban set- tings, and in all of the country's climatic zones. The 401 Park units cover more than 84 million acres (more than 3.5 percent of the nation's total area) and are located in every state except Delaware.

Our largest park, Wrangell-St. Elias in Alaska, is nearly the size of West Virginia, covering 13.2 million acres. On the other hand, many small historic park units, such as the Old Stone House in Washington, DC, are less than an acre in size. This adds to the challenge of construction, maintenance, and operation of these sites.

Park units are classified by location, physical characteristics, and recreational activities. Classifications include National Parks, Lakeshores, Parkways, Seashores, Preserves, Recreation Areas, Monuments, Scenic Rivers, Military Parks, Historic Sites, and Historic Parks.

Visitation

The population of the United States has grown more than threefold since the establishment of the NPS in 1916, from 102 million to 315 million today, and is projected to grow to 400 million by 2050. Park visitation has grown over the years, concurrent with both the nation’s population increase and a tremendous growth in the scope of the park system since the 1960s. Visitation increased dramatically during the NPS’s nearly 100-year-history, from thousands of visitors in 1916 to a forecasted 285 million visitors in 2013. For 2013, that is the same as if 9 out of 10 Americans visited a national park each year.

In other words, the daily average number of visitors to national parks, 780,000, is the same as:

- The number of daily riders on the Washington Metrorail

- The population of the state of Alaska
- 3 times the daily number of passengers at Hartsfield-Jackson Atlanta International Airport
- 17 times the number of daily visitors to Disneyland

Over the past two decades, NPS visitation grew annually by an average of nearly 600,000 people (see Figure B-3 below).

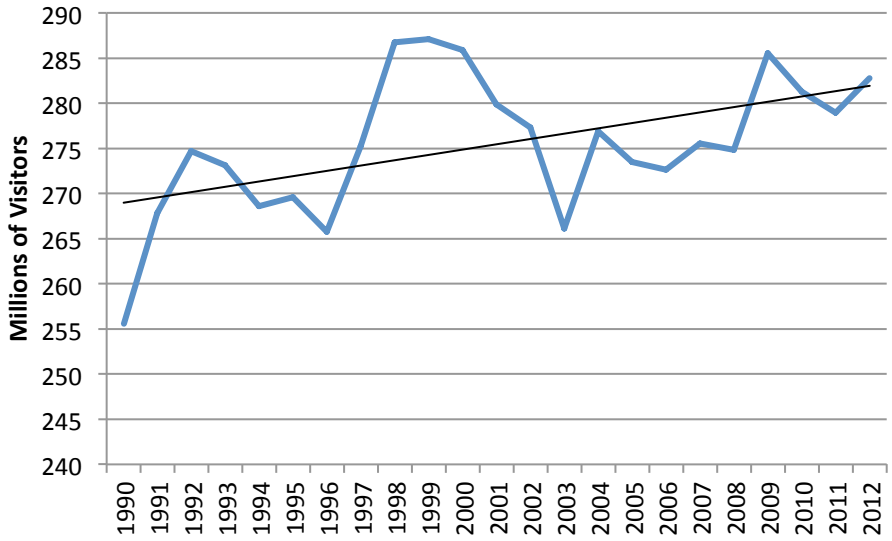


Figure B-3: Number of Visitors to National Park Properties 1990 - 2012

In 2012, national parks received 283 million recreational visitors representing a slight increase in visits over previous years. NPS personnel believe visits to National Parks will continue to grow in the coming years, as members of the baby boom generation retire, giving them more time to travel. In addition, population increases along the coasts and in the West will place more Americans closer to large national parks such as Yosemite, Olympic, and Mount Rainier National Parks. Both Americans and international visitors will continue to take advantage of recreational and educational activities provided by our national parks.

As the number of visits increases, park roads will increasingly experience traffic congestion. The NPS has not been building new roads or adding lanes to alleviate congestion. Instead, it has been pursuing alternative transportation systems, which frequently include high occupancy vehicles (shuttle buses, trolleys, ferries) as a means to add capacity, alleviate congestion, improve the visitor experience, and protect our resources.

The Economic Importance of NPS[12]

The National Park Service units across the country are some of this country's biggest tourist attractions for those vacationing in the states and for international tourist. The National Park Service wishes to do our part to reignite this country's economic engine through tourism and jobs. Providing safe and sound access in and around these points of destination is the first step towards this end.

While the NPS mission does not include creating economic benefits the economic benefits to local communities from national park related activities is significant.

The National Park System received 278.9 million recreation visits in 2011. Park visitors spent $12.95 billion in local gateway regions (within roughly 60 miles of the park). Visitors staying overnight outside the park (in motels, hotels, cabins, and bed and breakfasts) accounted for 54.9% of the total spending. About half (48%) of the spending was for lodging and meals, 21.4% for gas and local transportation, 9.7% for recreation and entertainment, 8.1% for groceries, and 12.7% for other retail purchases.

The contribution of this park visitor spending to the national economy amounted to 251,600 jobs, $9.34 billion in labor income, and $16.50 billion in value added. The direct effects of visitor spending are measured at the local level in gateway regions around national parks. Local economic impacts were estimated after excluding spending by park visitors from the local area (9.8% of the total spending). Combining local impacts across all parks yielded a total local impact (including direct and secondary effects) of 162,400 jobs, $4.58 billion in labor income, and $8.15 billion value added.

The four local economic sectors most directly affected by non-local visitor spending are lodging, restaurants, retail trade, and recreation and entertainment. Their spending supported 45,200 jobs in restaurants and bars, 34,100 jobs in lodging sectors, 15,500 jobs in retail and wholesale trade, and 20,000 jobs in recreation and entertainment.

Parks also impact the local and national economies through the NPS payroll.[13]
In fiscal year 2010 the National Park Service employed 26,031 people with a total payroll of $1.71 billion in wages, salaries, and payroll benefits. Including the induced effects of the spending of NPS wages and salaries in the local region, the total local economic impacts of park payrolls are $1.95 billion in labor income, $2.16 billion in value added, and 32,407 jobs (including NPS jobs). The impacts of the park payroll on the national economy are $2.41 billion in labor income, $2.96 billion in value added, and 41,700 jobs.

Combining the impacts of non-local visitor spending and NPS payroll-related spending yields a total impact of 300,000 jobs nationally, of which 189,000 are in the local regions around national parks.

The report *The 2012 U.S. Transportation Construction Industry Profile,* describes a statistic provided by FHWA that every $1 billion invested in highway construction yields 13,861 jobs for on-site construction and direct and indirect suppliers.[14]

During the years 2006 through 2012, NPS SAFETEA-LU transportation authorizations and awards, and obligations from NPS programs totaled $3.3 billion dollars, and thus created approximately 45,000 jobs.

Climate Change

Greenhouse gas (GHG) emissions, including those resulting from National Park Service transportation systems, contribute to the warming of Earth's atmosphere, which disrupts historic climate patterns, contributing to global climate change. Climate change will have significant implications for transportation systems in every region of the United States. In some cases, climate change will impact the natural and cultural resources that NPS is charged with protecting (e.g., shifts in wildlife migration patterns, degraded air quality). At the same time, climate change will result in more extreme temperature and precipitation events (e.g., heat waves, severe storms), and higher sea levels and storm surges will put NPS transportation facilities at risk of accelerated degradation, temporary closure, and in the most extreme cases, catastrophic damage or loss.

Mounting evidence of global climate change is generating new challenges for NPS transportation systems. Regional temperature and precipitation patterns are changing in ways that were never anticipated when much of the NPS transportation system was designed and built. Already, increases in the frequency and intensity of extreme temperature, precipitation, and costal storms (made worse by rising sea levels) are shortening the expected useful life of many NPS transportation facilities, and in the most extreme cases, have resulted in catastrophic damage and loss. As our understanding of climate change evolves through the current century, the NPS will be faced with adapting transportation systems to be more compatible with altered conditions, and with strengthening the resilience of essential infrastructure to withstand more frequent, extreme, and damaging events.

Over the current century, average temperatures are projected to rise between 4 and 11 degrees Fahrenheit, resulting in lower inland lake levels and thawing permafrost that will put marine and road systems at risk. Extreme heat events that cause roadway and railroad stress and sudden buckling are projected to be 10 times more likely to occur by century's end than they were in the late 20th century.

Precipitation patterns are also changing, with summers becoming dryer and winters wetter. Very heavy precipitation events like tropical storm Irene erode roadway beds, overwhelm culverts, flood low-lying areas, and turn gentle streams into rushing torrents that wash away bridges.

These types of events are projected to become much more common as climate change progresses, occurring at least once every five years and as frequently as every other year in some regions. In coastal areas, the threat of rising average sea levels poses perhaps the most significant threat to surface and coastal transportation systems.

Over the course of the 20th century, average sea level rose 6.7 inches, with many areas of the U.S. east coast measuring as much as 12 inches due to local conditions. By the end of this century, sea levels are predicted to rise an additional 30 to 72 inches, resulting in the permanent inundation of some critical infrastructure and dramatically increasing the potential for damaging storm surge flooding, such as was experienced during hurricane Sandy in 2012.

As temperature and precipitation patterns change, regional climates will shift, making northern latitudes feel more like southern latitudes do today. For example, climate experts project that by the close of the 21st century, the climate in the State of Illinois will be similar to that of western Arkansas or eastern Texas today. Dramatic changes like this will likely result in seasonal changes to the timing of visitation to national park units, and could even affect the places visitors are most interested in. These changes will likely cause proportional shifts in the demand for NPS transportation services.

The NPS is proactively addressing climate change through planning and implementation initiatives. For example, the Alaska Regional Office, in cooperation with other Alaska Federal land management agencies and the State of Alaska, applied for and received a FHWA grant to identify transportation assets that are adversely affected by climate change, identify engineering and other strategies to make infrastructure more resilient and adaptable, and identify priority-based work plans for addressing the most vulnerable assets first. This pilot vulnerability assessment will inform Federal land management agencies and FHWA nationwide as to how to collaboratively mitigate and adapt transportation assets on a broad scale transcending multiple jurisdictions.

The Northeast Regional Office is rebuilding and rehabilitating vital transportation infrastructure that was damaged during Hurricane Sandy and in doing so is including design and construction elements that are adaptable to a changing climate.

Using sustainable guidelines for replacement infrastructure, there will be many new methodologies and techniques that can be applied to all transportation projects across the country.

- The NPS is developing an Alternative Transportation Green Rating System that will enable transportation professionals to evaluate the design, operation and maintenance of existing and potential systems as it relates to environmental sustainability.

- The NPS currently tracks greenhouse gas (GHG) emissions from operational fleet and visitor transportation usage. This tracking tool, Climate Leadership in Parks (CLIP), was

developed in partnership with EPA to help parks measure and decide on strategic investments to reduce their carbon footprint.

- The NPS is developing a Long Range Transportation Plan that will utilize GHG emissions scenarios and environmental sustainable transportation planning techniques to standardize the way the NPS develops and operates their transportation systems.

As research continues on climate change and policies are refined, the NPS transportation program will need to dedicate funding to both adaptation and mitigation.

Transportation in Signature NPS Initiatives

As the NPS prepares for its second century of preserving, protecting, and providing access to the nation's special places, it is engaged in three signature initiatives (among others) that illustrate the importance of surface transportation to achieving core strategic goals.

1) On August 25, 2011, the ***A Call to Action*** report [15] was released, highlighting four goals and 36 actions that will advance the mission of the NPS into the first half of the 21st century.[16] One of the four goals highlights the key role of surface transportation in meeting the challenges of the next century of the NPS: "connect urban communities to parks, trails, waterways, and community green spaces that give people access to fun outdoor experiences close to home."

Several of the report actions also emphasize the need to invest in transportation assets and services:

Action 4: In My Backyard—emphasizes improvements to physical connections between urban residents and nearby park units through public transportation and non-motorized facilities.

Action 5: Parks for People—challenges the NPS to enhance the connection of densely populated and diverse communities to parks, greenways, trails, and waterways.

Action 12: Follow the Flow—highlights the need to expand access to water-based recreation and to protect and restore waterways across the country by establishing a national system of water trails.

Action 23: Go Green—goal is reduce the NPS carbon footprint over 2009 levels by reducing greenhouse gas emissions by 20 percent, including on-site fossil fuel usage and emissions due to electricity consumption [also see Green Parks Plan below].

Action 24: Invest Wisely—focuses investments from all maintenance fund sources on high priority assets to address deferred maintenance and code compliance needs.

2) The ***Green Parks Plan***[17] details the National Park Service's commitment to sustainability and environmental performance. It articulates an overarching vision that will make everything the NPS does more sustainable, including how transportation facilities are planned, constructed, operated, and maintained. A key commitment of the plan is to reduce NPS greenhouse gas emissions, including those from direct sources (e.g., fleet vehicles, construction) and from indirect transportation sources (e.g., commuter travel).

The plan also commits the NPS to using sustainable materials in the construction and maintenance of assets, to adapt the location, structure or function of park facilities as needed in anticipation of climate change, and to reduce stormwater runoff by employing best management practices. By leading the way in environmentally sustainable transportation, the NPS hopes to foster sustainability beyond park borders, engaging NPS visitors and employees in a long-lasting campaign to improve our nation and our planet.

3) On April 16, 2010, the President introduced ***America's Great Outdoors: A Promise to Future Generations*** (AGO),[18] an initiative aimed at reigniting the nation's historical commitment to conserving and enjoying the magnificent natural heritage that has shaped the nation and its citizens. The AGO is a plan on how to reconnect people with America's lands, waters and natural and cultural resources. Among the major goals is to "create and enhance a new generation of safe, clean, accessible great urban parks and community green spaces." Several of the report actions emphasize the need to:

- Support and align federal agency programs and initiatives to promote the creation, expansion and enhancement of urban parks and community green spaces. (6.2)
- Connect people with urban parks and community green spaces (6.4)
- Establish the National Recreational Blueway Trails Initiative to increase access to recreation. (9.1)
- Facilitate recreational access to nation's waterways. (9.2)

Innovative Transportation Finance

The U.S. Congress and the U.S. Department of Transportation have strongly recommended the pursuit of innovative transportation finance. States and municipalities are increasingly looking towards new methods of financing transportation projects in the absence of traditional sources.

The NPS has, under current statutory authority, applied most available methods of innovative financing. The deployment of additional innovative financing techniques would require

congressional support and legislation, and in some cases would require state and local government support for such methods as value capture.

A recent paper, *NPS Transportation Innovative Finance Options*, produced by the Volpe National Transportation Systems Center found that the NPS is severely constrained in the number of options available given the need to pass authorizing legislation to implement the many innovative financing techniques available to state and local governments.

Innovative finance techniques examined and their applicability within the context of the NPS is as follows:

- Grant management tools. NPS would need specific statutory authority to issue its own bonds. Tapered match and related strategies generally do not apply to NPS because unlike states, the NPS is not required to provide a match to Title 23 funding.

- Infrastructure bank. A national infrastructure bank has been the subject of proposed legislation, but does not currently exist. If one were created, NPS and other federal agencies would likely be ineligible for funding, as was specified in previous pending legislation.

- Tolling / Value Pricing. NPS has limited authority for user fees such as transportation and entrance fees; however, use of tolling would require statutory changes and exploration in the context of the NPS mission and goals of providing access to as wide an audience as possible.

- Public-Private Partnerships. NPS uses the PPP vehicles that are authorized and most relevant to its mission, namely concession agreements, partnerships, and design-build contracting.

- Value Capture / Tax Increment Financing. NPS does not have authority to levy property taxes. Use of this method could only take place in conjunction with a state or local partner.

In select instances, key NPS projects have been delivered with some form of non-traditional financing, primarily on alternative transportation systems. One such example is a public-private partnership for the Island Explorer bus shuttle system at Acadia National Park. Non-traditional financing models used on capital improvements or roadway construction are promising but have been limited.

The NPS has investigated many of these innovative financing options, and found that they have limited applicability, as described in Table B-1 below.

Table B-1: Summary of Innovative Finance Techniques and Implementation Issues for NPS

Finance Technique	Description	Examples	Implementation Issues for NPS
Grant management tools	Variety of techniques to allow flexibility in managing multi-year flow of federal-aid highway & transit capital funding	GARVEE bonds, GANs, COPs, tapered match, flexible matching, advance construction, joint development	Like most federal agencies, NPS does not have statutory authority to issue its own bonds. Use of these approaches would require legislative changes.
Infrastructure bank	A revolving fund that underwrites public-sector infrastructure projects and is paid back over time	Pilot projects in several states; Section 129 loans	A national infrastructure bank has been the subject of proposed legislation, but does not currently exist. If one were created, NPS and other federal agencies would likely be ineligible for funding, as was specified in previous pending legislation.
Tolling / Value Pricing	Direct fees on highway users to manage demand and generate revenue	Tolled express lanes; HOT lanes; cordon charges; variable parking charges; mileage-based user fees	NPS has limited authority for user fees such as transportation and entrance fees. Broader use of tolling would require statutory changes.
Public-Private Partnerships	Newer forms of contracting with greater private sector participation.	Design-Build-Operate-Maintain, Build-Operate-Transfer, and other contracts; concessions; long term leases; sale/ leaseback	NPS already uses the PPP vehicles that are authorized and most relevant to its mission, namely concession agreements, partnerships, and design-build contracting. More exotic PPPs such as leaseback would require statutory changes to allow private entities to own and/or maintain NPS assets. These arrangements are likely not consistent with agency mission and policies.
Value Capture / Tax Increment Financing	Special tax assessment on the additional property value created by new transportation facilities (e.g. new transit station).	Potomac Yard WMATA station funded in part by special tax district	NPS does not have authority to levy property taxes. Use of this method could only take place in conjunction with a state or local partner.

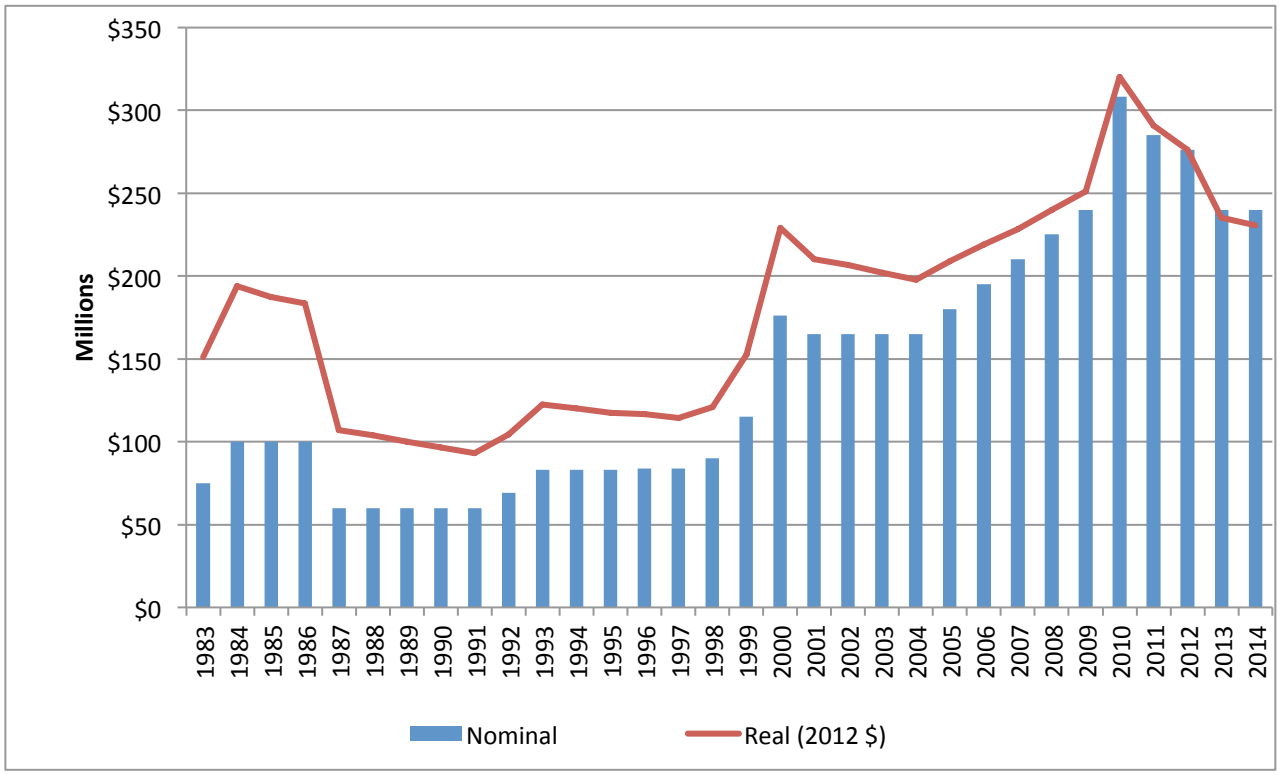
NPS continues to evaluate the feasibility of such innovative finance techniques working in tandem with state and local partners with the capacity and authority to utilize such mechanisms to deliver projects of mutual interest. Given the NPS' success with PPP's, the service seeks to continue and expand its use of these tools.

Although there may be targeted opportunities for NPS to partner with state and local governments who can take advantage of other tools, particularly grant management tools and value capture techniques, these opportunities are not widespread, nor could they be reasonably incorporated as elements of a national transportation finance strategy. Thus far, state and local fiscal constraints have not open new opportunities.

NPS Transportation Funding Trends

Figure B-4 provides a glimpse of the spikes and drops in funding since the inception of the Federal Lands Highway Program in 1983.

Figure B-4: NPS Transportation Title 23 Authorizations and Awards: 1983-2014



The National Park Service transportation asset portfolio is funded over its life-cycle through a combination of funding programs primarily derived from U.S.C. Title 16 and U.S.C. Title 23 sources. The NPS wants to wisely utilize all available funding for the maintenance and preservation of its transportation infrastructure. This includes considering the total cost of facility ownership over the life of the infrastructure it manages. For this reason, the NPS has used its asset management systems (in particular the Facility Management Software System – FMSS – but also U.S.C Title 23 required management systems) to create an investment strategy that focuses on this concern.

Figure B-5 below demonstrates the commitment of the NPS to the total cost of our transportation infrastructure from 2006-12. Over this period, the NPS expended over $1 billion from U.S.C. Title 16 authorizations, which is about 32 percent of all funds dedicated to transportation.

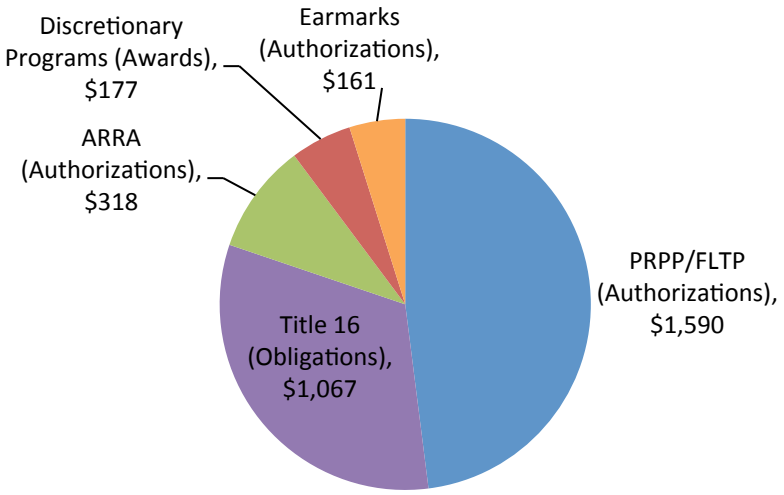


Figure B-5: NPS Transportation Authorizations, Awards, and Obligations: FY2006-2012 (in Billions of Dollars)

Finally, Table B-2 illustrates specific programs repealed or restricted to the NPS.

Title/Program	SAFETEA-LU (Nominal)	SAFETEA-LU (2012 Dollars)	MAP-21	Difference	Rationale
Title 16 Total	**$ 144.4**	**$ 152.1**	**$ 145.8**	**$ (6.3)**	
Title 16 Non-Fee	**$ 102.3**	**$ 107.7**	**$ 101.4**	**$ (6.3)**	**6% reduction under sequestration to all programs**
Operational Base	$ 37.9	$ 39.9	$ 37.5	$ (2.4)	6% reduction under sequestration
Cyclic Maintenance	$ 28.6	$ 30.7	$ 28.9	$ (1.8)	6% reduction under sequestration
Line Item Construction	$ 12.5	$ 13.1	$ 12.3	$ (0.8)	6% reduction under sequestration
Repair/Rehab	$ 12.3	$ 13.0	$ 12.3	$ (0.6)	6% reduction under sequestration
Other NPS Programs	$ 6.4	$ 6.1	$ 5.8	$ (0.4)	6% reduction under sequestration
Emergency Storm & Flood Damage	$ 4.5	$ 4.8	$ 4.5	$ (0.3)	6% reduction under sequestration
Title 16 Fees	**$ 42.1**	**$ 44.5**	**$ 44.5**		
Recreation Fee	$ 31.2	$ 33.0	$ 33.0		Assumes FLREA reauthorization (fees set at unit-level)
Transportation Fee	$ 8.6	$ 9.0	$ 9.0		Assume status quo (varies with vistation at unit-level)
Concessions Franchise Fees	$ 2.4	$ 2.5	$ 2.5		Assume status quo (contracts negotiated at unit-level)
Title 23 Total	**$ 266.4**	**$ 280.8**	**$ 240.0**	**$ (40.8)**	
PRPP	$ 227.1	$ 239.0	$ 240.0	$ 1.1	Authorization under MAP-21
Earmarks	$ 23.0	$ 24.6		$ (24.6)	Moratorium on earmarks
PLHD	$ 12.7	$ 13.3		$ (13.3)	Eliminated under Map-21
Transportation Enhancements	$ 2.1	$ 2.2		$ (2.2)	Eliminated under Map-21
Scenic Byways	$ 1.1	$ 1.2		$ (1.2)	Eliminated under Map-21
Ferry Program	$ 0.4	$ 0.5		$ (0.5)	FLMAs no longer eligible under Map-21
Other Funding Sources	**$ 20.0**	**$ 20.6**	**$ 5.2**	**$ (15.4)**	
FTA TRIP/ATPPL	$ 8.9	$ 9.3		$ (8.9)	Eliminated under MAP-21
SNPLMA	$ 6.2	$ 6.5		$ (6.5)	Legislation Expired
Reimbursable Agreements	$ 2.9	$ 3.1	$ 3.1		External funding usually arranged at unit-level
Donations	$ 2.0	$ 2.1	$ 2.1		Donations unaffected by policy shifts
Grand Total	**$ 430.9**	**$ 453.6**	**$ 391.0**	**$ (62.5)**	

Figure B-2 Loss of programs and funding from SAFETEA-LU to MAP-21

Preparing for Emergency Relief and Recovery

The Federal Lands Transportation Program (FLTP) under MAP-21 (formerly, the Federal Lands Highway Program) has existed in one form or another for 30 years. The FLTP funds the NPS Park Roads and Parkways Program. For NPS, the success of this program has been the flexibility it affords to plan and execute a multiyear program of road maintenance and transportation improvement projects. It is well known in the industry that the right kind of repair at the right time results in lower total cost of facility ownership. Ultimately, this means you get more for your money. Disasters impacting the NPS transportation systems often happen during the peak of hurricane season.

Unfortunately, this coincides with the end of the Federal fiscal year. As such, much needed critical emergency repairs take priority to stabilize damages. Without the Emergency Relief for Federally Owned Roads (ERFO) program to provide supplemental funding, in fiscal year 2012 the NPS's Park Roads and Parkways Program would have had to delay more than $31 million in carefully planned repairs, resulting in a larger transportation repair bill later. The ERFO Program is an excellent program model that meets a critical Federal responsibility for the stewardship of the Federal assets in National Parks.

Meanwhile, NPS is meeting several other challenges that are beyond the capability of the core Federal Lands Transportation Program under MAP-21. A similar approach or national program modeled on ERFO should be identified to address these unmet critical Federal needs across the country.

Appendix C: Management Systems, Data Collection and Planning

Assets & Funding Venues

The official deferred maintenance (DM) report from October 2012 (the most recent date which DM is available for all NPS asset types) showed that the NPS has an identified a total DM backlog of approximately $10.6 billion on its existing asset portfolio - buildings, housing, utilities, and roads**.** Over 58 percent of that backlog, or approximately $6.2 billion, consists of roads, parking areas, bridges and trails.

U.S.C Title 23 provides support to maintain or improve the current condition level of the transportation infrastructure in the NPS transportation system. Through 23 USC the NPS receives funding from the Federal Lands Transportation Program (FLTP) and the Emergency Relief for Federally Owned Roads (ERFO) Program. In addition, the NPS uses its own funding (from the repair and rehabilitation, line-item construction, and fee programs) to help address some of the backlog of DM needs.

For instance, in FY 2006, $7 million was collected in transportation fees in 11 park units for operations and maintenance of ATS systems. Operating transit systems is expensive. For example, the Zion National Park transit system, which served 2.8 million passengers in 2006, operates 30 buses with 21 trailer units that require drivers, a maintenance facility, and a fueling station at an annual cost of $2.6 million.

Currently, for most NPS transit systems there are no stable and reliable sources of funding for operations increasing the financial risks associated with these systems. Unfortunately these systems often cut back on services, or take from other park programs to make annual ends meet. Depending upon seasonal operations, NPS and its contracted/partnership systems comprise well over 300 vehicles operating in and around national park units and neighboring communities, including partner system operations. All these funding venues help address the national responsibility.

NPS Life-Cycle Costs and the Capital Investment Strategy (CIS)

The National Park Service Capital Investment Strategy (CIS) is a data-driven strategy for evaluating and prioritizing fiscal resources committed to NPS facilities. It will align ***project funding*** (Title 23, Title 16 and other) with a *commitment to meeting the ongoing, life-cycle operations and maintenance requirements of our facilities.* The strategy leverages the NPS corporate database (the Facility Management Software System, or FMSS), management systems such those for pavements and bridges and other related systems to address the total cost of facility ownership. Through the project prioritization process, it will also ensure a financially sustainable future for *those mission critical NPS assets* making optimal use of taxpayer dollars.

In brief, the CIS will provide the methodology for the NPS to focus its Title 23 preservation and rehabilitation funds on those transportation assets to which it has already allocated its Title 16 operations and maintenance funds.

As applied to transportation assets, the CIS has the following mission-related goals at its foundation:

- **Mission Goal I. Financial Sustainability**: Repair and improve transportation assets that parks commit to maintain in good condition, typically those that are considered mission critical as indicated by the NPS-standard Asset Priority Index (API).

- **Mission Goal II: Resource Protection**: Preserve, repair, and protect historic and iconic assets, cultural landscapes and natural resources. This includes both preserving historic transportation assets and protecting resources while providing visitor access.

- **Mission Goal III. Visitor Use**: Invest in transportation facilities that directly enable visitors to enjoy outdoor recreation opportunities and provide access to natural and cultural resources.

- **Mission Goal IV. Health and Safety**: Correct existing and identified unsafe and hazardous conditions on NPS transportation facilities.

The CIS implements, Item #24, "Invest Wisely," from the NPS's ***2nd Century Call to Action*** – the guidance document for all aspects of the NPS as it enters its second century of preserving America's treasures for present and future generations. Action #24 calls for a focus of investments from all maintenance and operational fund sources on high priority national park assets to prevent and address critical deferred maintenance. By doing so, the NPS will correct deferred maintenance deficiencies for a portion of the facilities that are most important to park visitor experience and resource protection.

The CIS will enable the NPS to demonstrate to Congress, the Department of Interior, and other stakeholders that it is *optimizing taxpayer dollars to preserve mission-critical assets*. Implementation of the CIS will not eliminate the deferred maintenance backlog, however, it will seek to focus resources in a fashion that best supports the mission of the NPS.

Pavements and Bridges

With 5,500 miles of publically accessible paved roads and 1,442 bridges, the NPS pavement and bridge network represents a sizeable portion of both the Service's total asset base and its deferred maintenance obligations. The replacement value of this transportation infrastructure is more than $30 billion; its deferred maintenance is estimated at $6.1 billion.

In accordance with Title 23 CFR, the NPS in conjunction with the FHWA has completed implementation of a Pavement Management System (PMS) and a Bridge Management System (BMS) and has the ability to systematically perform analyses which support transportation investment decisions.

The NPS is committed to practicing sound asset management in the stewardship of its transportation assets. PMS and BMS provide state-of-the-art tools that allow the NPS to align its budget requests with performance in terms of industry standard performance metrics. To this end, the NPS is using these management systems for the purposes of connecting budget development, allocation of resources, and projects development with our performance goals.

Safety

The NPS is committed to improving the safety of its roadways and parkways. The completion of a fully functional Transportation Safety Management System (TSMS) is its first priority for increasing park property safety.

A pilot system in the Northeast Region (NER) has allowed the identification of specific Safety Emphasis Areas (SEAs) and the recommendation of target areas and specific strategies that have the most significant impacts on reducing crashes and improving safety. These approaches have allowed the Northeast Region to establish a safety performance goal of a 20% reduction in serious accidents and to establish monitoring procedures to assess the effectiveness of their safety improvement strategies toward achieving this goal.

The NPS is using the successes illustrated in NER to augment our development of a national TSMS and to similarly establish reasonable and attainable performance goals for roadway safety. Recent analysis of traffic accident data illustrate some of the trends in roadway safety issues and have led to the development of SEA's at the national level (see Figures C-1 and C-2 below).

Driver actions are the highest contributing factors for crashes, with some causation attributed to environmental conditions, including animals in the roadway. These strategies include reducing lane departures (run-off- the-road crashes) and head-on collisions, increasing intersection safety, and reducing collisions with animals, among others.

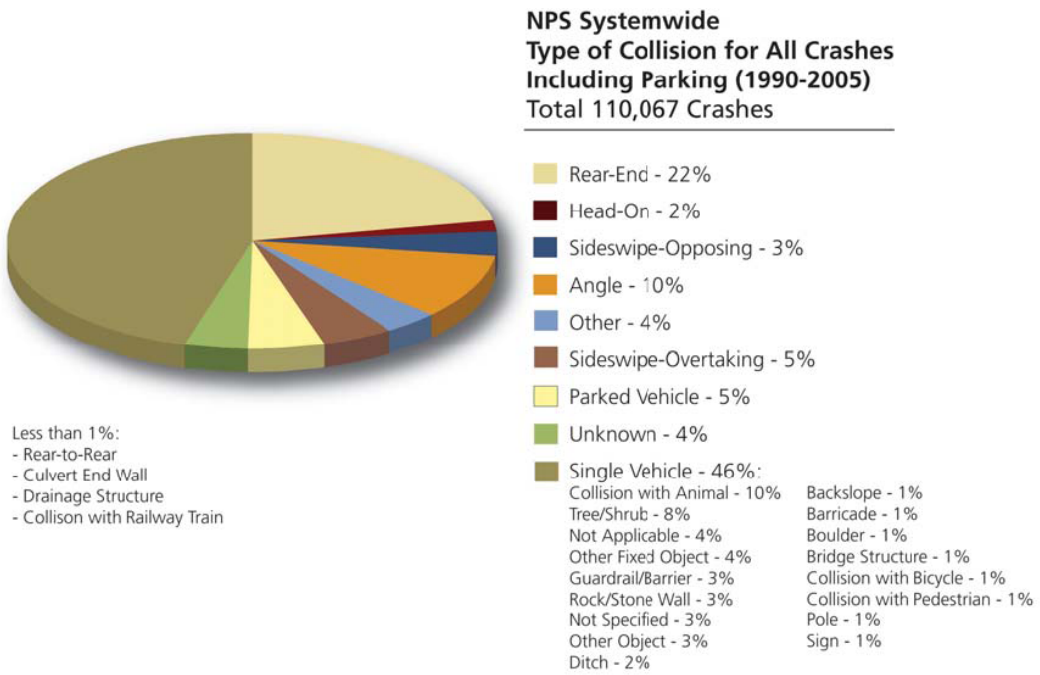


Figure C-1: NPS Systemwide Type of Collisions for All Crashes Including Parking (1990-2005)

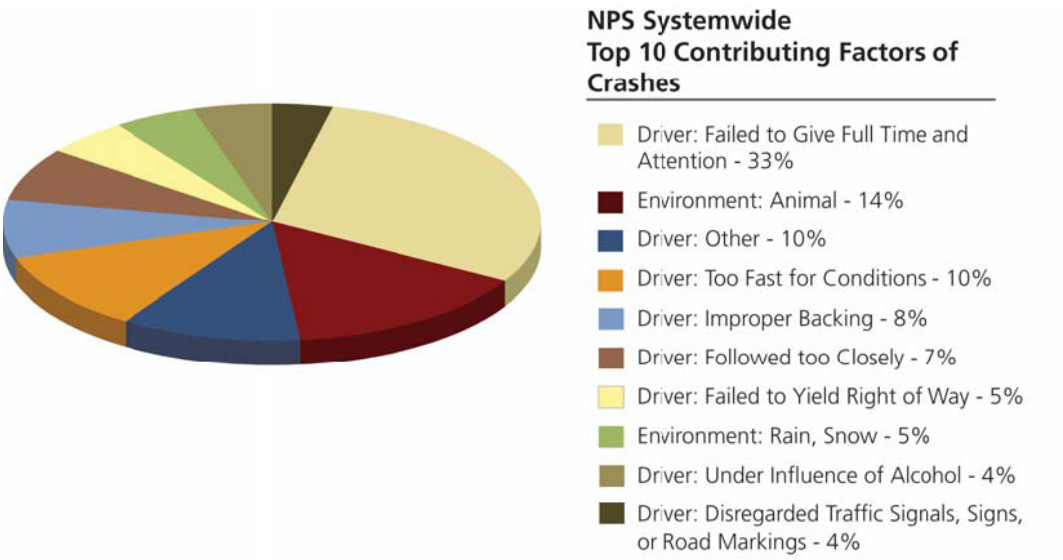


Figure C-2: NPS Systemwide Top 10 Contributing Factors of Crashes

In addition to these actions, we are strengthening our data collection and analysis capabilities to ensure that the TSMS provides appropriate information for informing resource allocation decisions and aids in our ability to establish firm performance targets.

Congestion

Just as traffic congestion continues to increase nationally, it is likely more visitors will experience traffic delays at National Parks. The NPS recognizes that in times when the focus is on asset management of the current system, congestion management may offer the opportunity to make limited capacity improvements for a small fraction of the cost of a road or parking area construction project. Given the mission of the NPS to preserve and protect natural and cultural resources, adding additional road capacity is not always an option.

Some parks situated near large, growing urban areas experience more traffic as these areas grow. Increased suburban development leads to an increase in commuter traffic through parks during rush periods or for other non-park visit purposes. Current visitation numbers indicate that for some parks, such as Rock Creek Parkway in Washington, DC, the ratio on non-recreation to recreation visitors is as high as 6 to 1. In parks not located near large urban areas, recurring congestion can occur for other reasons. Some parks experience significant congestion at key sites, such as entry stations or parking lots, during periods of high park visitation.

Central to the NPS congestion management mission was the need to validate a definition of congestion in the context of the National Parks. Transportation congestion is commonly defined as the condition where travel demand has exceeded travel supply. However, highway congestion is very different than congestion at park entrance stations, visitor center parking areas, or even hiking trails. During SAFETEA-LU, the NPS executed a series of structured, comprehensive projects to define NPS congestion, to identify the types of congestion found in the NPS, and to create a tool kit for managing congestion.

The NPS proposes to continue to develop congestion management. The focus will be on three things:

1. Technical subject matter expertise—Improving the Parks ability to get expertise as well as seeking to ensure that lower-level congestion problems are addressed before they become larger, more expensive problems.

2. Data improvement—Improving the quality of traffic data and technical support for congestion management project and program analyses. Industry standard congestion management often requires traffic data that is not collected under the NPS Traffic Program. Obtaining vehicle or even pedestrian traffic counts in Parks will require different technologies than those used on simpler roadway counts.

3. Metric improvements—Developing and implementing metrics that reflect NPS congestion is necessary for a truly systematic congestion management methodology. Congestion metrics will allow the development of benefit-cost and other models improving the decision support tools available to the NPS.

Traffic

While not a management system, a solid traffic count program provides information that is needed by a number of decision support tools including each of the management systems. A traffic count program is required in order to be able to compare the safety of two routes, define deterioration models for pavement and bridge management systems, support development of alternative transportation systems, and to prioritize competing projects.

The NPS will pursue rehabilitation of its permanent count station network with the goal of restoration of its current 33-park network of stations. This will allow the NPS to perform traffic coverage counts and develop traffic information for parks that account for more than 50% of both the paved road network and total service visitation. Additionally, the NPS is dedicated to developing event-specific temporary traffic count standards that will allow counts to be performed outside of the 33-park network in support of network objectives as well as park-level operation needs.

Long Range Transportation Planning

The NPS has initiated its National Long Range Transportation Plan (LRTP), three regional level LRTP's, and one unit-level LRTP. It has completed two of the three regional LRTP's, with the Alaska Region's multi-agency plan being awarded the 2012 FHWA's Excellence in Teamwork Award.

The NPS is on track to initiate another Regional LRTP along with data collection to support LRTP work in the remaining regions within the next year. Completion of all remaining regional LRTP's will occur over the three subsequent years.

Long-range transportation planning in the NPS has proven to provide benefits in establishing long-term, multi-modal goals for the agency, establishing baseline conditions for critical transportation investments, determining high priority, long-term transportation needs for the agency, and establishing financial strategies to most efficiently and effectively meet those needs. Multi-agency, partner, and interagency collaborative planning processes have reaped benefits in coordinated planning and project development, resulting in more efficient and effective delivery of funding to meet multiple agency objectives.

Reduction in Air, Noise, and Visual Pollution

Increased visitation at NPS units means escalating amounts of pollution emitted by cars. The NPS has taken positive steps to alleviate this problem by implementing alternative transportation systems in the form of bus shuttles at many of its parks. Many successes are evident not only in establishing shuttle systems, but also in upgrading vehicle fleets to achieve greater reductions.

- At Yosemite National Park, older fleet vehicles are being replaced with vehicle types meeting the highest fuel efficiency ratings, resulting in a 21% emissions reduction in 2011. In 2012, the park added three hybrid electric buses to the Tuolumne route and also replaced older diesel vehicles with hybrid diesel/electric tractors for the Mariposa Grove Tram Tour. Within the last year a park concessioner acquired new clean diesel motor coaches and in 2009 replaced seven propane-fueled tractors with hybrid diesel/electric tractors used for the Valley Tram Tour.

- Noise pollution created by diesel bus acceleration and deceleration has been reduced by as much as 70% with hybrid buses, thereby allowing the visitors to more fully experience all of the sights and sounds of nature.

- Following the introduction of shuttle bus service, noise near roadways was reduced by 9.6 decibels in Zion National Park and 6.3 decibels in Acadia National Park. This is comparable to the reduction that would result from building a 12- to 15-foot-tall noise barrier along the roads.

- The *Island Explorer* shuttle at Acadia National Park transports approximately 439,000 visitors annually on its clean fuel buses. Since 1999, Island Explorer buses have eliminated more than 1,700,000 automobile trips and prevented 15,942 tons of greenhouse gases.

Nearly 20% of National Park units are located in regional air quality nonattainment areas for PM2.5 and Ozone. There are 51 park units located in 42 PM2.5 nonattainment counties and 81 park units in 63 Ozone nonattainment counties. The NPS is placing a greater emphasis on maintaining alternative transportation systems that will help keep our parks cleaner, quieter, and more sustainable.

Appendices Endnotes

[1] Pavement Data Collected by FHWA during Cycle 3 between 2005 and 2008.This data has been modeled by FHWA to represent the condition of the network as of October 2012.

[2] Bridge condition data is collected by the FHWA between 2010 and 2012. By law, motor vehicle bridges are inspected every two years.

[3] Note that industry best practices independently estimate that about 2% of the total value of an asset collection should be spent annually in order to maintain those assets in good condition.

[4] Note that the ratio of maintenance needs to replacement value is 3.7%, almost double the industry standard ratio of 2% demonstrating the poor condition of the paved parking area network.

[5] Note that these figures do not include the Arlington Memorial Bridges.

[6]The inventory was conducted to be in compliance with Public Law 112-141 Moving Ahead for Progress in the 21st Century (MAP-21) section 203 (c) which requires the NPS to conduct a facilities inventory.

[7] Includes asphalt, boardwalk, concrete, and paver block.

[8] Front Country trails include trails listed as Front Country and Urban in the NPS Facility Management Software System (FMSS).

[9] U.S. Department of the Interior, National Park Service, *Trails Condition Report*, February 2, 1988.

[10] The Federal Lands Highway Program was created under the Surface Transportation Assistance Act of 1982 [Public Law 97-424].

[11] The FCI or Facility Condition Index is established into three (3) categories: *Good* 0-0.08; *Fair* 0.09-.20; and *Poor* >0.20. These categories were developed with FHWA.

[11] *Economic Benefits to Local Communities* from *National Park Visitation*, *2011*. Natural Resource Report NPS/NRSS/ARD/NRR–2013/632. National Park Service, Ft. Collins, CO, 2011.

[13] *Economic Benefits to Local Communities from National Park Visitation and Payroll, 2010*. Natural Resources Report NPS/NRSS/EQD/NRR – 2011/481, National Park Service, Ft. Collins, CO, 2011.

[14] http://www.mwrtba.org/microsites/transportationcreatesjobs/pdf/Economic_Profile.pdf, p. 96. November, 2012.

[15] The 2011 Call to action was amended in 2012 and can be found at: http://www.nps.gov/calltoaction/

[16] *A Call to Action* draws from three major initiatives—*America's Great Outdoors: A Promise to Future Generations* (2011); the National Parks Second Century Commission Report, *Advancing the National Park Idea* (2009); and *The Future of America's National Parks* (the Centennial Report, 2007).

[17] April 2012 is the latest plan and can be found at:
http://www.nps.gov/greenparksplan/downloads/NPS_2012_Green_Parks_Plan.pdf

[18] By Presidential Memorandum for the Secretary of the Interior, the Secretary of Agriculture, the Administrator of the Environmental Protection Agency and the Chair of the Council on Environmental Quality, April 16, 2010.