

chapter 12

Transportation Serving Federal and Tribal Lands

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Transportation Serving Federal and Tribal Lands

This chapter documents transportation that serves Federal and Tribal lands, a subset of the transportation system that the analyses presented in Chapters 1 through 10 do not explore in depth. Included are discussions of the types of lands, access to Tribal communities, resources served, role of transportation in the use of Federal and Tribal lands, role of Federal lands in the U.S. economy, condition of the transportation system, sources of funding, expenditures of funds for construction and maintenance of transportation infrastructure, and the future of transportation on Federal and Tribal lands.

Types of Federal and Tribal Lands

The Federal government has title to about 650 million acres,¹ or about 30 percent of the country's total area of 2.3 billion acres.² Additionally, the Federal government holds in trust approximately 55 million acres of land on behalf of Tribal governments, located primarily in the West. Various Federal land management agencies (FLMAs) manage Federal lands, primarily within the Departments of the Interior (DOI), Agriculture (USDA), and Defense (DOD). DOI's Bureau of Indian Affairs primarily holds Tribal lands in trust, but many Tribes own land in addition to these trust lands. *Exhibit 12-1* illustrates the major Federal and Tribal lands (note that this exhibit shows only the large units; many smaller units are not shown due to the scale of the image). *Exhibit 12-2* highlights resources that eight FLMAs manage.

Accessing Tribal Communities

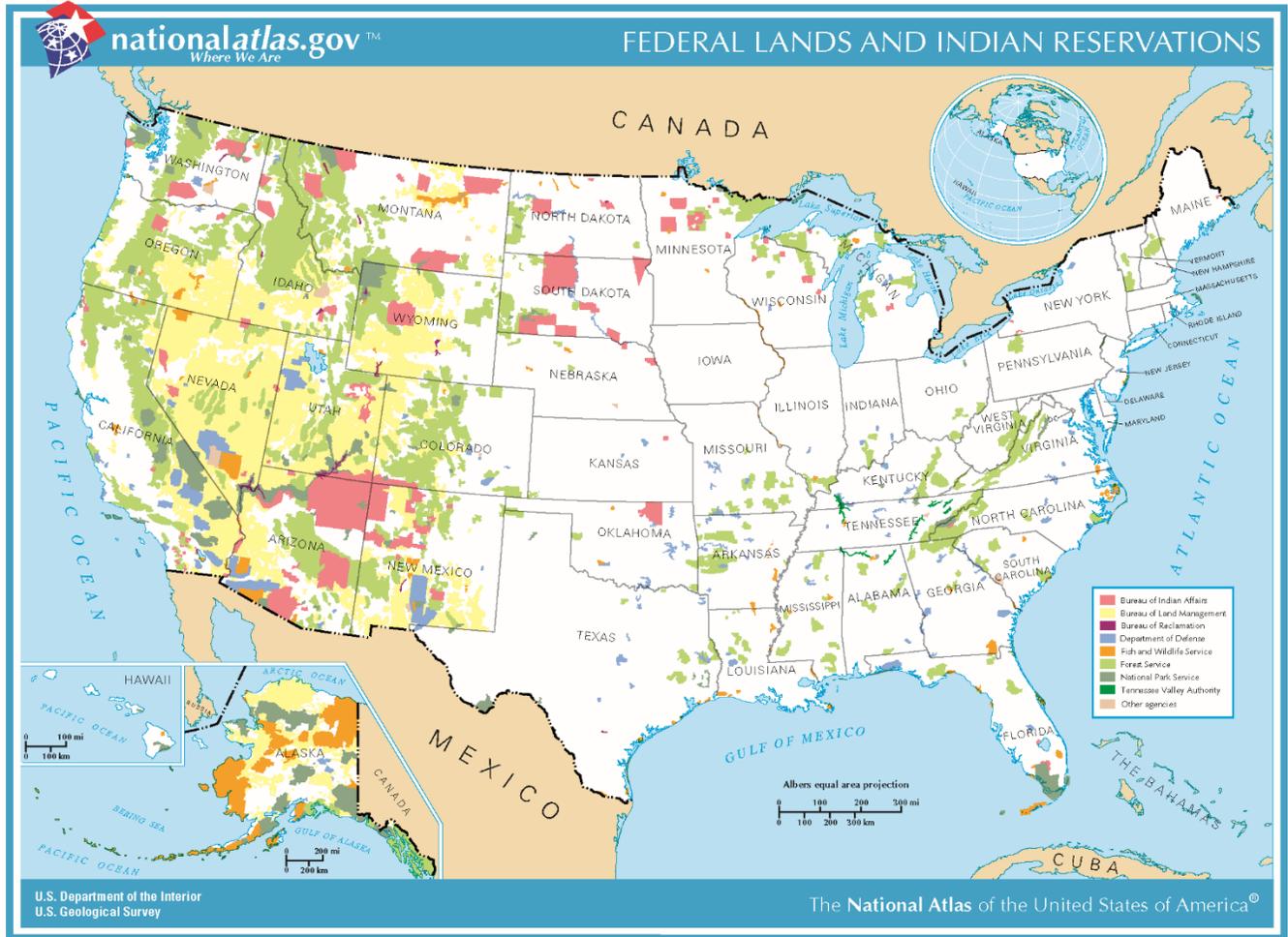
An Indian reservation is land reserved for a Tribe when the Tribe relinquished its other land areas to the United States through treaties. More recently, congressional acts, Executive Orders, and administrative acts have officially recognized additional Tribes and their lands. Tribal communities exist across the country. Some are located in the cities or suburbs, but most are located in rural America. The 229 Alaska Native Villages are found at their historical locations throughout Alaska.

Access to basic community services for the 566 federally recognized sovereign Tribal governments is primarily by road, but in remote Alaskan villages also can be by ice roads, trails for snow machines and all-terrain vehicles, airfields, and waterways. Some Tribes operate transit service within their communities. This transportation infrastructure (roads, bridges, trails, or transit systems) can be owned by the Bureau of Indian Affairs, Tribes, States, or counties and other local governments.

Many roads accessing Tribal lands can be characterized as substandard native surface roadways, accessible only during periods of good weather. Access to many critical community services, jobs, stores, schools, hospitals, emergency services, or intercommunity commerce can be compromised by a common rain event or a thaw of an Alaskan river or permafrost. More than 8 billion vehicle

miles are traveled annually on the Tribal Transportation Program road system, even though it is among the most rudimentary of any transportation network in the United States, with more than 60 percent of the system unpaved.

Exhibit 12-1 Major Federal Lands



Source: The National Atlas of the United States of America.

Resources Served within Federal Lands

The natural and cultural resources of Federal and Tribal lands are among the Nation’s greatest assets. The unique mission of each site shapes how the FLMAs manage the resources and provide access to and around those resources for the public and the citizens living on those lands to enjoy. Most FLMAs are charged with managing the use of resources for the benefit of present and future generations. These Federal lands provide some of the richest resources and most breathtaking scenery in the Nation, clean air and drinking water for millions of Americans, and contributing to hundreds of thousands of jobs for the broader economy. Resource management includes preserving and protecting natural, cultural, historic, and wildlife areas. Many sites have multiple uses, while others have very limited, specific uses. Approximately one-half the Federal lands are managed under multiple use and sustained yield policies that rely on transportation. The

remaining lands have protected use management policies, but even so, transportation systems are essential to their resource management, development, recreational use, and protection.

Exhibit 12-2 Types of Lands Managed by Federal Land Management Agencies

Federal Agency	Federal Lands Served
Department of Agriculture	
Forest Service	193 million acres of public lands; 155 National Forests, 20 National Grasslands, and 9 National Monuments; 9100 miles of Scenic Byways; 5,000 miles of Wild and Scenic Rivers; 4,300 Campgrounds; 27 million annual visits to 122 Ski Areas; and 12,000 miles of National Historic and Scenic Trails
Department of the Interior	
National Park Service	412 National Park System units ¹
Fish and Wildlife Service	556 Wildlife Refuges, 38 Wetland Management Districts, 70 Fish Hatcheries, and 43 administrative sites
Bureau of Land Management	247.5 million acres of public lands; 700 million acres of subsurface mineral estate; 2,500 recreation sites; 700 administrative sites; BLM's National Conservation System includes: 16 National Conservation Areas, 17 National Monuments, 221 Wilderness Areas, 2,400 miles of Wild and Scenic Rivers, 545 Wilderness Study Areas, and 5,343 miles of National Historic and Scenic Trails.
Bureau of Indian Affairs	566 federally recognized Indian Tribes
Bureau of Reclamation	476 dams, 338 reservoirs, 187 recreation areas, and 53 power plants
Department of Defense	
Military Installations	4,169 DOD sites, 28.8 million acres
U.S. Army Corps of Engineers - Civil Works Facilities	420 Water Resource Projects

¹ <http://www.nps.gov/faqs.htm>

Source: FLMA's.

Federal lands have many uses, including national defense facilitation, recreation, education, livestock grazing, timber and minerals extraction, energy generation and transmission, watershed management, fish and wildlife management, and wilderness. These lands are also managed to protect natural, scenic, scientific, and cultural values. In recent years, mineral extraction and timber cutting have been significantly reduced. At the same time, recreation use has significantly increased. *Exhibit 12-3* summarizes annual recreation use and visits on Federal lands. Recreation on Federal lands is measured in recreation visitor days, equivalent to one 12-hour visit.

Role of Transportation in Use of Federal and Tribal Lands

Tribal communities, national defense, recreation, travel and tourism, and resource extraction depend on quality transportation infrastructure. Transportation plays a key role in how people access and enjoy Federal and Tribal lands, and in providing access to jobs and resources. Visiting our Federal lands without the hundreds of thousands of miles of Federal and Tribal roads, trails, and transit systems providing access to and within these lands is inconceivable. This transportation infrastructure provides opportunities for employment, recreational travel and tourism, protection and enhancement of resources, sustained economic development in rural and

urban areas, access to educational and health benefits, and national and international access to our Nation’s most pristine natural, cultural, and historic resources.

Exhibit 12-3 Summary of Annual Recreation Use and Visits¹

Federal Agency	Recreation Visits (Millions)	Recreation Visitor Days (Millions)	# of Sites
Department of Agriculture			
Forest Service	173	288	175
Department of the Interior			
National Park Service	307	110	412
Fish and Wildlife Service ²	47	46	464
Bureau of Land Management	58	58	2,800
Bureau of Indian Affairs	N/A	N/A	N/A
Bureau of Reclamation	25.5	25.5	187
Department of Defense			
Military Installations	N/A	N/A	N/A
U.S. Army Corps of Engineers - Civil Works Facilities	360	N/A	2,857
Total	970.5	527.5	6,895

¹ Data shown are not for a consistent year, but instead reflect the latest available information as of late 2014 when these data were obtained from the FLMAs. Recreation data are based on definitions of the FLMAs, which might not be fully consistent.

² 464 of 594 sites open to public use.

Source: FLMAs.

Federal agencies, Tribes, and States have designated and manage numerous roadways as Scenic Byways, many of which are Federal and Tribal roads. Based on archeological, cultural, historic, natural, recreational, and scenic qualities, 150 of these roadways in 46 States are designated as National Scenic Byways and All-American Roads. The USDA Forest Service began designating National Forest Scenic Byways in 1988; as of 2012, more than 130 routes have been designated, totaling 9,000 miles in 36 States. The National Park Service has 80 National Park Service Units designated or affiliated with a National Scenic Byway or an All-American Road. The U.S. Fish and Wildlife Service (FWS) manages 83 National Wildlife Refuge Systems or National Fish Hatcheries along 83 National Scenic Byways or All-American Roads. In 1989, the Bureau of Land Management (BLM) began designating Back Country Byways; more than 54 routes have been designated to date, totaling 3,100 miles in 10 States. BLM has another 60 routes, totaling 5,300 miles in 7 States that are classified as scenic, historic, or other road type. Although just as important, these 60 routes have not been classified as designated Back Country Byways.

DID YOU KNOW?

The Bureau of Land Management has more than 5,700 miles of national scenic and historic trails.

Public roads comprise significant portions of the transportation systems serving these Federal and Tribal lands. In many areas—both urban and rural—transit, bicycle, and pedestrian use supplement this road network, although most agencies do not track this usage. In many remote areas, motorized and nonmotorized trails, waterways, and air transports serve as the primary

mode of transportation. The broad range of needs that depends on transportation access to Federal lands is summarized in *Exhibit 12-4*.

Exhibit 12-4 Federal Land Use

Federal Agency	Recreation	Wildlife	Minerals, Oil, & Gas	Grazing & Farming	Water Resources	Timber	Industry	Energy	Housing	National Defense
Department of Agriculture										
Forest Service	X	X	X	X	X	X	X	X	X	X
Department of the Interior										
National Park Service	X	X			X					X
Fish and Wildlife Service	X	X	X	X	X					
Bureau of Land Management	X	X	X	X	X	X	X	X		
Bureau of Indian Affairs	X	X	X	X	X	X	X	X	X	
Bureau of Reclamation	X	X	X	X	X			X		
Department of Defense										
Military Installations	X	X		X	X		X		X	X
U.S. Army Corps of Engineers - Civil Works Facilities	X	X	X	X	X	X		X		

Source: FLMA's.

Condition and Performance of Roads Serving Federal and Tribal Lands

Although the primary focus of this C&P report is on the Nation's highways, bridges, and transit systems as a whole, the Federal government has a special interest and responsibility for public roads and transportation that provide access to and within federally and tribally owned lands. The transportation systems serving various Federal and Tribal lands are discussed below. Roads serving these lands are summarized in *Exhibit 12-5*.

Forest Service

The Forest Service has jurisdiction over the National Forest System that contains 155 national forests and 20 grasslands spanning approximately 193 million acres in 40 States plus Puerto Rico and the Virgin Islands. The system comprises 30 percent of federally owned lands or approximately 8 percent of the land in the United States.

Approximately 372,000 miles of National Forest System Roads are under the jurisdiction of the Forest Service. About 102,000 miles are reserved for future use, and are not open to or maintained for traffic. Of miles that are maintained for traffic, 205,000 are managed for high-clearance vehicles. These roads are generally native surface roads that are impassable by passenger cars. Approximately 65,000 miles are maintained for passenger car use. Some 9,500 miles of these

roads are paved, and the rest are gravel or native surface. Of these, 137 (9,126 miles) are designated byways in the National Forest Scenic Byways Program.

Exhibit 12-5 Roads Serving Federal Lands¹

Federal Agency	Public Paved Road Miles	Paved Road Condition ²			Public Unpaved Road Miles	Public Bridges		Backlog of Deferred Maintenance (Transportation Only)
		Good	Fair	Poor		Total	Structurally Deficient ³	
Forest Service	9,500	42%	55%	3%	362,500	4,200	11%	\$2.9 billion ⁴
National Park Service	5,500	59%	29%	12%	4,100	1,442	3%	\$6 billion
Bureau of Land Management	500	65%	20%	15%	600	835	3%	\$350 million
Fish and Wildlife Service	400	60%	25%	15%	5,200	281	7%	\$1 billion
Bureau of Reclamation	762	65%	25%	10%	1,253	331	12%	N/A
Bureau of Indian Affairs	8,800	N/A	N/A	N/A	20,400	929	15%	N/A
Tribal Governments	3,300	N/A	N/A	N/A	10,200	N/A	N/A	N/A
Military Installations	27,900	N/A	N/A	N/A	N/A	1,418	26%	N/A
U.S. Army Corps of Engineers	5,247	56%	30%	14%	2,549	416	6.20%	N/A

¹ Data shown are not for a consistent year, but instead reflect the latest available information as of late 2014 when these data were obtained from the FLMAs.

² Road condition categories are based on definitions of the FLMAs, which are not fully consistent.

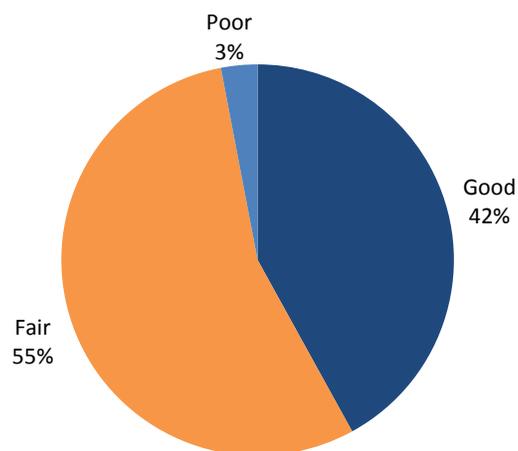
³ Structural deficiencies are classified using a uniform definition consistent with that presented in the Trends in Bridge Structural Deficiencies section in Chapter 3.

⁴ Deferred maintenance figure for the Forest Service is for Passenger Car roads only.

Source: FLMAs.

Timber harvest volumes have declined by 80 percent since the 1980s. The loss of road maintenance support from the timber sale program, reduced work related to resource projects, and increased recreation use have resulted in significant deterioration of the entire road system. The agency currently has a \$2.9-billion backlog of deferred maintenance on the 65,000 miles of roads maintained for passenger cars. As shown in *Exhibit 12-6*, of these roads, 42 percent are in good condition, 55 percent are in fair condition, and 3 percent are in poor condition.

Exhibit 12-6 Forest Service Pavement Conditions (Passenger Car Roads Only)



Source: USFS.

Public National Forest System Roads have approximately 4,200 bridges, 11 percent of which are structurally deficient. Nonpublic National Forest System Roads have approximately 1,000 bridges, 20 percent of which are structurally deficient.

The Forest Service manages approximately 158,000 miles of trails and approximately 6,500 trail bridges. Trails can be motorized trails or nonmotorized and vary in surface and length. The primary distinction between a road and a trail is width: A right-of-way less than 50 inches wide is generally considered a trail. About 32,000 miles of trails are inside wilderness areas and just over 12,000 miles are designated national scenic and historic trails, such as the Appalachian National Scenic Trail, Continental Divide National Scenic Trail, Florida National Scenic Trail, Pacific Crest National Scenic Trail, Nez Perce National Historic Trail, Arizona National Scenic Trail, and Pacific Northwest National Scenic Trail.

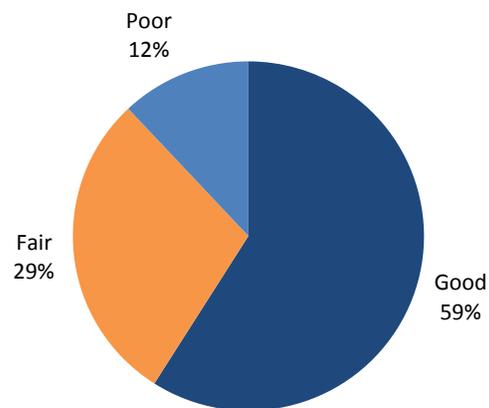
National Park Service

The NPS system includes more than 84 million acres³ across 412 national park units. These units include national parks, national parkways, national monuments, national historic sites, national military parks, national battlefields, national memorials, national recreation areas, national scenic waterways, and national seashores.

Roads continue to be the primary method of access to and within the NPS system. The NPS transportation network is composed of both motorized and nonmotorized facilities that accommodate surface, marine, and aviation modes, enabling high-quality access to park units. With few exceptions, travel by private vehicle or tour buses is the only means of getting to and moving within the system. As a result, some of the most conspicuous problems in units of the NPS system with high visitation levels stem from difficulty accommodating increasing volumes of traffic, larger vehicles, and the growing demand for visitor parking.

About 9,600 miles of publicly accessible park roads and parkways exist, approximately 5,500 miles of which are paved. As shown in *Exhibit 12-7*, the condition rankings of paved roads are 59 percent good, 29 percent fair, and 12 percent poor. The NPS network includes approximately 1,442 publicly accessible bridges and 63 publicly accessible tunnels. About 3 percent of the bridges are structurally deficient resulting from deterioration. An additional 23 percent of the bridges are functionally obsolete, and are labeled as such, based on current design standards. NPS owns several historic bridges, which also are often functionally obsolete. The number of fatalities in the NPS system due to crashes varies between 40 and 60 per year, with an annual average of 47.

Exhibit 12-7 National Park Service Pavement Conditions (Paved Roads Only)



Source: NPS.

NPS reports the backlog of improvement needs for paved roads and bridges approaches \$6 billion. To prioritize annual funding allocations, NPS implements a performance-based investment strategy, using analytical tools to maximize investment decisions in terms of pavement, bridge, congestion, and safety metrics, as well as mechanisms that ensure preventive maintenance for

those assets. In addition to this backlog, investments are needed to address vehicle congestion, transportation safety concerns, and alternative transportation solutions.

Approximately 500 miles of paved and unpaved roads are intended for nonpublic use (i.e., roads restricted to official use), which are not funded from the Federal Lands Transportation Program (FLTP), but are funded from DOI appropriations. NPS also uses NPS Fee Program dollars and various other funding avenues (both public and private) to cover the cost to build, operate, and maintain all the different aspects of the NPS transportation system.

NPS manages 121 discrete transit systems in 63 of the 412 NPS units.⁴ These transit systems accommodate 36.5 million passenger boardings annually. Shuttle, bus, van, and tram systems make up the largest share of all system types (50 percent), followed by boat and ferry systems (29 percent), planes (11 percent), snow coaches (7 percent), and trains and trolleys (3 percent). NPS owns and operates 18 of these systems directly and 12 operate under service contracts; together, they account for 35 percent of all passenger boardings. An additional 78 systems operate under concession contracts and represent the majority (49 percent) of all passenger boardings. The final 13 systems operate under a cooperative agreement and represent 16 percent of passenger boardings. Of these systems, 41 provide the sole access to an NPS unit because of resource or management needs and geographic constraints. Twelve systems are operated by a local transit agency under a specific agreement with NPS. In total, these transit systems include 982 vehicles, including 274 vehicles NPS owns or leases. Of NPS-owned vehicles, 61 percent operate on alternative fuel, while 13 percent of non-NPS-owned vehicles operate on alternative fuel.

Bicycle and pedestrian usage in the national parks is integral in the visitor's experience and serves a critical nonmotorized transportation function providing multimodal access to and within the park, as well as to areas unreachable by motorized travel. Bicycling, hiking, and walking are effective and pleasurable alternatives to motor vehicle travel. NPS is exploring the use of these and other transportation alternatives to offer additional visitor access and experiences. Bicycle and pedestrian access can accommodate more park visitors while alleviating congestion, protecting park resources, and improving the visitor experience. All park trails are open to pedestrians, and 28 percent are paved and also used by bicyclists. Bicycle and pedestrian access provides an interface between different transportation modes (i.e., park shuttle and public transportation systems) and many times serves as the primary transportation facility linking visitors (including disabled visitors) with the resources they want to see and experience. The NPS trails inventory includes 17,872 miles of trails, of which 5,012 miles (28 percent) consist solely of front-country paved trails. The total replacement value of these trails is approximately \$2.5 billion. The approximate deferred maintenance value exceeds \$259 million. Approximately 21 percent of front-country paved trails (1,070 miles) are in fair, poor, or serious condition.

NPS generally does not track usage of bicycle or pedestrian trails. Some NPS units track bicycle or pedestrian usage, however, in multimodal contexts. For example, the Cuyahoga Valley Scenic Railroad has served an average of 21,000⁵ "Bike Aboard!" passengers each year since its inception in 2008. Cuyahoga Valley National Park in Ohio partnered with the Cuyahoga Valley Scenic Railroad to offer "Bike Aboard!" so that bicyclists can ride the Towpath Trail and use the railroad

to return to their starting location. This program offers visitors the flexibility to pedal as far as they want with an option to return by train. It also provides the opportunity to view the park from two different perspectives. Another example is the 45-mile historic Carriage Path network in Acadia National Park in Maine, a crushed-stone aggregate system of paths providing access to pedestrians and nonmotorized equipment users (e.g., bicycles, skis) to park resources directly from surrounding towns without the need for a vehicle. In conjunction with the Carriage Path network, the Acadia Island Explorer public transportation system, which was inaugurated in 1999, carried more than 500,000 visitors in 2014.⁶ Each bus has the capacity to transport bicycles to points throughout the park to access the Carriage Path network. A dedicated Bicycle Express route carried more than 21,000 riders in 2014 alone. Ridership of this transportation system has increased 74 percent since 2001.

Fish and Wildlife Service

FWS manages the National Wildlife Refuge System, which consists of 563 national wildlife refuges and 38 wetland management districts encompassing 150 million acres of lands and waters. It receives nearly 48.5 million recreation visits per year and has a variety of roads, trails, boat ramps, access points, bicycle trails, and viewing areas. FWS also operates 72 National Fish Hatcheries and one historic hatchery open to the public for visits and tours and owns more than 15,500 miles of roads, including 5,300 miles of public roads across all Service lands.

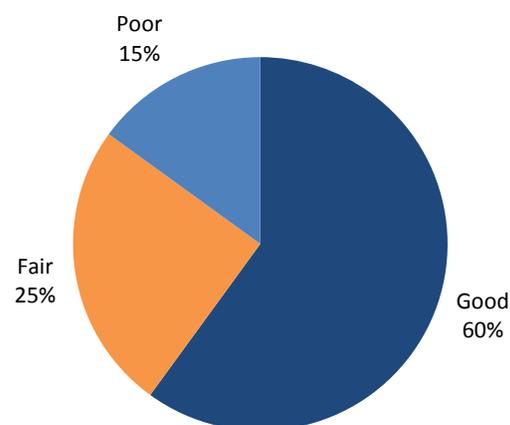
Of those 5,300 miles of public roads, approximately 400 miles are paved; the remaining 4,900 miles consist of gravel and native surfaced roads open to the public. The condition of the public-use roads during the 2008–2012 condition assessments were 60 percent excellent to good, 25 percent fair, and 15 percent poor to failed, as shown in *Exhibit 12-8*. About 300 bridges and 5,150 parking lots are associated with the public road system. Approximately 7 percent of the bridges are structurally deficient.

The 2008–2012 inventory and condition assessment identified a maintenance backlog that approaches \$1 billion for all public roads and bridges. Using estimated life cycles of 10 years for gravel roads and 20 years for paved roads, prorated annual infrastructure replacement costs amount to approximately \$100 million a year to maintain the existing system.

FWS owns and operates 16 permanent transit systems, with temporary service expanded to other units during special events, such as the 3-day Festival of the Cranes at Bosque Del Apache National Wildlife Refuge in New Mexico.

Further, at least eight urban transit systems currently serve FWS units. Local agencies and refuges have transit access information on their websites, and are adding transit stops on or immediately

Exhibit 12-8 Fish and Wildlife Service Pavement Condition



Source: FWS.

adjacent to refuge access points. Additionally, the 2013 FWS Urban Refuge Program implementation strategy included, as a “standard of excellence,” the increase of equitable access to urban refuges by all modes, with an emphasis on transit and trails for refuges within 25 miles of urban areas having populations greater than 250,000, by working with local, regional, and State partners.

FWS recorded more than 11 million uses of the designated automobile tour routes on National Wildlife Refuges in FY 2014. Pedestrian and bicycle use continue to be important ways for visitors to experience FWS lands. FWS logs nearly 1 million visits on bicycles on FWS lands and more than 15 million uses of FWS footpaths annually. In FY 2016 and 2017 bicycle and pedestrian counters will be installed at 30 refuges nationally and the data will be incorporated into the national bicycle/pedestrian database being developed by the Federal Highway Administration. FWS maintains 2,187 miles of trails, 95 percent of which are in excellent to good condition. Approximately 32 percent of the miles are paved or boardwalk, and the remainder are gravel, native surface, chipped wood, or mowed vegetation. These trails have a current replacement value of \$186 million, with a deferred maintenance backlog of \$1.3 million, which yields a trails facility condition index of 0.007 (trails facility condition index is the ratio of deferred maintenance to current replacement value).

Bureau of Land Management

BLM manages 16 percent of the surface area of the United States and is the largest manager (40 percent) of Federal lands. BLM maintains a transportation system that serves as one of the primary means of connectivity to more than one-eighth of the United States, providing access to 247.5 million acres of BLM-administered public lands concentrated primarily in the 11 western States and Alaska. These lands comprise 20–80 percent of the individual States or their political subdivisions. These lands play a significant role in the environmental and socioeconomic fabric of the Nation, the West, Alaska, and local governments. BLM also manages 700 million acres of subsurface mineral estate throughout the United States.

As the national parks and national forest have become increasingly overcrowded, more people have begun using facilities on BLM-managed lands. Visits to BLM lands and facilities have significantly increased, due to an increase in outdoor recreational activities and the number of resources available throughout all FLMAs. Outdoor recreation has increased approximately 5 percent annually in the past several years despite the economic recession. Comprehensive transportation planning is a major priority for BLM. BLM established its Travel and Transportation Management Program to identify and classify all roads and trails, including well-maintained FLTP-eligible roads, temporary access routes for commercial uses, high-clearance primitive roads, and various types of recreational trails through a formal decision-making process. Classification of roads and trails is necessary for proper management of access to and impacts on vegetation; sensitive species and their habitats; soils, air and water quality; and cultural and visual resources. BLM is moving toward a multimodal travel and transportation network that addresses the access and recreational needs of multiple user groups, including both motorized and nonmotorized forms of travel, on a designated system of routes. Completing management travel plans by inventorying and evaluating roads and areas, and deciding how roads or areas will be

designated, is an enormous task. Travel plans on more than 212 million acres (83 percent) of overall inventory remain to be completed.

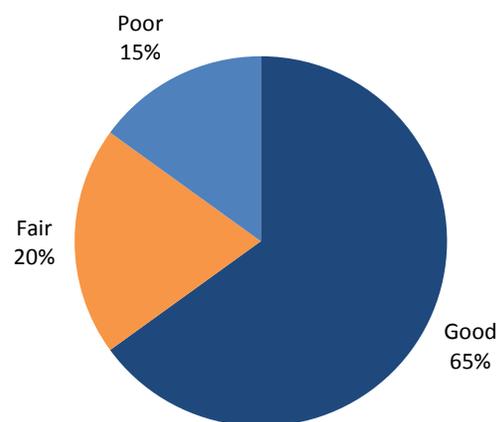
BLM owns approximately 86,000 miles of public lands development roads and trails (PLDR&T), which is the primary road system on BLM lands. The roads in the PLDR&T are not considered public roads. About 1,100 miles of BLM roads, however, are being proposed for inclusion in the FLTP system under Moving Ahead for Progress in the 21st Century (MAP-21, Public Law 112-141). Many of the roads have public uses and special purposes, such as those that serve recreational development areas. The PLDR&T system evolved from a user-established system dating to initial settlement of the West. BLM has completed its 10-year effort to inventory and assess the condition of its road system. This effort identified deferred maintenance and capital replacement costs and gathered basic inventory and geospatial data over what is currently considered the agency's road system (approximately 42,000 miles). Additionally, BLM has an inventory of approximately 29,000 miles of primitive roads, which comprise another set of assets in BLM's formal transportation system. Primitive roads, or high-clearance roads, do not normally meet any BLM road design standards.

BLM owns approximately 500 paved miles and 600 miles of unpaved public roadways and about 835 public bridges and major culverts. As shown in *Exhibit 12-9*, the condition of paved and surfaced roads is 65 percent good, 20 percent fair, and 15 percent poor. Approximately 3 percent of the public bridges are structurally deficient. BLM reports the backlog of improvement needs is \$350 million.

Bureau of Reclamation

The Bureau of Reclamation (Reclamation) administers 476 dams and 348 reservoirs in the 17 western States, and manages 187 recreation areas in partnership with other non-Federal recreation partners such as State, county, and city governments. One of the most notable reservoirs, created by Hoover Dam, is Lake Mead, which NPS administers. Reclamation is the ninth largest electric utility and second largest producer of hydropower in the United States, with 58 power plants producing an average 40 billion kilowatt-hours annually. Reclamation is also the Nation's largest wholesale water supplier, delivering 10 trillion gallons of water to more than 31 million people each year and providing 1 of 5 western farmers with irrigation water.

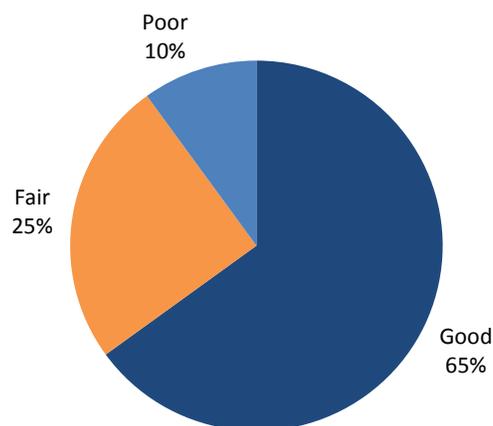
Exhibit 12-9 Bureau of Land Management Pavement Conditions (Paved Roads Only)



Source: BLM.

Reclamation owns approximately 2,015 miles of roads open to the public, 762 miles of which are paved. As shown in *Exhibit 12-10*, the condition of Reclamation roads is 65 percent good, 25 percent fair, and 10 percent poor. Reclamation also owns 331 public bridges, approximately 12 percent of which are structurally deficient. In addition, Reclamation owns an estimated 8,000 miles of administrative roads and operations and maintenance roads, which are not open to the public.

Exhibit 12-10 Bureau of Reclamation Pavement Conditions (Paved Roads Only)



Source: Reclamation.

Bureau of Indian Affairs

The United States has a unique legal and political relationship with Indian Tribes and Alaska Native entities as provided for by the Constitution of the United States, treaties, court decisions, and Federal statutes. Within the government-to-government relationship, the Bureau of Indian Affairs (BIA) provides services directly or through contracts, grants, or compacts to 567 federally recognized Tribes with a service population of about 1.9 million American Indian and Alaska Natives. BIA offers an extensive scope of programs that covers the entire range of Federal, State, and local government services. Programs administered through BIA include social services, natural resources management on trust lands (55 million surface acres and 57 million acres of subsurface mineral estates), economic development programs in some of the most isolated and economically depressed areas of the United States, law enforcement and detention services, administration of Tribal courts, implementation of land and water claim settlements, housing improvement, disaster relief, replacement and repair of schools, repair and maintenance of roads and bridges, and repair of structural deficiencies on high-hazard dams. BIA operates a series of irrigation systems and provides electricity to rural parts of Arizona.

BIA is responsible for approximately 29,200 miles of roads that are open to the public, 8,800 miles of which are paved. Tribal governments own an additional 13,500 miles of public-use roads, including 3,300 miles that are paved. Neither number includes any mileage for future or proposed roads that are in the inventory. Approximately 17 percent of total BIA and tribally owned roads are in acceptable condition. Additionally, BIA owns 929 public bridges, approximately 15 percent of which are structurally deficient and 68 percent of which are in acceptable condition. The number and condition of tribally owned bridges is currently unknown, given they first required inspection in 2013 with the passage of the MAP-21.

Department of Defense

The mission of the Department of Defense (DOD) is to provide the military forces needed to deter war and to protect the security of our country. DOD owns or manages more than 28.8 million acres of land within the continental United States. More than 4,100 military sites are within the U.S. installations in the United States. A site is any site larger than 10 acres with a replacement

value greater than \$10 million. DOD has many smaller sites that also have traffic needs. The economic benefit DOD provides to the country as a whole has not been precisely calculated, but many States and communities have publicly declared the economic benefits their installations provide. For instance, South Carolina reported in 2012 that their military bases generated more than 138,000 jobs and contributed over \$13 billion dollars in revenue to their communities.⁷ Many examples in other States also support the economic benefits of DOD.

People assume that DOD installations generally are not open to the public due to the overriding military mission of those specific areas. Many installation roads, however, are open to use by military family members, visitors, and other members of the public, even though stopping at a gate area might be required. Roads on military installations serve housing offices, commissaries, base exchanges, recreation facilities, unrestricted training facilities, hospitals, and traffic crossing the installation. Many installations allow the public access for hunting and fishing. Given this mixed use, the public street system must reflect the street system in surrounding areas. In practice, DOD makes every effort to comply with the same traffic and transportation engineering guidance of the civilian road systems. Military installations also offer pristine habitat for our Nation's threatened and endangered species. Other Federal agencies collaborate with DOD to manage ecological endeavors.

The *DOD Base Structure Report – Fiscal Year 2014 Baseline* indicates that DOD, excluding the U.S. Air Force, owns or manages almost 28,000 miles of roadways deemed open for public travel. Travelers on installation roads consist of military personnel and their dependents, civilian work force on military installations, contractors performing work for the military, civilian personnel operating businesses, and visitors (including nonmilitary-associated sportsmen). DOD has 1,418 public bridges, 25 percent of which are classified as structurally deficient, as defined in Chapter 3. Addressing bridge investment needs presents a challenge given recent trends in reduced DOD operating funds. The DOD maintenance and construction of roadways are prioritized at the local installation level. Further, there is no central DOD “pot of funds” for roadway work. Roads must compete with buildings, structures, parking lots, runways, and any other infrastructure for a limited amount of funding. In addition, just as each installation's mission might vary greatly from another's, the infrastructure needs from one installation to another could vary greatly. Therefore, DOD does not track roadway condition for all installations in any one central repository nor does it centrally track the amount spent on roadway improvements. That tracking is completed at the local level, where it will remain. DOD does, however, record and document to the Federal Highway Administration the condition and performance of all bridge structures. Despite the differences at the installation level, DOD does strive to comply with accepted traffic and transportation engineering guidance, which seeks to ensure consistency in all aspects from geometrics to sign standards. DOD's policy is to adhere, whenever possible, to the same standards non-DOD public roadways are held. For instance, DOD policy is that all DOD roadways are subject to the Manual of Uniform Traffic Control Devices and should be operated in conformance to these standards. Therefore, even though DOD does not centrally control and manage roadways and bridges, activities are undertaken to ensure consistency across all installations.

DOD contributes to the highway trust funds at the national and State level. The Hayden Cartwright Act of 1934 directed the collection of fuel taxes on military installations. Many military installations operate fuel service stations that sell fuel to military members, dependents, retirees, and civilians. Each year, those sales include more than 450 million gallons of gasoline and more than 5 million gallons of diesel fuel. (Note these sales do not include fuel used by military or government vehicles.) Those figures contribute more than \$100 million to the Federal Highway Trust Fund alone. These sales were to DOD civilians and military personnel who in general live and shop outside military installations.

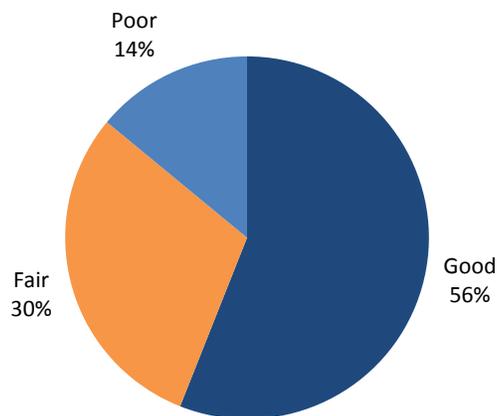
DOD is one of the largest FLMAs and relies primarily on its own resources for transportation management. It strives to operate and manage a transportation system that is functional, multimodal, and considerate of the environment.

United States Army Corps of Engineers

The USACE Civil Works Program helps build and maintain America’s infrastructure through its three main mission areas: commercial navigation, flood risk management, and aquatic ecosystem restoration. USACE also protects the Federal lands and waters and provide recreational opportunities at these water resource projects. USACE currently manages nearly 12 million acres of land and water at 420 lakes and waterways throughout the United States.

USACE owns about 6,500 miles of the more than 7,700 miles of public roads that serve USACE lakes and waterways. More than 5,200 miles are paved. Most of these roadways are found within recreation areas distributed around the water resource project. The system of recreation areas and the road network are established and not expected to grow. Although this road network consists of relatively short segments, they are heavily used by the more than 335 million visitors annually (the highest visitation of any FLMA). USACE also owns and maintains 416 public bridges, of which 6 percent are structurally deficient. As shown in *Exhibit 12-11*, the condition of USACE roads is 56 percent good, 30 percent fair, and 14 percent poor.

Exhibit 12-11 U.S. Army Corps of Engineers Pavement Conditions



Source: USACE.

Transportation Funding for Federal and Tribal Lands

Providing access within Federal and Tribal lands generally is not a State or local responsibility, but that of the Federal government. Before the 1980s, all road improvements depended on the unpredictability of the various annual Federal agency appropriations competing with non-transportation needs, which resulted in many road systems on Federal and Tribal lands falling

into disrepair. The Surface Transportation Assistance Act of 1982 established the Federal Lands Highway Program. This program brought together, for the first time, a consolidated and coordinated long-range program funded under the Highway Trust Fund.

Under the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (Public Law 109-59 SAFETEA-LU), the Federal Lands Highway Program has provided funding for NPS Park Roads and Parkways, BIA Indian Reservation Roads, FWS Refuge Roads, and two components of the Public Lands Highway Program—Forest Highways and a discretionary component called the Public Lands Highway Discretionary Program. The funding categories and annual authorizations are shown for FY 1983 through FY 2012 in *Exhibit 12-12*.

Exhibit 12-12 Federal Lands Highway Program Annual Authorizations, 1983–2012

Authorization	Annual Authorizations by Program (Millions of Dollars)						Total
	FY	FH	PLHD	IRR	PRP	RR	
STAA	1983	50	50	75	75	0	250
	1984	50	50	100	100	0	300
	1985	50	50	100	100	0	300
	1986	50	50	100	100	0	300
STURAA	1987	55	40	80	60	0	235
	1988	55	40	80	60	0	235
	1989	55	40	80	60	0	235
	1990	55	40	80	60	0	235
	1991	55	40	80	60	0	235
ISTEA	1992	94	49	159	69	0	371
	1993	113	58	191	83	0	445
	1994	113	58	191	83	0	445
	1995	113	58	191	83	0	445
	1996	114	58	191	84	0	447
	1997	114	58	191	84	0	447
TEA-21	1998	129	67	225	115	20	556
	1999	162	84	275	165	20	706
	2000	162	84	275	165	20	706
	2001	162	84	275	165	20	706
	2002	162	84	275	165	20	706
	2003	162	84	275	165	20	706
TEA-21 Extension	2004	162	84	275	165	20	706
SAFETEA-LU	2005	172	88	314	180	29	783
	2006	185	95	344	195	29	848
	2007	185	95	384	210	29	903
	2008	191	99	424	225	29	968
SAFETEA-LU Extension	2009	198	102	464	240	29	1,033
	2010	198	102	464	240	29	1,033
	2011	198	102	464	240	29	1,033
	2012	198	102	464	240	29	1,033
Total		3,762	2,095	7,086	4,036	372	17,351

Source: FLHP.

On July 6, 2012, President Obama signed MAP-21 into law. This transformative law realigned and expanded the component programs of the Federal Lands Highway Program into three more comprehensive Federal Lands and Tribal Transportation Programs, funded at \$1 billion annually

for FY 2013 and FY 2014 (see *Exhibit 12-13*). The Tribal Transportation Program, funded at \$450 million annually for FY 2013 and FY 2014, replaces the Indian Reservation Roads program. The FLTP, funded at \$300 million annually for FY 2013 and FY 2014, merges the Park Roads and Parkways and Refuge Roads programs and expands the program to include transportation facilities owned by BLM, USACE, and the Forest Service to address improvements to transportation facilities owned by the largest Federal recreation providers. The Federal Lands Access Program is funded at \$250 million annually for FY 2013 and FY 2014 and takes attributes from the Forest Highways program and the Public Lands Highway Discretionary Program to address transportation needs comprehensively on non-Federal roads, which provide access to all types of Federal lands.

Exhibit 12-13 Federal Lands and Tribal Transportation Program Authorizations, 2013–2014

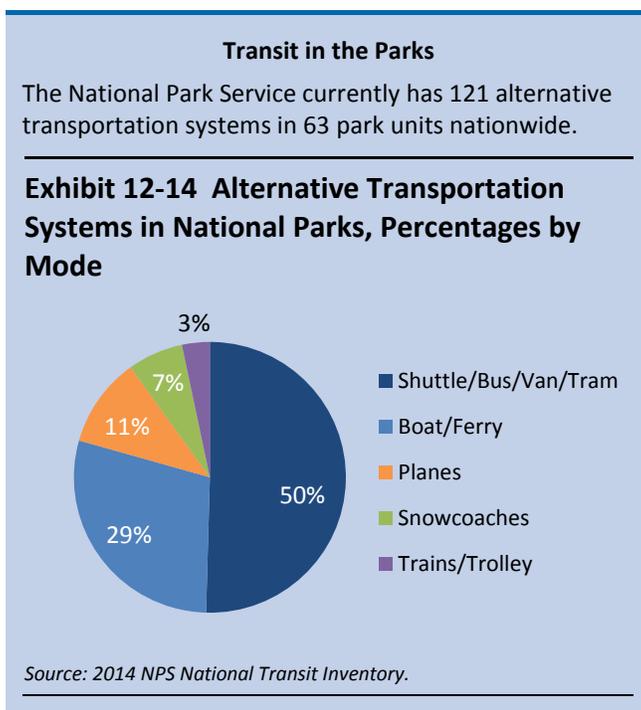
Program	2013	2014
	(\$ Millions)	
Federal Lands Transportation Program	300	300
Federal Lands Access Program	250	250
Tribal Transportation Program	450	450
Total	1,000	1,000

Source: FLTTP

Funds in the Federal Lands Highway Program and Federal Lands and Tribal Transportation Programs may be used for transportation planning, research engineering, and construction of roadways. They may also be used to fund transit facilities that provide access to or within Federal and Tribal lands. Maintenance, rehabilitation, and reconstruction of transportation facilities also may be funded through various other FLMA appropriations.

Increasing Walking, Biking, and Transit Use on Federal and Tribal Lands

Growth in public use of Federal and Tribal lands has created a need for additional investment in transportation facilities for transit, bicycle, and pedestrian uses on Federal and Tribal lands. High visitation levels, to both large and small sites, are causing problems due to the growing volumes of traffic and demands for visitor parking. In many areas, the problem is not too many people but too many motor vehicles and too many visits concentrated in certain periods. Specific examples of successful park investments in transit are shuttle bus systems in Denali National Park and Preserve, Acadia National Park, Cape Cod



National Seashore, Zion National Park, and Grand Canyon National Park; the train system serving Cuyahoga National Park; and the ferry system serving Fire Island National Seashore. In addition, FLMAs actively continue to pursue partnerships to meet visitor demand. An example of a successful partnership is the San Antonio Missions National Historical Park B-Cycle Bike Share Expansion Project. The project enhances alternative transportation options for visitors at the park and provides connections to the surrounding community by offering bike share stations along the San Antonio River and at each of the four NPS missions.

DID YOU KNOW?

The U.S. Fish and Wildlife Service has 16 alternative transportation systems.

A 2004 U.S. Department of Transportation study estimated transit needs on Forest Service lands. This study identified 30 sites that would benefit from new or supplemental transit investments and estimated that approximately \$698 million in 2003 dollars (\$714 million in 2004 dollars or \$60 million per year) would be needed in these areas between

2003 and 2022. A joint 2001 Transit Authority/Federal Highway Administration study estimated transit investment needs on NPS, BLM, and FWS lands—all part of DOI. Total DOI needs for 2002 to 2020 were estimated to be \$1.71 billion in 1999 dollars (\$2.16 billion in 2004 dollars or \$180 million per year). An estimated 91 percent of these needs were for NPS, 7 percent for FWS, and 2 percent for BLM.

In 2005, the Paul S. Sarbanes Transit in the Parks (TRIP) Program was established under SAFETEA-LU and provided approximately \$26 million of Federal funding annually. The TRIP Program was established to help develop new alternatives for enjoying our parks and public lands while protecting resources. The program funded transportation in the parks and public lands; helped conserve natural, historic, and cultural resources; reduced congestion and pollution; improved visitor mobility and accessibility; enhanced the visitors' experience; and helped ensure access to all, including persons with disabilities. The TRIP Program was repealed under the most recent surface transportation authorization, MAP-21.

Also in 2005, SAFETEA-LU created the Tribal Transit Program. SAFETEA-LU authorized funding for this program beginning in FY 2006 at \$8 million, increasing to \$10 million in FY 2007, to \$12 million in FY 2008, and to \$15 million annually in FY 2009 through FY 2012. MAP-21 increased the funding to \$30 million in FY 2013 and 2014. Federally recognized Tribes may use the funding for capital, operating, planning, and administrative expenses for public transit projects that meet the growing needs of rural Tribal communities. Examples of eligible activities include capital projects; operating costs of equipment and facilities for use in public transportation; and the acquisition of public transportation services, including service agreements with private providers of public transportation services.

The Future of Transportation on Federal and Tribal Lands

In examining future transportation needs on Federal and Tribal lands, FLMAs need to address challenges in identifying and involving all stakeholders and in gaining a better understanding of

the complex relationship among these entities. Along with this, the following significant issues continually need to be addressed.

- **New Technology and Innovative Transportation Solutions:** As population increases, the demand for access to Federal and Tribal lands will grow. Providing access will require fully considering and implementing new technology and innovative transportation solutions, including efficient intermodal transfers among the available modes of transportation (walking, bicycles, cars, buses, recreational vehicles, transit, ferries, or aircraft), adaptive signal control, and connected/automated vehicles. Intelligent transportation systems will continue to play an increasingly important role as a way to communicate congestion and provide information on alternative routes and times to visit Federal and Tribal lands.
- **Urban Growth:** In many instances, urban growth is encroaching on Federal and Tribal lands. As these lands become part of urban areas, FLMAs and Tribes face challenges with issues affecting urban transportation officials. In close cooperation with metropolitan, local, and other transportation officials, these agencies need to undertake and implement effective land use and urban transportation planning. FLMAs and Tribes are focusing on intermodal solutions to challenges of increasing demands for access and balancing those desires with impacts on natural, cultural, and historic resources and the environment, including air and water quality.
- **Transportation Funding:** As public transportation funding is likely to continue to be constrained, ensuring more effective coordination among Federal agencies, Tribal governments, and State/local transportation agencies becomes paramount. A critical need is the effective development and implementation of transportation investment practices that fully use products of transportation planning and management systems for bridge, safety, pavement, and congestion.
- **Aging Population:** The average age of drivers on Federal and Tribal lands will continue to increase, requiring continued improvements in signs and information systems and accommodation for visitors with disabilities. This need will be especially important in urban areas where effective destination guidance is a challenge to implement.
- **VMT Reductions and Generational Differences:** Nationally, VMT last peaked in 2007. Millennials (aged 18 through 34 years in 2015) are the Nation’s largest population, but their transportation choices noticeably differ from those of prior generations. The Boomer Generation (51 through 69 years old in 2015) is defined by the motor vehicle. Millennials are

Deferred Maintenance	
Due to a lack of funding for routine maintenance, the deferred maintenance backlog is over \$10 billion.	
Exhibit 12-15 Deferred Maintenance Backlog	
Federal Agency	Backlog of Deferred Maintenance (\$ Million)
Forest Service	\$2,900
National Park Service	\$6,000
Fish and Wildlife Service	\$1,000
Bureau of Land Management	\$350
Bureau of Reclamation	N/A
Bureau of Indian Affairs	N/A
Tribal Governments	N/A
Military Installations	N/A
U.S. Army Corps of Engineers	N/A
Total	\$10,250
<i>Source: FLMAs.</i>	

less inclined to use the automobile, however, tending to use transit and other modes of transportation, like biking and walking. In addition, they are often characterized as being detached from nature and uninterested in outdoor-based experiences. As VMT growth remains uncertain and per capita attendance at parks and recreation areas declines, developing strategies is increasingly important for connecting with and attracting Millennials to the Nation's recreation areas and providing alternative transportation solutions to ensure access to Federal lands.

¹http://nationalmap.gov/small_scale/printable/printableViewer.htm?imgF=images/preview/fedlands/fedlands3.gif&imgW=588&imgH=450

² "Public Land Statistics 2011," Bureau of Land Management, Department of Interior, May 2012.

http://www.blm.gov/public_land_statistics/pls11/pls2011.pdf

³ <http://www.nps.gov/aboutus/index.htm>

⁴ "NPS National Transit Inventory, 2014,"

http://ntl.bts.gov/lib/55000/55500/55568/NPS_WASO_2014_National_Transit_Inventory.pdf

⁵ Cuyahoga Valley National Park visitor use statistics.

⁶ Acadia National Park visitor use statistics.

⁷ "The Economic Impact of the Military Community in South Carolina," November 2012, Research Division, South Carolina Department of Commerce.