

# CHAPTER 11

## Transportation Serving Federal and Tribal Lands

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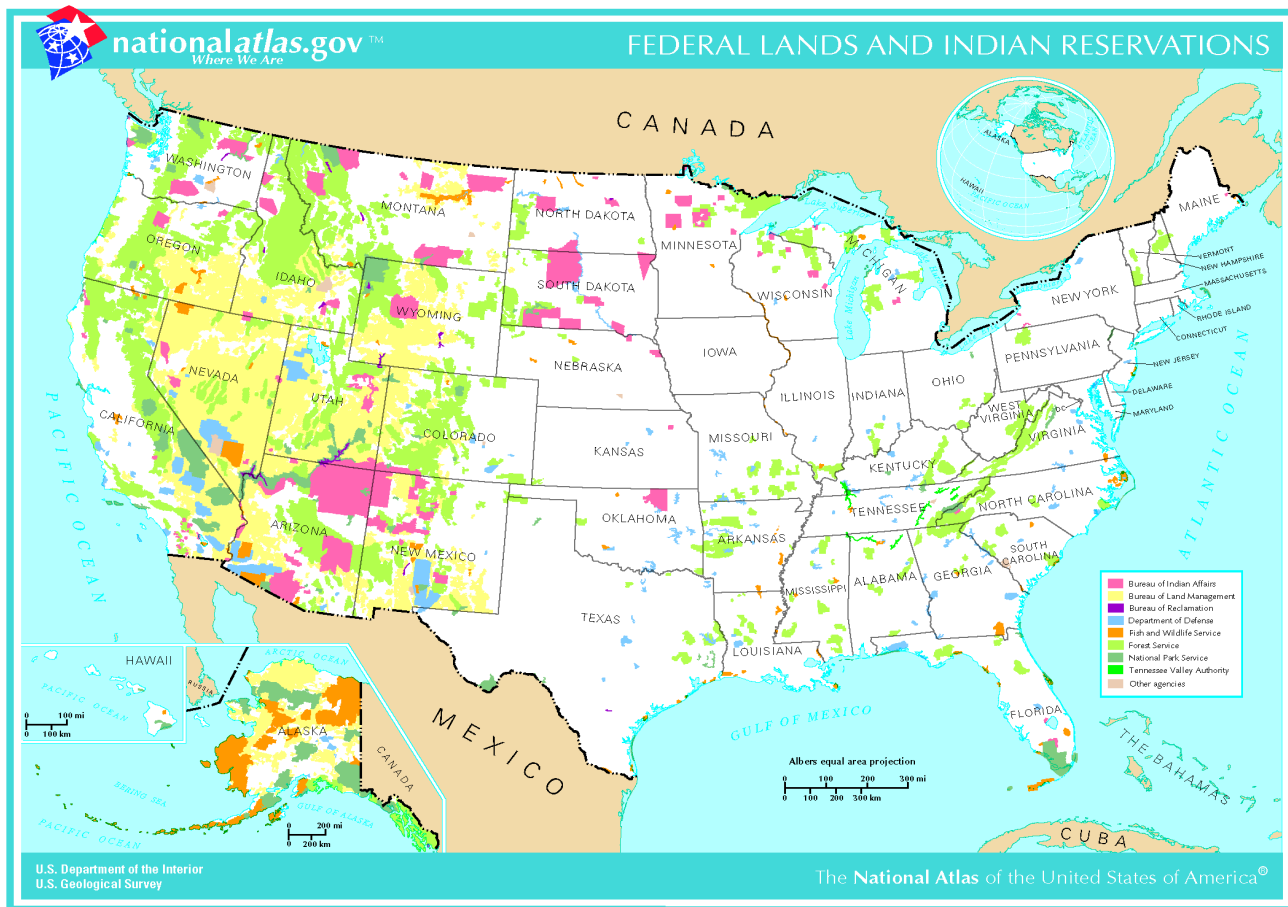
# Transportation Serving Federal and Tribal Lands

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

## Types of Federal and Tribal Lands

The Federal government has title to about 650 million acres<sup>1</sup>, or about 30 percent of the United States' total area of 2.3 billion acres<sup>2</sup>. Additionally, the Federal government holds in trust approximately 55 million acres of land on behalf of Tribal governments. These lands are primarily located in the western part of the country. Federal lands are managed by various Federal land management agencies (FLMAs), primarily within the Departments of the Interior (DOI), Agriculture (USDA), and Defense (DOD). Tribal lands are primarily held in trust by the DOI's Bureau of Indian Affairs, though many Tribes own additional land beyond these trust lands. *Exhibit 11-1* illustrates the major Federal and Tribal lands (note that this only shows the large

**Exhibit 11-1 Major Federal Lands**



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

units; many smaller units are not shown due to the scale of the image). *Exhibit 11-2* highlights resources managed by eight FLMAs.

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**Exhibit 11-2 Types of Lands Managed by Federal Land Management Agencies**

Federal Agency	Federal Lands Served
<b>Department of Agriculture</b>	
Forest Service (FS)	155 National Forests and 20 National Grass Lands
<b>Department of the Interior</b>	
National Park Service (NPS)	401 National Parks and Monuments
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; 601 recreation sites
Bureau of Indian Affairs	566 federally-recognized Indian Tribes
Bureau of Reclamation	476 dams, 348 reservoirs, 187 recreation areas, and 58 power plants
<b>Department of Defense</b>	
Military Installations	400 Major Military Installations
U.S. Army Corps of Engineers - Civil Works Facilities	423 lakes

Source: FLMAs.

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## Accessing Tribal Communities

An Indian reservation is land reserved for a Tribe when it relinquished its other land areas to the United States through treaties. More recently, Congressional acts, Executive Orders, and administrative acts have also officially recognized Tribes and their lands. Tribal communities exist in all corners of the country. Some Tribes are located in the cities or suburbs, but most are located in rural America. The 229 Alaska Native Villages continue to be found at their historic locations throughout the State of Alaska. Access to basic community services for the 566 federally recognized sovereign Tribal governments is primarily served by roads, but also can include ice roads, snow machine and ATV trails, airfields, and waterways in remote Alaskan villages. 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, counties, or other local governments.

Many roads accessing tribal lands can be characterized as substandard native surface roadways, which can only be used 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.

## Resources Served within Federal Lands

The natural and cultural resources of Federal and Tribal lands are among the Nation’s greatest assets. Each individual site managed by the FLMAs has a unique mission for managing its resources while providing access in varying degrees to those resources for the enjoyment of the public and the citizens living on those lands. Most FLMAs are charged with managing the wise use of resources for the benefit of present and future generations. Resource management includes preserving and protecting natural, cultural, and historical areas as well as wildlife use areas. Many of the sites have multiple uses, while others have a very limited, specific use. It is estimated that approximately one-half of 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.

Federal lands have many uses. These include facilitating national defense, recreation, range and grazing, timber and minerals extraction, energy generation, watershed management, fish and wildlife management, and wilderness. These lands are also managed to protect natural, scenic, scientific, and cultural values. In recent years, resource extraction and cutting of timber have been significantly reduced. At the same time, recreation use has significantly increased. *Exhibit 11-3* summarizes annual recreation use and visits on Federal lands. Recreation on Federal lands is measured in recreation visitor days (RVD), which is equivalent to a 12-hour visit.

**Exhibit 11-3 Summary of Annual Recreation Use and Visits**

Agency	Recreation Visits (Millions)	Recreation Visitor Days (Millions)	# of Sites
<b>Department of Agriculture</b>			
Forest Service	173	288	175
<b>Department of the Interior</b>			
National Park Service	279	101	397
Fish and Wildlife Service	46	46	626
Bureau of Land Management	58	58	601
Bureau of Indian Affairs	N/A	N/A	N/A
Bureau of Reclamation	28	28	187 areas
<b>Department of Defense</b>			
Military Installations	10	53	400+
U.S. Army Corps of Engineers - Civil Works Facilities	365	210	463
<b>Total</b>	<b>959</b>	<b>884</b>	<b>2,849+</b>

Source: FLMA's.

## Role of Transportation in the Use of Federal and Tribal Lands

Tribal communities, national defense, recreation, travel and tourism, and resource extraction are all dependent on quality transportation infrastructure. Transportation plays a key role in the way that people access and enjoy Federal and Tribal lands, and in providing access to jobs and resources. It is impossible to conceive of 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. This transportation infrastructure provides opportunities for employment, recreational travel and tourism, protection and enhancement of resources, sustained economic development in rural/urban areas, access to educational and health services, and national and international access to our Nation's most pristine natural, cultural, and historic resources.

Federal agencies, along with States, have designated numerous highways as Scenic Byways, many of which are Federal roads. The 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. There are more than 3,000 miles of U.S. National Park Service (NPS) roads and parkways that also meet the criteria for Scenic Byways. In 1989, the Bureau of Land Management (BLM) began designating the Back Country Byways; more than 60 routes have been designated to date, totaling 3,100 miles in 11 States.

Public roads make up significant portions of the transportation systems serving these Federal and Tribal lands. In many areas—both urban and rural—transit, bicycling, and pedestrian use supplement this road network, though most agencies do not track this usage. In many remote areas, motorized and non-motorized trails, waterways, and air transports serve as the primary mode of transportation. The broad range of needs dependent on transportation access to Federal lands is summarized in *Exhibit 11-4*.

**Exhibit 11-4 Federal Land Use**

Federal Agency	Recreation	Wildlife	Minerals, Oil, & Gas	Grazing & Farming	Water Resources	Timber	Industry	Energy	Housing	National Defense
<b>Department of Agriculture</b>										
Forest Service	X	X	X	X	X	X	X	X	X	X
<b>Department of the Interior</b>										
National Park Service	X	X			X				X	
Fish and Wildlife Service	X	X	X	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		
<b>Department of Defense</b>										
Military Installations	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.

## Role of Federal Lands in U.S. Economy

The American outdoor recreation economy produces 6.1 million jobs, spurs \$646 billion in spending, and creates \$39.9 billion in Federal tax revenue and \$39.7 billion in state and local tax revenue.<sup>3</sup> In total, there are nearly 1 billion visits per year to Federal lands. In 2011, the recreational visits to lands owned by the Department of the Interior supported over 403,000 jobs and contributed around \$48.7 billion in economic activity<sup>4</sup>. This economic output in 2011 represents about 6.5 percent of the direct output of tourism related personal consumption expenditures for the United States and about 7.6 percent of the direct tourism-related employment. The travel, tourism, and recreation industry claim a share of many other industry sectors, including transportation, lodging, communications, power, wholesale and retail trade, manufacturing, and construction.

Not only is travel and tourism a significant part of our Nation's economy, it is also an integral part of many local economies in communities adjacent to Federal lands. Overall, recreating visitors spend a little more than \$11 billion per year in areas around National Forest System lands. In total, spending by visitors to National Forests and Grasslands contributes almost \$13.4 billion to the U.S. economy and sustains more than 205,000 full-and part-time jobs<sup>5</sup>. Direct and indirect economic benefits on BLM lands from recreation are \$7 billion and contribute a total of nearly 59,000 jobs<sup>6</sup>. The U.S. Fish and Wildlife Service (FWS) reported that visits to units of the National Wildlife Refuge System (NWRS) generated more than \$1.7 billion for the economy per year and employ nearly 27,000 people<sup>7</sup>. Nationally, U.S. Army Corps of Engineers lakes attract 365 million recreation visitors every year, and the economic impact on these areas is enormous. The total economic benefits on local communities (within 30 miles of a lake) include more than 112,000 jobs, almost \$3 billion in annual salaries and wages, and more than \$9.7 billion in total spending. An additional \$1.5 billion in spending are generated outside the 30-mile radius resulting in total spending of over \$11 billion and supporting 189,000 jobs nationwide. In addition, visitors to Corps lakes also spend \$5 billion a year on recreation equipment which supports 81,000 jobs. That is \$16 billion a year in spending by Corps lake visitors and 270,000 jobs to the Nation's economy<sup>8</sup>.

There are significant amounts of national and international visitation to national parks that add considerably to the gross national product of the United States. The national park units receive approximately 279 million visitors annually. Recreational use in the national parks is expected to double by the year 2020. Park visitors spent \$12.13 billion<sup>9</sup> in the local region surrounding the parks. The contribution of this spending to the national economy is 258,400 jobs, \$9.8 billion in labor income, and \$16.6 billion in value added. *Exhibit 11-5* summarizes recreation-related economic benefits and employment.

In addition to recreation, travel, and tourism, Federal lands provide substantial economic benefit from resource outputs including defense-related industries, grazing, timber harvesting, oil extraction, mining, electrical generation, and related activities. In many instances, a portion of the receipts are returned directly to local governments.

**Exhibit 11-5 Economic Benefits of Federal Lands\***

Federal Agency	Recreation Related Jobs	Recreation Economic Benefits (\$ Billion)
<b>Department of Agriculture</b>		
Forest Service	205,000	13
<b>Department of the Interior</b>		
National Park Service	258,000	39
Fish and Wildlife Service	27,000	2
Bureau of Land Management	59,000	7
Bureau of Reclamation	N/A	N/A
<b>Department of Defense</b>		
Military Installations	N/A	N/A
U.S. Army Corps of Engineers - Civil Works Facilities	270,000	16

\* Economic benefits include lodging, food, entertainment, recreation, and incidentals expended during travel.

Source: FLMA's.

## Condition and Performance of Roads Serving Federal and Tribal Lands

While the primary focus of the 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 11-6*.

**Exhibit 11-6 Roads Serving Federal Lands**

Agency	Public Paved Road Miles	Paved Road Condition			Public Unpaved Road Miles	Public Bridges		Backlog of Deferred Maintenance
		Good	Fair	Poor		Total	Structurally Deficient	
Forest Service	10,700	25%	50%	25%	259,300	3,840	6%	\$5.1 billion
National Park Service	5,450	60%	28%	12%	4,100	1,270	3%	\$5 billion
Bureau of Land Management	700	60%	20%	20%	2,000	439	3%	\$350 million
Fish & Wildlife Service	400	59%	23%	18%	5,200	281	7%	\$1 billion
Bureau of Reclamation	762	N/A	N/A	N/A	1,253	311	11%	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	26,000	N/A	N/A	N/A	N/A	1,422	11%	N/A
U.S. Army Corps of Engineers	5,135	55%	25%	20%	N/A	294	11%	\$100 million

Source: FLMA's.



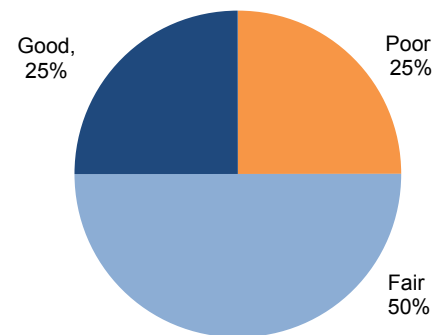
## Forest Service

The USDA Forest Service has jurisdiction over the National Forest System (NFS) that contains a total of 155 national forests and 20 grasslands spanning approximately 193 million acres in 40 States plus Puerto Rico and the Virgin Islands. The NFS is about 25 percent of federally owned lands.

There are approximately 372,000 miles of National Forest System Roads (NFSR) under the jurisdiction of the Forest Service serving the NFS. About 308,000 miles of NFSR are managed for high-clearance vehicles. Of the 270,000 miles of NFSR, 65,000 miles open to public travel are designated for passenger car use. Of these 137 (9,126 miles) are byways in the National Forest Scenic Byways Program.

The timber harvest volumes have been reduced by 80 percent since the 1980s. The loss of road maintenance support from the timber sale program, reduced resource project related work, and the increase in recreation use has resulted in significant deterioration of the entire road system. The agency currently has a \$5.1 billion backlog of deferred maintenance. Approximately 10,700 miles of these roads are paved, and the remainder are surfaced with gravel. As shown in *Exhibit 11-7*, of the paved roads, 25 percent are in good condition, 50 percent are in fair condition, and 25 percent are in poor condition. There are approximately 3,840 bridges on public NFSRs, 6 percent of which are structurally deficient. (See Chapter 3 for a more extensive discussion of structural deficiencies.)

**Exhibit 11-7 Forest Roads Pavement Condition (Paved Roads Only)**



Source: USFS.

The 102,000 miles of non-public NFSRs provide access for management and protection of the NFS. These roads are generally maintained for high-clearance vehicles. The backlog of deferred maintenance for these roads is estimated at \$4.3 billion. Approximately 100,000 miles of the roads are gravel surface, and the remainder are earth surface. There are approximately 1,000 bridges on non-public NFSRs. Approximately 20 percent of these bridges are structurally deficient.

## National Park Service

The NPS system includes more than 84 million acres over 401 national park units, which include National Parks, National Parkways, National Monuments, National Historic Sites, National Military Parks, National Battlefields, National Memorials, National Recreational Areas, National Scenic Waterways, and National Seashores.

Roads continue to be the primary method of access to and within the NPS system. With few exceptions, travel by private vehicle or tour buses are 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 an inability to accommodate increasing volumes of traffic, larger vehicles and the spiraling demand for visitor parking.

There are about 10,000 miles of park roads and parkways (PRP). Approximately 5,500 miles are paved. As shown in *Exhibit 11-8*, the condition rankings of paved roads are 60 percent good, 28 percent fair, and 12 percent poor. There are approximately 1,270 bridges and 69 tunnels. Approximately 3 percent of the bridges are structurally deficient—deficient due to deterioration. An additional 23 percent of the bridges are functionally obsolete and are labeled such due to a function of the geometrics of these bridges in relation to the geometrics required by current design standards. The NPS owns a number of historic bridges, which are often functionally obsolete. The annual vehicle miles traveled (VMT) is in excess of 2.4 billion based upon

a subset of 33 parks representing 63 percent of paved road miles for which VMT information is available. The number of fatal crashes in the NPS varies between 40 and 60 fatalities per year, with an annual average of 47 fatalities. The average fatal crash rate is less than 2 fatalities per 100 million VMT.

The backlog of improvement needs for paved roads and bridges is more than \$5 billion. In addition to this backlog, more than \$270 million of new park road construction remains to complete the Natchez Trace Parkway and the Foothills Parkway. Also, there are national parks where congestion has become a major problem and constructing wider or new roadways is not a preferred solution. Investments made in alternative modes of transportation and the integration of several transport alternatives will be key to solving these capacity problems. To address this challenge, the NPS pursues a performance-based strategy, using both 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.

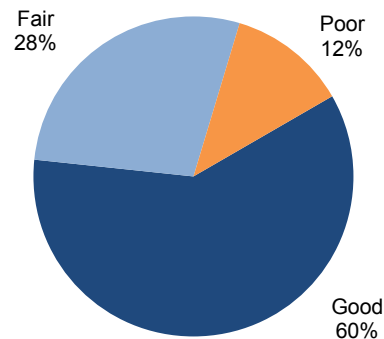
There are approximately 450 miles of roads intended for non-public use (i.e., roads restricted to official use) which are not funded from the Federal Lands Highway Program (FLHP), but are funded from DOI appropriations. NPS also uses NPS Fee Program dollars and various other funding avenues both public and private to cover the cost to build, operate, and maintain all the different aspects of the NPS transportation system.

The NPS manages 147 discrete transit systems in 72 of the 401 NPS units<sup>10</sup>. These transit systems annually accommodate 36.3 million passenger boardings. Shuttle, bus, van, and tram systems make up the largest share of all system types (44 percent), followed by boat and ferry systems (34 percent), planes (9 percent), snow coaches (10 percent), and trains and trolleys (3 percent). Twenty of these systems are owned and operated by NPS directly and 13 operate under service contracts; together, they account for 13.4 percent of all passenger boardings. A further 97 systems operate under concession contracts and represent the majority (54.4 percent) of all passenger boardings. The final 17 systems operate under a cooperative agreement and represent 18.7 percent of passenger boardings. Fifty-two of these systems 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 the NPS. In total, these transit systems include 890 vehicles, including 264 vehicles owned or leased by the NPS, and 56 vehicles which operate in systems with intermixed NPS and non-NPS owners. Two thirds (175 of 264) of the NPS-owned or leased vehicles operate on alternative fuel, while 14 percent (79 of 562) of non-NPS-owned vehicles operate on alternative fuel.

Bicycling and pedestrian usage in the National Parks plays an integral role in the visitor's experience and serves a critical non-motorized transportation function providing access 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 disperse visitor use and accommodate more park visitors while alleviating congestion, protecting park resources, and improving the visitor experience. All park trails are open to pedestrians, while 28 percent are paved and 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

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**Exhibit 11-8 Park Roads and Parkways  
Pavement Condition (Paved Roads Only)**



Source: NPS.

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trails. The total replacement value of these trails is approximately \$2.5 billion. The approximate deferred maintenance value is over \$315 million. Approximately 21 percent of front country paved trails (1,070 miles) are in fair, poor, or serious condition.

The NPS does not generally track usage of bicycle or pedestrian trails. However, some NPS units track bicycle or pedestrian usage in multi-modal contexts. For example, the Cuyahoga valley Scenic Railroad has served an average of 21,000 “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 pick up 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 a wonderful 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 non-motorized equipment users (e.g., bicycles, skis) to park resources directly from surrounding towns without the need of a vehicle. In conjunction with the Carriage Path network, the Acadia Island Explorer public transportation system carried nearly 424,000 visitors in 2013. Each bus has the capacity to transport bicycles to points throughout the park to access the Carriage Path network, and a dedicated Bicycle Express route carried over 17,000 riders in 2013 alone. Ridership of this transportation system has increased 77 percent since it started in 2001.

### Fish and Wildlife Service

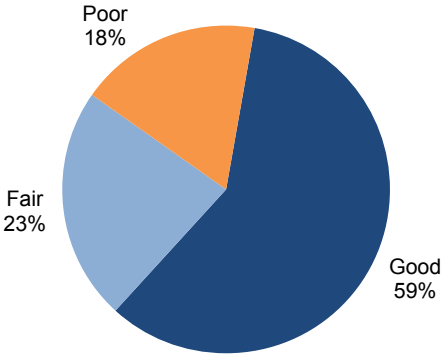
The U.S. Fish and Wildlife Service (FWS) manages the National Wildlife Refuge System (NWRS). This system consists of 594 wildlife refuges and wetland management districts encompassing 150 million acres of land. It receives about 46 million recreation visits per year and has a variety of roads, trails, boat ramps, access points, bicycle trails, viewing areas, etc. The FWS also operates 70 National Fish Hatcheries that are open to the public for visits and tours. The FWS owns more than 11,000 miles of wildlife refuge roads, including 5,600 miles of public roads.

Approximately 400 public miles are paved; the remaining 5,200 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 59 percent excellent to good, 23 percent fair, and 18 percent poor to failed, as shown in *Exhibit 11-9*. There are about 281 bridges and 5,150 parking lots 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.

The 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. A more comprehensive inventory of FWS transit needs will be conducted in FY 2014. Further, at least seven urban transit systems currently serve FWS units. Additionally, the 2013 FWS Urban Refuge Initiative implementation strategy has included as a “standard of excellence” the increase of equitable access to urban refuges by transit and trails for refuges within 25 miles of urban areas with populations greater than 250,000.

**Exhibit 11-9 Wildlife Refuge Roads Condition**



Source: FWS.

Also, pedestrian and bicycle use continue to be important ways for visitors to experience FWS lands. There are nearly a million visits on bicycles on FWS lands and more than 15 million uses of FWS footpaths annually. The FWS maintains 2,187 miles of trails, 95 percent of which are in excellent to good condition. Approximately 32 percent of these miles are paved or boardwalk, and the remainder are gravel, native surface, wood chipped, or mowed. 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.

## Bureau of Land Management

The BLM manages 16 percent of the surface area of the United States and is the largest manager (40 percent) of Federal lands. The BLM lands, totaling 247.5 million acres, are concentrated primarily in the 11 Western States and Alaska. These lands often make up between 20 to 80 percent of the individual States and/or their political subdivisions. These lands play a significant role in the environmental and socioeconomic fabric of the Nation, its Western States, Alaska, and local governmental units. The BLM also manages 700 million acres of subsurface mineral estate throughout the United States.

As the National Parks and National Forest have become more overcrowded, an increasing number of people are using facilities on BLM-managed lands. Between 1991 and 2007, visitor use of BLM lands and facilities increased 62 percent.

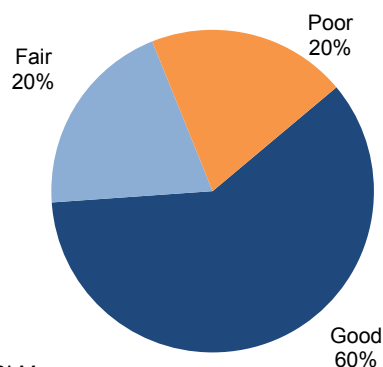
Comprehensive transportation planning has become a major priority to the BLM. Extensive cross-country travel, which can impact vegetation, soils, air and water quality, and cultural resources, and can fragment habitat on “open” or unrestricted lands, has led the BLM into an era that calls for thoughtful and comprehensive transportation planning. Completing travel plans by inventorying, evaluating, and deciding how roads or areas will be designated is an enormous task. Travel plans on more than 100,000,000 acres still remain to be completed.

The BLM owns approximately 74,000 miles of public lands development roads and trails (PLDR&T), which is the primary road system on BLM lands. The PLDR&T are not considered public roads. However, there are about 2,700 miles of BLM roads being proposed for inclusion in the Federal Land Highway system under Moving Ahead for Progress in the 21st Century (MAP-21) as public roads. Many of the roads serve public uses and special purposes, such as those that serve recreational development areas. The PLDR&T system evolved from a user-established system dating back to the period in which settlement of the West first began. The BLM will soon complete a 10-year effort to inventory and assess the condition of its road system. This effort has identified deferred maintenance and capital replacement costs as well as gathered basic inventory and geospatial data over what is currently considered to be the agency’s road system (approximately 49,000 miles). Additionally, the BLM has another set of assets as part of its formal transportation system, known as Primitive Roads.

Primitive roads, or high-clearance roads, do not normally meet any BLM road design standards. The BLM has an inventory of approximately 25,000 miles of primitive roads.

The PLDR&T system has approximately 700 miles of paved public roadways. The system has about 439 public bridges and major culverts. As shown in *Exhibit 11-10*, the condition of paved roads is 60 percent good, 20 percent fair, and 20 percent poor. Approximately 3 percent of the public bridges are structurally deficient. The backlog of improvement needs is \$350 million.

**Exhibit 11-10 BLM Roads Pavement Condition (Paved Roads Only)**



Source: BLM.

## **Bureau of Reclamation**

The Bureau of Reclamation (Reclamation) administers 476 dams and 348 reservoirs in the 17 Western States and manages in partnership 187 recreation areas. One of the most notable reservoirs is Lake Mead, created by the Hoover Dam. Reclamation is the ninth largest electric utility and second largest producer of hydropower in the United States, with 58 power plants producing on the 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 one out of five western farmers with irrigation water.

Reclamation owns approximately 2,015 miles of roads that are open for use by the general public, of which 762 miles are paved. Additionally, Reclamation owns 311 public bridges, and approximately 11 percent of the public bridges are structurally deficient. Reclamation also owns administrative roads and operations and maintenance (O&M) roads which are estimated to be approximately 8,000 miles, and are not open to the public.

## **Bureau of Indian Affairs**

The United States has a unique legal and political relationship with Indian tribes and Alaska Native entities as provided 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 566 federally recognized tribes with a service population of about 1.9 million American Indian and Alaska Natives. The BIA offers an extensive scope of programs that covers the entire range of Federal, State, and local government services. Programs administered through the BIA include social services, natural resources management on trust lands representing 55 million surface acres and 57 million acres of subsurface minerals 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 the repair of structural deficiencies on high-hazard dams. The BIA operates a series of irrigation systems and provides electricity to rural parts of Arizona.

The BIA has responsibility over approximately 29,200 miles of existing roads that are open for use by the general public, of which 8,800 miles are paved. Tribal governments further own an additional 13,500 miles of existing public use roads, including 3,300 miles of paved roads. 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, the BIA owns 929 public bridges, and approximately 15 percent of the public bridges are structurally deficient. Approximately 68 percent of these bridges are in acceptable condition. The number and condition of tribally owned bridges is currently unknown, since these were first required to be inspected in 2013 with the passage of the Moving Ahead for Progress in the 21<sup>st</sup> Century Act (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. The DOD owns millions of acres of land within the continental United States. There are more than 400 major military installations in the United States, encompassing about 20 million acres of land, which are integral to the defense of the country. The economic benefit provided by the DOD to the country as a whole has not been precisely calculated, but is in the hundreds of billions of dollars.

When one thinks of DOD installations, one assumes that they are generally not open to the public due to the overriding military mission of those specific areas. However, many installation roads are open to use by dependents, visitors, and other members of the public, even though there may be a requirement to stop at a gate area. Roads on military installations serve housing offices, commissaries, base exchanges, recreation facilities, unrestricted training facilities, hospitals, and traffic crossing the installation. This public street system is similar to the street system in urban areas. In many cases, the military streets are an integral part of the street system of the local community.

The 2008 calculations indicated that the DOD has in excess of 26,000 miles of paved roads under its jurisdiction deemed open for public travel. Travel on installation roads consists of military personnel and their dependents, civilian work force on military installations, contractors performing work for the military, civilian personnel operating businesses, and visitors (to include non-military associated sportsmen). The DOD has 1,422 public bridges, of which 11 percent are structurally deficient.

The DOD maintenance and construction of roadways are prioritized at the local installation level. As the mission of each installation may be extremely different from one installation to another, the infrastructure needs from one installation to another will vary greatly. Therefore, the DOD does not track roadway condition for all installations in any one central repository. That tracking is done at the local level and will continue to remain there. Currently, the DOD does record and document to the FHWA the condition and performance of all bridge structures. This philosophy is consistent in all aspects from geometrics to sign standards. It is DOD policy 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 (MUTCD) and should be operated in conformance to MUTCD standards. It is the local installation's responsibility to maintain sign inventories and monitor their programs. This philosophy is in part tied to how installation roadways receive funding for roads. Roadway projects are prioritized and funded with all other military construction work, i.e. barracks, offices, training sites. The DOD does collect State and Federal gas taxes on all military installation service stations but does not retain those funds. In 2011, those sales included more than 468 million gallons of gasoline and more than 5 million gallons of diesel fuel. These sales were to DOD civilians and military personnel who in general live and shop outside military installations.

Additionally, in the past 20 years, residences of military personnel have shifted from on-base facilities to off-base housing. This trend has placed a greater emphasis on the need for alternative transportation. Many installations across the country have partnered with adjacent communities to incorporate local transit services onto the installation. For example, Scott Air Force Base is directly served by the St Louis area metro rail and is serviced on base by a bus service operated by the regional transit service. Other installations have implemented similar programs and are implementing transit options where feasible. In addition, the DOD discourages single occupancy vehicle usage by restricting parking and offering special parking for carpooling.

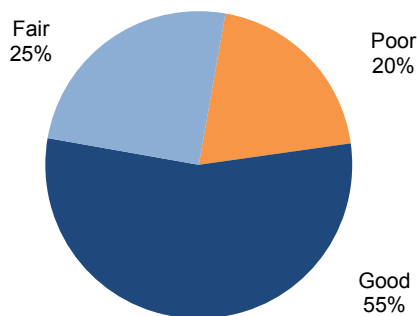
## **United States Army Corps of Engineers**

The United States Army Corps of Engineers (USACE) has the responsibility to maintain and improve navigable waterways throughout the United States, and to mitigate flooding risks affecting the country. One supplementary benefit to the public of the USACE's navigation and flood protection projects is that the USACE has become the largest provider of water-based recreation in the country. The USACE currently administers approximately 12.8 million acres of land and water at 423 lakes and waterways reporting public recreation use throughout the United States.

There are more than 8,800 miles of public roads serving USACE lakes and waterways. About 6,234 miles are owned by the USACE. More than 5,135 miles are paved. The USACE also own 294 public bridges, of which 11 percent are structurally deficient. As shown in *Exhibit 11-11*, the condition of USACE roads are 55 percent Good, 25 percent Fair, and 20 percent Poor. The backlog of improvement needs of public roads and bridges is estimated at \$100 million.

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**Exhibit 11-11 U.S. Army Corps of Engineers Road Condition**



Source: USACE.

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## Transportation Funding for Federal and Tribal Lands

Providing access within Federal and Tribal lands is generally not a State or local responsibility, but Federal government responsibility. Before the 1980s, all road improvements were dependent upon the unpredictability of the various annual Federal Agency appropriations competing with non-transportation needs. This caused many road systems on Federal and Tribal lands to fall into disrepair. The Surface Transportation Assistance Act of 1982 (STAA) established the Federal Lands Highway Program (FLHP). It brought together for the first time a consolidated and coordinated long-range program funded under the Highway Trust Fund.

The funding for FLHP continued and, under SAFETEA-LU, the FLHP provided funding for the NPS's Park Roads and Parkways (PRP), the Bureau of Indian Affairs's Indian Reservation Roads (IRR), the FWS's Refuge Roads (RR), and two components of the Public Lands Highway Program: Forest Highways (FH) and a discretionary component called the Public Lands Highway Discretionary Program (PLHD). The funding categories and annual authorizations are shown for FY 1983 through FY 2012 in *Exhibit 11-12*.

On July 6, 2012, the President signed MAP-21 into law. This transformative law realigned and expanded the component programs of the FLHP into three more comprehensive Federal Lands and Tribal Transportation Programs (FLTTP), funded at a total of \$1 billion annually for FY 2013 and 2014. The Tribal Transportation Program (TTP), funded at \$450 million annually for FY 2013 and 2014, replaces the IRR program. The Federal Lands Transportation Program (FLTTP), funded at \$300 million annually for FY 2013 and 2014, merges the PRP and RR programs and expands to include transportation facilities owned by the Bureau of Land Management, the U.S. Army Corps of Engineers, and the USDA Forest Service to address improvements to transportation facilities owned by the biggest Federal recreation providers. The Federal Lands Access Program (FLAP) is funded at \$250 million annually for FY 2013 and 2014, takes attributes from the FH and PLHD programs to comprehensively address transportation needs on non-Federal roads which provide access to all types of Federal lands.

The FLHP and FLTTP funds 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 may also be funded through various other FLMA appropriations.



**Exhibit 11-12 FLHP Annual Authorizations (\$M)**

Authorization	FY	Program					Total
		FH	PLHD	IRR	PRP	RR	
STAA	1983	50	50	75	75	0	<b>250</b>
	1984	50	50	100	100	0	<b>300</b>
	1985	50	50	100	100	0	<b>300</b>
	1986	50	50	100	100	0	<b>300</b>
STURAA	1987	55	40	80	60	0	<b>235</b>
	1988	55	40	80	60	0	<b>235</b>
	1989	55	40	80	60	0	<b>235</b>
	1990	55	40	80	60	0	<b>235</b>
	1991	55	40	80	60	0	<b>235</b>
ISTEA	1992	94	49	159	69	0	<b>371</b>
	1993	113	58	191	83	0	<b>445</b>
	1994	113	58	191	83	0	<b>445</b>
	1995	113	58	191	83	0	<b>445</b>
	1996	114	58	191	84	0	<b>447</b>
	1997	114	58	191	84	0	<b>447</b>
TEA-21	1998	129	67	225	115	0	<b>536</b>
	1999	162	84	275	165	20	<b>706</b>
	2000	162	84	275	165	20	<b>706</b>
	2001	162	84	275	165	20	<b>706</b>
	2002	162	84	275	165	20	<b>706</b>
	2003	162	84	275	165	20	<b>706</b>
TEA-21 Extension	2004	162	84	275	165	20	<b>706</b>
SAFETEA-LU	2005	172	88	314	180	29	<b>783</b>
	2006	185	95	344	195	29	<b>848</b>
	2007	185	95	384	210	29	<b>903</b>
	2008	191	99	424	225	29	<b>968</b>
	2009	198	102	464	240	29	<b>1,033</b>
SAFETEA-LU Extension	2010	198	102	464	240	29	<b>1,033</b>
	2011	198	102	464	240	29	<b>1,033</b>
	2012	198	102	464	240	29	<b>1,033</b>
<b>Total</b>		<b>3,762</b>	<b>2,095</b>	<b>7,086</b>	<b>4,036</b>	<b>352</b>	<b>17,331</b>

Source: FLHP.

## 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, in both large and small sites, are causing problems due to the growing volumes of traffic and demands for visitor parking. In many areas, it is not that there are too many people but too many motor vehicles and too many visits concentrated in certain time periods. Specific examples of parks that have made successful 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.



A 2004 U.S. DOT study estimated transit needs on USDA 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. An earlier joint FTA/FHWA study, undertaken in 2001, estimated transit investment needs on NPS, BLM, and FWS lands, which are all part of the DOI. Total DOI needs for the period 2002 to 2020 were estimated to be \$1.71 billion in 1999 dollars (\$2.16 billion in 2004 dollars or \$180 million per year). Ninety-one percent of these needs were estimated to be required by the NPS, 7 percent by the FWS, and 2 percent by the BLM.

In 2005, the Paul S. Sarbanes Transit in the Parks (TRIP) Program was established under the 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, historical, and cultural resources; reduced congestion and pollution; improved visitor mobility and accessibility; enhanced the visitors' experience; and helped to ensure access to all, including persons with disabilities. The TRIP Program was not continued under the most recent surface transportation authorization, MAP-21.

Also in 2005, the SAFETEA-LU created the Tribal Transit Program. The 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 in FY 2009 through FY 2012. The 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 looking at the future transportation needs on Federal and Tribal lands, FLMAs need to address challenges in identifying and involving all of the stakeholders and gaining a better understanding of the complex relationship among these entities. Along with this, the following significant issues continually need to be addressed:

1. As population increases, the demand for access to Federal and Tribal lands will continue to grow. This will require the need to fully consider and implement innovative transportation solutions, including efficient intermodal transfers among the available modes of transportation (pedestrians, bicycles, cars, buses, RVs, transit, ferries, or aircraft). Intelligent transportation systems will continue to play more and more important roles as a way to communicate congestion and provide information on alternative routes and times to visit Federal and Tribal lands.
2. In many instances, urban growth is expanding closer and closer to Federal and Tribal lands. As these lands become part of urban areas, FLMAs and Tribes are challenged with all the issues affecting urban transportation officials. These agencies need to undertake and implement effective urban transportation planning in close cooperation with metropolitan transportation officials, local officials, and various transportation officials. Tribes and FLMAs 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.
3. As transportation funding continues to lag behind transportation needs, there is a need to ensure more effective coordination between Federal agencies, Tribal governments, and State/local transportation agencies. It also necessitates effective development and implementation of transportation investment that

fully uses products of transportation planning and bridge, safety, pavement, and congestion management systems.

4. The average age of drivers on Federal and Tribal lands will continue to increase. This requires continued improvements in signs, information systems, and accommodation for visitors with disabilities. This will be especially important in urban areas where the need for effective destination guidance is a challenge to implement.

## Endnotes

<sup>1</sup> <http://www.nationalatlas.gov/printable/fedlands.html>

<sup>2</sup> “Public Land Statistics 2011”, Bureau of Land Management, Department of Interior, May 2012. [http://www.blm.gov/public\\_land\\_statistics/pls11/pls2011.pdf](http://www.blm.gov/public_land_statistics/pls11/pls2011.pdf)

<sup>3</sup> “The Outdoor Recreation Economy”, Outdoor Industry Association, 2012. [http://www.outdoorindustry.org/images/researchfiles/OIA\\_OutdoorRecEconomyReport2012.pdf?167](http://www.outdoorindustry.org/images/researchfiles/OIA_OutdoorRecEconomyReport2012.pdf?167)

<sup>4</sup> The Department of the Interior’s Economic Contributions Report, FY 2011: <http://www.doi.gov/americasgreatoutdoors/loader.cfm?csModule=security/getfile&pageid=308931>

<sup>5</sup> “National Visitor Use Monitoring Results National Summary Report”, USDA Forest Service (Last updated 22 May 2012). [http://www.fs.fed.us/recreation/programs/nvum/nvum\\_national\\_summary\\_fy2011.pdf](http://www.fs.fed.us/recreation/programs/nvum/nvum_national_summary_fy2011.pdf)

<sup>6</sup> “The BLM: A Sound Investment for America, 2012” Bureau of Land Management, May 2012 [http://www.blm.gov/pgdata/etc/medialib/blm/wo/Communications\\_Directorate/public\\_affairs/socioeconomic.Par.81563.File.dat/socioeconomic\\_2012.pdf](http://www.blm.gov/pgdata/etc/medialib/blm/wo/Communications_Directorate/public_affairs/socioeconomic.Par.81563.File.dat/socioeconomic_2012.pdf)

<sup>7</sup> “Welcome to the National Wildlife Refuge System”, U.S. Fish & Wildlife Service, October 2011. <http://www.fws.gov/refuges/about/welcome.html>.

<sup>8</sup> “Recreation Economic Impacts”, U.S. Army Corps of Engineers, September 2012, <http://www.corpsresults.us/recreation/receconomic.cfm>.

<sup>9</sup> Stynes, D. J. 2011. Economic benefits to local communities from national park visitation and payroll, 2010. Natural Resource Report NPS/NRSS/EQD/NRR—2011/481. National Park Service, Fort Collins, Colorado. <http://atfiles.org/files/pdf/NPS-LocalPayroll2010.pdf>

<sup>10</sup> “NPS National Transit Inventory, 2012”, <http://www.volpe.dot.gov/transportation-planning/public-lands/national-park-service-national-transit-inventory-2012>