

APPENDIX E

Condition and Performance of the Transportation System Serving Federal and Indian Lands

Introduction

This appendix documents the surface transportation system serving Federal and Indian lands. It begins with a discussion of the various types of Federal lands, then addresses the role these areas play in the U.S. economy. It then examines the transportation system on Federal lands, assessing its role, condition, funding sources, construction and maintenance expenditures. The conclusion includes an outlook on the future of the transportation system on Federal and tribal lands. The following acronyms are used in this appendix:

Acronyms	
BIA	Bureau of Indian Affairs
BLM	Bureau of Land Management
BOR	Bureau of Reclamation
COE	U.S. Army Corps of Engineers
CRR	Corps Recreation Roads (COE Roads)
DOA	Department of Agriculture
DOD	Department of Defense
DOI	Department of the Interior
FDR	Forest Development Roads
FLHP	Federal Lands Highway Program
FH	Forest Highway
FS	U.S. Forest Service
FWS	U.S. Fish and Wildlife Service
IRR	Indian Reservation Roads
LMHS	Land Management Highway System
MIR	Military Installation Roads
MTMC	Military Traffic Management Command
NPS	National Park Service
RR	Refuge Roads
PFAR	Public Forest Access Roads
PLDR	Public Lands Development Roads
PLH	Public Lands Highway Program (Discretionary Program)
PRP	Park Roads and Parkways

Q. Are the pavement conditions percentages presented in this appendix developed using the IRI and PSR standards discussed in Chapter 3?

A. No. The pavement condition ratings are based on separate analyses performed by each of the Federal Agencies. These may not be fully consistent with those reported by States in the Highway Performance Monitoring System.

Q. Are the figures cited for “backlog” in this appendix fully consistent with the investment backlog for all highways identified in Chapter 7?

A. No. The backlog figures are based on separate analyses performed by each of the Federal Agencies. The Highway Economic Requirements System (HERS) model was not used to develop the backlog estimates in this appendix.

Characteristics of Federal Roads and Lands

The total area of the 50 States is 2.3 billion acres, of which the Federal Government has title to about 650 million acres. Federal lands, representing about 29 percent of the country's area, are overwhelmingly located in the Western United States. Indian lands make up about 2 percent of the country's area. Exhibit E-1 summarizes the various Federal and Indian lands. Exhibit E-2 summarizes the types and condition of roads serving these areas.

Exhibit E-1

Types of Lands Managed by Federal Land Management Agencies

Federal Land Agency	Federal Lands Served
Department of Agriculture Forest Service (FS)	155 National Forests and 20 National Grasslands
Department of the Interior National Park Service (NPS) Bureau of Indian Affairs (BIA) Fish and Wildlife Service (FWS) Bureau of Land Management (BLM) Bureau of Reclamation (BOR)	378 National Parks and Monuments 560 Federally Recognized Tribes and Indian Villages 553 Wildlife Refuges and Wetlands Management Districts, 67 Fish Hatcheries and 43 Administrative Sites 264 million acres of public lands 348 Dams-reservoirs, 308 recreation sites, and 59 power plants
Department of Defense Military Installations	500 Military Installations
US Army Corps of Engineers (COE) COE Facilities-Civil Works	463 lakes

Federal lands are managed by various Federal Land Management Agencies (FLMA) within the Departments of the Interior, Agriculture, and Defense. Most Indian lands are held in trust by the Department of the Interior or Native Alaska corporations.

Resources Served Within Federal and Indian Lands

Federal and tribal lands have many uses. These include: recreation, grazing, timber harvesting, mineral extraction, energy production and watershed, fish and wildlife, and wilderness protection. Indian communities, villages, and small towns are located in or surrounded by these lands. These lands are also managed to protect natural, scenic, scientific, and cultural resources. Over the past ten years, resource extraction and timber cutting have been significantly reduced. At the same time, recreation use has significantly increased. Exhibit E-3 summarizes uses for Federal and tribal lands.

Many of these areas have multiple uses, while others have a very limited, specific purpose. Approximately one-half of Federal lands are managed under multiple use and sustained yield policy, which relies on effective transportation. The remainder have protected use management policies, but even so, transportation systems are essential to their resource management, development, recreational use and protection. About 2 million Native Americans and military personnel live on these lands.

Role of Federal Lands in the U.S. Economy

Travel, tourism, and recreation are among the largest industries in the United States. This sector ranks third in retail receipts behind automobile and food sales, generating over \$450 billion annually. The travel, tourism, and recreation industries can claim a share of many other industry sectors, including transportation, lodging, communications, power, manufacturing, and construction. Travel and tourism

Exhibit E-2

Summary of Roads Serving Federal and Indian Lands

Federal Land Management Agency		Length Miles	Paved Miles	Condition Paved Roads			Bridges	
Road Category	Owner			% Good	% Fair	% Poor	Number	% Defic.
Department of Agriculture								
National Forest								
FH	State/Local	29,200	21,400	20	60	20	4,200	48
PFAR	FS	83,000	8,000	25	50	25	5,100	15
FDR	FS	302,000	20,000	25	50	25	2,600	
Department of the Interior								
National Park Service								
PRP	NPS	8,127	5,139	38	22	40	1,252	35
Bureau of Indian Affairs								
IRR	BIA	23,000	5,500	34	37	29	753	19
IRR	State/Local	25,600	10,150				3,362	27
Fish and Wildlife Service								
Public Roads	FWS	5,900	500	30		70	530	
Administrative Rds	FWS	3,100						
Bureau of Land Management								
PLDR	BLM	83,000	1,700	20	30	50	589	6
LMHS	State/Local	7,200	3,600	29	45	26	100	7
Bureau of Reclamation								
Public Roads	BOR	1,980	1,000	65	25	10	600	10
Administrative Rds	BOR	8,000	800	20	40	40	3,900	
Department of Defense								
Military Installations								
MIR	DOD	23,000	23,000	55	25	20		
US Army Corps of Engineers								
COE Recreation Areas								
CRR	COE	4,800						
Leased Roads	COE	3,600					250	50

is the largest employer in 11 States and is the third largest employer nationwide. Over 6.6 million people are employed with an annual payroll exceeding \$120 billion.

Approximately 94 percent of Americans over the age of 16 participate in outdoor recreation. More than 10 percent of all consumer spending is on recreation and entertainment, totaling over \$40 billion annually. Recreation is one of the fastest growing sectors of the United States economy, expanding at a rate of 5 percent annually. Travel and tourism is also an integral part of many local economies in communities adjacent to Federal and Indian lands.

Travel, tourism, and recreation are heavily dependent on federally owned lands. For example, Federal lands accommodate over 20 percent of recreation activities in the U.S. This percentage is measured in recreation visitor days (RVD). A RVD is equivalent to a 12-hour visit.

The various FLMAs contribute in different ways to travel and tourism:

- **National Park Service (NPS)** areas receive more than 273 million visitors annually, generating more than \$5.5 billion annually to local communities. Recreational use in the national parks is expected to double by 2020. As the larger and more popular parks become more crowded, emphasis may shift to other lesser known national parks, nearby State facilities, gateway communities, and private recreational facilities.

Exhibit E-3

Federal and Indian Land Use

Federal Agency	Other Land Uses									
	Recreation	Timber	Minerals & Oil	Grazing & Farming	Water Resource	Wildlife	Energy	National Defense	Housing	Industry
Department of Agriculture Forest Service	✓	✓	✓	✓	✓	✓	✓		✓	
Department of the Interior National Park Service	✓				✓	✓			✓	
Bureau of Indian Affairs	✓	✓	✓	✓	✓	✓	✓		✓	✓
Fish and Wildlife Service	✓	✓	✓	✓	✓	✓	✓			✓
Bureau of Land Management	✓	✓	✓	✓	✓	✓	✓			✓
Bureau of Reclamation	✓				✓	✓	✓			
Department of Defense Military Installations	✓				✓	✓		✓	✓	
US Army Corps of Engineers COE- Civil Works	✓				✓	✓	✓			

- The **Bureau of Land Management (BLM)** estimates that outfitters and guides provide between \$50 and \$60 million in public land related revenue to the 11 western States. The combined uses of BLM lands annually generate over \$1.3 billion in receipts, of which \$740 million is shared with State and county governments. Economic benefits on BLM lands from travel and tourism exceed \$3.3 billion.
- The **U.S. Fish and Wildlife Service** estimates that visits to the National Wildlife Refuge System generate over \$370 million to the economy.
- Visitors spend over \$12 billion during recreation visits to areas near **U.S. Army Corps of Engineers (COE)** facilities.

In addition to the benefits from recreation, travel and tourism, Federal lands provide resources for grazing, timber harvesting, oil extraction, mining, electrical generation, and other related activities. In many instances, a portion of the receipts are returned directly to local governments. Exhibit E-4 summarizes recreation and related economic benefits.

Exhibit E-4

Federal Agency	Economic Benefits of Federal and Indian Lands ⁽¹⁾	
	Recreation RVD (Million) 1994	Economic Benefits (\$ Billion)
Department of Agriculture Forest Service	288	45.0
Department of the Interior National Park Service	116	5.5
Bureau of Indian Affairs	(2)	
Fish and Wildlife Service	34	0.4
Bureau of Land Management	72	3.3
Bureau of Reclamation	22	6.0
Department of Defense Military Installations	53	
US Army Corps of Engineers COE - Civil Works	192	12.0

(1) Economic benefits include lodging, food, entertainment, recreation, and incidentals expended during travel.
 (2) Travel, tourism, and gaming are emerging areas on American Indian lands. Statistical information is not available.

Role of Transportation in the Use of Federal and Tribal Lands

The recreation, travel and tourism industries depend on a quality transportation infrastructure. Nearly 490,000 miles of Federal roads and over 110,000 miles of State and local access roads provide access to and within these lands. Transportation is also critical to the survival and quality of life of tribal communities and other small towns located within Federal lands. It provides the access between Indian housing and education, emergency centers, and employment.

In the United States, pleasure driving accounts for 30 percent of all vehicle miles traveled. The FLMAs have various roads that promote pleasure driving:

- Many Federal Lands Highway Program (FLHP) roads are **Scenic Byways**, a designation conferred by Federal and State agencies.
- The Forest Service designated 136 **National Forest Scenic Byways** in 35 States. The byways total length is 9,126 miles. 74 percent of these byways are also designated as a State or Federal scenic byway.
- There are also more than 3,000 miles of National Park Service roads that also meet the criteria for Scenic Byways. Nine Federal scenic byways pass through National Park Service lands.
- The Bureau of Indian Affairs has identified 1,000 miles with a potential for an Indian Reservation Road Scenic Byways designation. Several Federal scenic byways are in Indian reservations.
- The Bureau of Land Management designated over 60 byways, totaling 3,100 miles in 11 States as **Back Country Byways**.

The remaining byways are largely public and administrative roads. In many remote areas, motorized and non-motorized trails, waterways, and air transports serve as the primary mode of transportation.

Condition and Performance of Roads by Federal Agency

Federal land management agencies are under heavy pressure to accommodate tourist traffic and resource development. For example, heavy visitation to some National Parks is increasing the demand for new parking and wider roads. The FLMAs can often not “build” their way out of this situation since doing so would undermine the very resources agencies are trying to preserve. For the Federal Government to continue its mission of providing visitor enjoyment and conserving resources, innovative and creative solutions will be required. Possible solutions to these problems are briefly discussed at the end of this chapter. The transportation systems serving various Federal and Indian lands are discussed below.

Forest Service

The Forest Service has jurisdiction over 155 national forests and 20 grasslands in the United States. This includes approximately 191 million acres in 40 States, as well as Puerto Rico and the Virgin Islands. This collectively amounts to about 29 percent of all federally owned land. National Forests are used for recreation, watershed management, grazing, wilderness protection, mining, and energy protection. National Forests are being used for lower-impact activities than during the 1980s. National Forests are home to more than half the Nation’s inventory of softwood timber, but harvesting has been reduced by about 80 percent since the 1980s.

National Forests contain a diversity of fish and wildlife habitats. National Forests have 128,000 miles of streams, including 3,338 miles of the Wild and Scenic River System, and 2.2 million acres of lakes and reservoirs. The National Forests contains the headwaters for over 80 percent of the freshwater in the United States, and about half of the Nation’s cold water fisheries. They are home to more than 60 percent of all the animal species in the country, including 50 percent of big game animals and 140 threatened or endangered species.

There are over 414,000 miles of roads serving the National Forest system. These are divided among three categories: Forest Highways (FH); Public Forest Access Roads (PFAR), which are higher standard arterials; and Forest Development Roads (FDR), which are non-public administrative roads that provide access for the management and protection of the National Forest system. Exhibit E-5 describes mileage, pavement characteristics, and backlog information for these three road categories.

Exhibit E-5

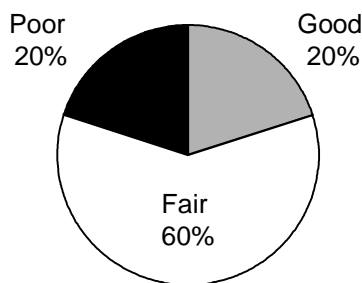
Roads Serving National Forests

Road Type	Road Mileage					Number of Bridges
	Unimproved Earth	Graded Earth Template	Gravel	Paved	Total	
FH	0	0	7,714	21,500	29,214	4,200
PFAR	0	5,000	70,000	8,000	83,000	5,100
FDR	100,000	82,000	100,000	20,000	302,000	2,600
Total	100,000	87,000	177,714	49,500	414,214	11,900

Exhibit E-6 describes pavement characteristics for Forest Highway Roads. Approximately 60 percent of roads on this system have a “fair” rating.

Exhibit E-6

Forest Highways Pavement Condition (Paved Roads Only)



National Park Service

The National Park Service system includes 378 park units that encompass more than 79 million acres. This extensive network includes national parks, parkways, monuments, historic sites, military parks, battlefields, and recreational areas. Roads are the primary method of transportation within the National Park system, although there are actually about 70 mass transit systems serving these properties. As a result, some of the most popular NPS sites suffer from increasing traffic volume, larger vehicles, and the spiraling demand for visitor parking. More than 3.2 billion vehicle miles are annually traveled within the NPS system, an estimate that increases about three percent each year. In 1994, a report was submitted to Congress on “Alternative Transportation in National Parks,” one of the first attempts to address this growing problem of congestion on the NPS system.

There are about 8,127 miles of park roads and parkways (PRP). Exhibit E-7 describes the extent of this system, while Exhibit E-8 identifies pavement condition.

Exhibit E-7

Park Roads and Parkways

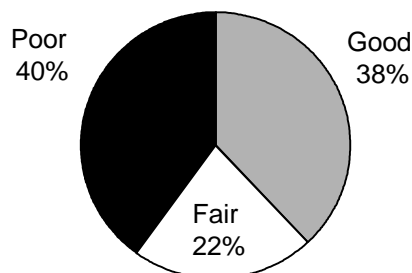
Road Type	Road Mileage					Number of Bridges*
	Unimproved Earth	Graded Earth Template	Gravel	Paved	Total	
Public Roads	---	---	2,988	5,139	8,127	1,252

* In addition to 1,252 bridges, there are 60 tunnels.

Approximately 35 percent of PRP bridges are deficient. The backlog of PRP road, bridge and tunnel improvement needs exceeds \$2.2 billion. An additional \$350 million would be required to complete all portions of certain park roads that have been partially constructed, such as the Natchez Trace Parkway in Mississippi and the Foothills Parkway in Tennessee. Also, there are national parks where congestion is a major problem and constructing wider or new roads is not an acceptable solution. This increases the need for using alternative modes of transportation.

Exhibit E-8

Park Roads and Parkways Pavement Condition (Paved Roads Only)



Bureau of Indian Affairs

The Bureau of Indian Affairs (BIA) has stewardship over programs that serve Indian tribes and Alaskan native villages. There are more than 560 federally recognized Indian tribes in the United States. Not only do Native Americans have special cultural needs, but many live in isolated locations with little arable land and few known natural resources. Some of the isolation is perpetuated by a lack of transportation facilities. Isolation is also a result of geologic features such as islands, lakes, rivers, and terrain. Except for a few tribes with urban land, oil and mineral resources, or recreational operations, nearly all reservations are among the most economically depressed areas of the country with very high unemployment rates. Some tribal governments have been successful in initiating economic development activities, including small industries and casinos. These require a viable Indian Reservation Roads (IRR) system. In many instances, rural transit is needed to serve Native Americans, particularly the elderly, sick, and those without private vehicles. Some tribes are providing these services on a limited basis.

The IRR system provides access to and within Native American areas. There are two categories of Indian Reservation Roads. BIA system roads include 23,000 miles that are owned and maintained by the BIA and tribal governments. The second category consists of about 25,600 miles of Federal, State, and local public roads that provide access to or within Indian reservations.

Exhibit E-9 describes the extent of the Indian Reservation Roads system. Exhibit E-10 describes pavement condition. Over 2 billion vehicle miles are annually traveled on this system, although it is among the most rudimentary of any transportation network in the United States. Over 66 percent of the IRR system is unimproved, earth and gravel. Some of these roads resemble roads in developing Nations. In some instances, the IRR consist of wheel tracks. In other instances, the road is unimproved earth surface, and many streams are crossed using low water crossings. Approximately 19 percent of the 753 bridges owned by the BIA are deficient.

Exhibit E-9

Indian Reservation Roads	Road Mileage					Number of Bridges
	Unimproved Earth	Graded Earth Template	Gravel	Paved	Total	
BIA & Tribes	6,000	8,500	3,000	5,500	23,000	753
State, Local and Other	2,000	3,850	8,600	10,150	25,600	3,362
Total	8,000	12,350	11,600	16,650	48,600	4,115

These conditions make it difficult for residents of Indian country to travel to hospitals, stores, schools, and employment centers. The poor road quality also impacts safety. The annual fatality rate on Indian Reservation Roads is more than four times the national average. The estimated backlog of improvement needs for BIA and selected State and local IRR roads exceeds \$6.8 billion.

Fish and Wildlife Service

The U.S. Fish and Wildlife Service (FWS) manages the National Wildlife Refuge System. This system consists of 553 wildlife refuges and wetland management districts encompassing 93 million acres of land. The FWS properties receive about 34 million visits annually. The FWS also operates 67 National Fish Hatcheries and 43 Administrative Sites which are open to the public for visits and tours. On most FWS roads, traffic volumes are less than 400 vehicles per day, although several refuges have roads with substantial traffic volumes.

The FWS owns approximately 9,000 miles of wildlife refuge roads. Most of these are public roads (also called refuge roads), but there are nearly 3,100 administrative roads within the FWS network. Collectively, these roads have about 271 bridges. Exhibits E-11 and E-12 describe the extent and condition of the FWS system.

Exhibit E-10

Indian Reservation Roads Pavement Condition (Paved Roads only)

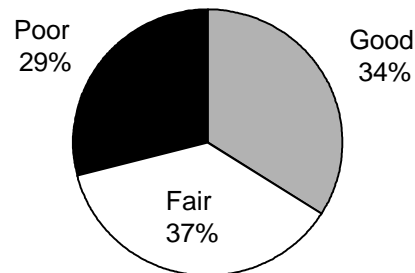


Exhibit E-11

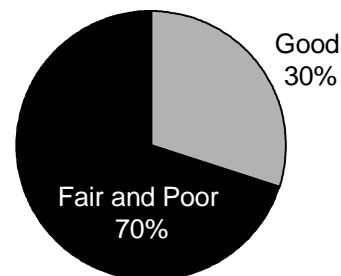
Fish and Wildlife Service Roads

Road Type	Road Mileage					Number of Bridges
	Unimproved Earth	Graded Earth Template	Gravel	Paved	Total	
Public Roads		2,800	2,600	500	5,900	271 (1)
Administrative					3,100	
Total (2)		2,800	2,600	500	9,000	271 (1)

- (1) The FWS owns 653 bridges with lengths greater than 10 feet. However, only 271 of these are greater than 20 feet in length.
- (2) The FWS also has 100 miles of public hatchery roads and 50 miles of administrative hatchery roads serving fish hatcheries. Also, they have 10 miles of public roads and 2 miles of administrative roads serving administrative sites.

Exhibit E-12

Wildlife Refuge Roads Pavement Condition (Paved Roads Only)



Bureau of Land Management

The Bureau of Land Management (BLM) controls 41 percent of all Federal lands, the largest owner. Its 264 million acres represent nearly 12 percent of the area of the United States. Concentrated largely in the Western U.S. (including Alaska), BLM lands often make up between 20 to 80 percent of each State.

The BLM is responsible for the balanced management of lands and resources. Activities have traditionally included grazing, timber harvesting, mineral and oil extraction, although tourism has increased significantly at BLM sites. Between 1991 and 1997, visitor use at BLM lands jumped by nearly 62 percent. Virtually all visits require the use of an access road.

The BLM lands are served by two categories of roads. Most are Public Lands Development Roads (PLDR) owned by the Bureau of Land Management. These represent the backbone of the BLM system but are not considered public roads. However, there are about 9,000 miles classified as arterials which are considered public roads. Many of them serve public uses and special purposes, such as those that serve recreational development areas. The second category is land management highway system (LMHS) roads. Approximately 7,200 miles of State and local roads are designated as LMHS. Over 70 percent of the LMHS are under county jurisdiction and the remainder under State supervision.

A significant portion of this road system is primitive in nature, but is usually adequate for BLM general management. The BLM has constructed new roads over the last 25 years to meet recreation and other access needs. The condition of paved roads is shown in Exhibits E-13 and E-14.

Exhibit E-13

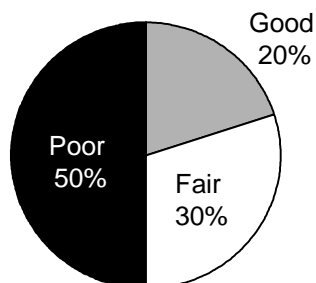
Bureau of Land Management Roads

Road Type	Road Mileage					Number of Bridges
	Unimproved Earth	Graded Earth Template	Gravel	Paved	Total	
PDLR	29,000	33,200	19,100	1,700	83,000	589
LMHS*	---	---	3,600	3,600	7,200	100
Total	29,000	33,200	22,700	5,300	90,200	689

* This only represents about 50 percent of the anticipated future LMHS to be designated.

Exhibit E-14

Public Lands Development Roads Pavement Condition (Paved Roads Only)



Q. What are the improvement priorities for the land management highway system?

A. The top priorities are to 1) correct safety deficiencies, 2) improve the condition of high use roads, and 3) repair or replace deficient bridges.

Bureau of Reclamation

The Bureau of Reclamation (BOR) administers 348 dams and reservoirs in 17 Western States and shares management over 308 recreation sites. Reclamation is the ninth largest electric utility and the second largest producer of hydropower in the United States, with 59 power plants producing nearly 42 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. Reclamation projects provide one out of five western farmers with irrigation water.

The Bureau of Reclamation owns approximately 1,980 miles of roads and 600 bridges that are open and intended for use by the general public. These public BOR roads and bridges are eligible for discretionary Public Lands Highway funding under the FLHP. Funding varies since it is a discretionary program. The remainder of the roads and bridges (not intended for use by the general public) are funded through appropriations directly to BOR or by project beneficiaries, and bridges are provided through BOR appropriations. The road system serving BOR lands is summarized in Exhibit E-15.

Exhibit E-15

Bureau of Reclamation Roads

Road Type	Road Mileage					Bridges
	Earth	Template	Gravel	Paved	Total	
Public Roads			980	1,000	1,980	600
Administrative	3,200	3,200	800	800	8,000	3,900
Total	3,200	3,200	1,780	1,800	9,980	4,350

Department of Defense

There are approximately 500 major military reservations in the United States. These encompass about 24 million acres of land. Installation roads are open to use by dependents and public visitors, although some may require a security clearance. Roads on military installations serve housing, offices, commissaries, base exchanges, recreation facilities, unrestricted training facilities, hospitals, and traffic crossing the installation. This road network is similar to the street system in urban areas, and in many cases, military roads are an integral part of a local community. Motorists may not even realize they are on a military street.

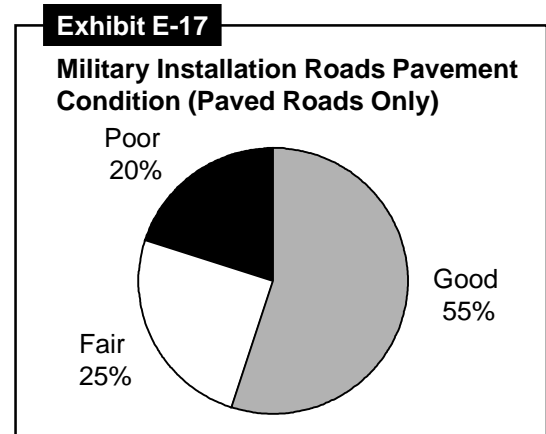
Department of Defense (DOD) regulations allow public access to unimproved recreational facilities such as lakes, beaches, and wooded areas for bases within the continental United States. The public may access these areas for fishing, swimming, and hunting except where an overriding military mission specifically requires a suspension of such use. Improved recreational facilities such as baseball, football, and soccer fields, gymnasiums, golf courses, swimming pools, and bowling alleys are also available. Many installations have an annual open house, where the public is invited to tour the installation, attend military demonstrations, and view shows. About one-third of the installations have museums or other cultural attractions, which the public is encouraged to visit. These facilities attract an estimated 15 million visitors annually. Approximately 28 billion vehicle miles are traveled per year on military roads.

About 24,000 miles of paved roads referred to as Military Installation Roads (MIR) are under the jurisdiction of the Department of Defense (DOD). Approximately 2,100 miles (8 percent) are classified as primary and principal arterial roads, about 5,400 miles (21 percent) as collector roads, and about 18,000 miles (71 percent) as local roads. About 24,000 miles are open to public travel, while the remaining roads are located within restricted areas. The extent and condition of DOD roads are described in Exhibits E-16 and E-17.

Exhibit E-16						
Roads on Military Installations						
Road Type	Road Mileage					Number of Bridges
	Unimproved Earth	Graded Earth Template	Gravel	Paved	Total	
MIR--Public Roads				23,000	23,000	
Administrative				1,200	1,200	
Total				24,200	24,200	

Deficiencies in military roads generally relate to inadequate traffic capacity, poor geometric features, structurally deficient bridges, and antiquated entrance gates which are below Federal standards.

Additionally, over 1,000 high-accident locations (HALs) have been identified. A HAL is a location with five or more property-damage accidents, three or more injuries, or one or more fatalities. The cost to improve and eliminate deficiencies at these HALs is more than \$165 million. Of these sites, there are 175 very high accident locations (VHALs). A VHAL is a location with 10 or more property-damage accidents, 5 or more injuries, or 1 or more fatalities. The annual estimated total accident cost for these VHALs exceeds \$150 million, and the total cost to correct safety deficiencies is approximately \$30 million.



United States Army Corps of Engineers

The United States Corps of Engineers (COE) is the largest provider of water-based recreation. The COE currently administers approximately 11.7 million acres at 463 lakes and waterways. In 1997, there were 4,340 recreation areas, of which 2,500 were managed directly by the COE. These areas are located in 43 States, but the majority of COE resources are east of the Rocky Mountains, where most Americans live. The road system serving COE facilities is summarized in Exhibit E-18.

Exhibit E-18						
Roads Serving COE Lakes						
Road Type	Road Mileage					Number of Bridges
	Unimproved Earth	Graded Earth Template	Gravel	Paved	Total	
Public Roads					4,800	250
Lease Roads					3,600	
Total					8,400	250

Funding of Roads Serving Federal and Indian Lands

The Federal Government is responsible for providing access within Federal and Indian lands. Before the 1980s, all road improvements were dependent upon the unpredictability of various annual Federal agency appropriations and had to compete with non-transportation needs. This caused many road systems on Federal lands to fall into a state of dilapidation. The 1982 Surface Transportation Assistance Act (STAA) established the Federal Lands Highway Program (FLHP). This consolidated long-range transportation program is financed through the Highway Trust Fund.

Funding and annual authorizations are shown for Fiscal Years 1983 through 2003 in Exhibit E-19. Between FY 1983 and FY 1997, the FLHP received 100 percent obligation limitation each year. Starting in FY 1998, the FLHP received about only 88 percent obligation limitation. The remaining 12 percent of these funds were returned to the States in accordance with TEA-21 provisions.

Exhibit E-19

FLHP Annual Authorization (\$ Millions)

Category	STAA		STURRA		ISTEA		TEA-21	
	FY 83	FY 84 - 86	FY 87- 91	FY92	FY93 - 95	FY 96 - 97	FY 98	FY99 -03
PLH-FH	50	50	55	94	113	114	129	162
PLH-D	50	50	40	48	58	58	67	84
IRR	75	100	80	159	191	191	225	225
PRP	75	100	60	69	83	84	115	165
RR	0	0	0	0	0	0	0	20
Total	250	300	235	370	445	447	536	706

The FLHP funds may be used for transportation planning, research engineering, and construction. Funds may also be used to support transit facilities which provide access to or within Federal or Indian lands. Also, maintenance, rehabilitation and reconstruction of transportation facilities also receive additional funding through other Departmental appropriations.

In recent years, several initiatives were developed to improve transportation on Federal lands. For example, the ISTEA initiated transportation planning and pavement, bridge and safety management systems for the FLHP. The ISTEA provided for a study on alternative transportation in park lands. This study was prepared and submitted to Congress in 1994. The Departments of Transportation and the Interior subsequently signed a memorandum of understanding (MOU) in November of 1997 that lays the groundwork for the NPS and the DOT to develop more efficient transportation systems to serve the national parks. Several MOU initiatives are underway, including the development of a rural Intelligent Transportation System operational test in a national park and a planning guidebook for the NPS.

Some classes of Federal roads are funded through means other than the FLHP. For example, the Forest Service has jurisdiction over non-public Forest Development Roads (FDR). The Bureau of Land Management has worked with States to develop its Land Management Highway System (LMHS) road network. These are State and local public roads that are generally supported by State and local

government funds. Additionally, the Department of Defense has jurisdiction over Military Installation Roads (MIR), and these are funded by DOD appropriations. The Army COE has jurisdiction over public roads providing access to lakes managed by them. Exhibit E-20 summarizes these roads.

Exhibit E-20

Federal Roads Not Funded Under the Federal Lands Highway Program

Type	Jurisdiction	Lands Served	Length Miles
Department of Agriculture			
Public Forest Access Roads	Forest Service	National Forest System	83,000
Forest Development Roads	Forest Service	National Forest System	302,000
Department of the Interior			
Fish Hatchery Roads	Fish and Wildlife Service	National Fish Hatcheries	150
Administrative Roads	Fish and Wildlife Service	Refuges, Hatcheries, and administrative areas	3,100
Land Management Highways	State/Local Agencies	Public Lands	7,200
Public Lands Development Roads	Bureau of Land Management	Public Lands	83,000
Reclamation Public Roads	Bureau of Reclamation	Federal Dams, Reservoirs	1,980
Administrative Roads	Bureau of Reclamation	Federal Dams, Reservoirs	8,000
Department of Defense			
Military Installation Roads	Defense Department	Military Installations	24,000
US Army Corps of Engineers			
Corps of Engineers Roads	Corps of Engineers (COE)	COE Recreation	4,900

Funding of road construction and maintenance is shown in Exhibit E-21. Construction includes repair, rehabilitation, reconstruction, replacement or new construction. Maintenance includes routine activities like minor regravelling, surface patching, and cyclic motor grading. Where a Federal agency is shown, the source of funds would generally be through annual appropriations to the agency having jurisdiction of the particular class of road. Where a State is shown, it implies that funds are provided by either the State or local government depending on jurisdiction and practices in individual States.

Future Challenges

Millions of tourists visit Federal lands. High visitation levels, in both large and small areas, are causing problems due to the growing volume of traffic and demands for visitor parking. The FLMAs cannot simply “build” their way out of this situation since this would undermine the very resources the agencies are trying to preserve. Innovative and creative solutions will be required. In addressing these challenges, FLMAs will need to involve all Federal, tribal, State and local stakeholders and understand the complex relationship among each.

Exhibit E-21
Construction and Maintenance Funds - Roads Serving Federal Lands (\$ Millions)

Federal Lands Served/ Road Category	Owner	Road and Bridge Construction Funding			Maintenance Funding	
		Road	Bridge	Source	Amount	Source
Department of Agriculture						
National Forest						
FH	State/Local	115	26	FH	Unknown	State/Local
PFAR	FS	40	10	FS	44	FS
FDR	FS	42	4	FS	55	FS
Department of the Interior						
National Parks						
PRP	NPS	119	25	PRP	37.2	NPS
Indian Lands						
IRR	BIA	226	13	IRR	25.6	BIA
IRR	State/Local			IRR & State		State
Wildlife Refuges & National Fish Hatcheries						
RR	FWS	16	1	RR		FWS & RR
Non Public Roads	FWS			FWS		FWS
Non Public Roads	FWS		~	FWS		FWS
Public Lands						
LMHS	State/Local	Unknown	Unknown	State/Local	Unknown	State/Local
PLDR	BLM	13.8	*	BLM	11.6	BLM
Reclamation Projects						
Reclamation Roads	BOR			BOR		BOR
Administrative Rds	BOR			BOR		BOR
Department of Defense						
Defense Installations					216.5	
MIR	DOD	4.0**	**	DOD	(estimated)	DOD
US Army Corps of Engineers						
COE Recreation Areas						
CRR	COE			COE		COE
Leased Roads	COE			COE & State		COE & State

* Bridge funding part of the \$13.8 million funding for construction.

** \$4M is the 3-year average. Bridge costs are part of the roadway cost.

- As population increases, the demand for access to Federal lands will continue to grow. This will require a full consideration of alternative transportation systems, including efficient intermodal transfers. Intelligent Transportation Systems will play a more important role in reducing congestion and moving traffic.
- Urban growth is expanding closer and closer to Federal lands and Indian lands. As Federal and Indian lands become part of urban areas, FLMAs will be challenged with all the issues affecting urban transportation officials. The FLMAs will need to undertake and implement effective urban transportation planning in close cooperation with metropolitan local and various other transportation officials.
- Officials will need to look at seamless transportation. This involves two areas. One is how to ensure continuity for drivers as they travel from one FLMA road system to another. The other issue involves providing efficient transfer between various modes (highway, rail, transit, air, and water transportation). The seamless system goal will be to enhance the quality of visitor's experience consistent with environment and resource management plans.
- Environmental and resource concerns will continue to be a major concern in accommodating increase visitors. Developing and implementing transportation systems must be compatible with values of Federal and Indian land.
- The average age of drivers visiting Federal and Indian lands will continue to increase. This will require 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.
- Effective coordination between Federal agencies, tribal governments, and State and local transportation agencies will remain important.