



CHAPTER V

PLANNING AND MANAGEMENT SYSTEMS

The purpose of this chapter is to describe the processes and procedures necessary to identify and plan projects for the multiyear program of projects of the Park Roads and Parkways Program (PRP Program). The subsequent project development process is described in Chapter VI, and appendix K includes a flow chart of key milestones and appendix L shows the related matrix.

As a jointly administered program of the National Park Service (NPS) and Federal Highway Administration (FHWA), planning for PRP Program-funded projects should reflect the applicable decision support systems of both agencies. The following sections summarize key planning requirements and decision tools for each agency as they may relate to the PRP Program.

A. NPS PLANNING REQUIREMENTS FOR PARK UNITS

Planning for facilities of national park system units¹³ occurs within a framework of laws, policies, and guidance that starts with the enabling act for the Park Service—the Organic Act of 1916 (16 USC 1), which established the following mission for the Park Service:

[T]o conserve the scenery and the natural and historic objects and the wild life therein and to pro-

vide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations.

The mission is the first and last test for the soundness of all transportation plans. Beyond the mission are federal laws that relate to various aspects of facility planning in general, such as: the Antiquities Act of 1906, the Wilderness Act of 1964, the National Environmental Policy Act of 1969, and the National Historic Preservation Act of 1966. For each park unit there is also specific enabling legislation that defines, among other things, the boundaries and purposes of the park unit.

Management policies are designed to implement the relevant body of laws and to carry out the mission. Overall guidance on planning for parks is provided in “Chapter 2, “Park System Planning” of the *NPS Management Policies 2006*, which can be found in Appendix O. Director’s orders provide more specific guidance on the process and procedures for implementing NPS policies.



NPS policy puts the primary decision-making role for park development and maintenance with the park superintendent and the regional director. Working within this framework of laws, policy, and guidance, park units propose projects—including transportation projects—for funding. Park superintendents are responsible for developing policies and strategic plans required for the park unit's facilities and for recommending capital improvement projects. Regional directors must approve projects and plans.

How transportation fits into this planning and decision-making process is evolving, but the place to start is the general management plan, which is required for each park unit.

1. The General Management Plan¹⁴

Transportation defines many important aspects of the park visitor's experience, from the choice of attractions to see, where to stay, and when and how long to visit.

Transportation planning is a process that can be used to improve visitor experience and protect a park unit's natural and cultural resources from possible impacts. Each park unit, area, and trail has unique challenges and goals, which are required under NPS policy to be identified in the park unit's general management plan (management plan or GMP).

The general management plan is the broadest level of NPS planning and the most important. It is shaped by, and must respond to, the Park Service's many laws, policies, and guidance. All other decisions flow from the goals articulated in the management plan, which establishes core park values that are accepted by NPS staff and stakeholders. This management plan holds the vision for the park unit's future and is concerned more with goals than with details. As a conceptual plan, the management plan should clearly define the desired future resource conditions and visitor experiences envisioned for the park unit.



The planning horizon for a management plan is 15 to 20 years and beyond. (The GMP process is parallel to the planning process that is used for national and scenic trails, national historic sites and areas, heritage areas, and wild and scenic rivers.)

General management plans are developed through the efforts of a multidisciplinary team. For park units with significant transportation issues, regional FLHP Coordinators (Coordinators) can help identify transportation experts to be involved in the GMP process and can provide transportation data from management systems and traffic studies developed for the PRP Program.

Transportation considerations for a general management plan include the following:

- a. legislation relating to transportation in the park
- b. how transportation serves the park's purpose and significance
- c. how park resources relate to transportation systems and facilities
- d. the role transportation plays in protecting these resources
- e. the way transportation systems and facilities reinforce the visitor experience and sense of place envisioned over 15 to 20 years the transportation issues occurring outside the park unit that need to be considered in future planning efforts
- f. the types of transportation facilities and services needed to support the vision and significance of the park unit
- g. staffing and long-term operational needs to support transportation systems

Preparing a new general management plan or revising an existing one can be a complex process requiring time and dedication of staff representing many disciplines. The time to complete a management plan varies by the size, location, purpose, and other factors of each park unit, generally ranging from two to five years. Limited funding and the availability of park staff to work on plans are also factors that may affect plan completion.

The Park Service's Washington Office (WASO) provides funding from the PRP Program for transportation studies, which can be part of the GMP process or in support of an established management plan. From 2000 to 2005, for example, \$250,000 to \$1 million was allocated for this type of planning annually, with the average project costing about \$40,000.

General management plans provide a forum for involving the public and document how the environmental consequences of management decisions are considered. There are legal requirements associated with general management plans as well as agency policy directives that need to be followed. These can be found in several reference materials including the [WASO Park Planning and Special Studies Web site](#) and the [DSC Workflows Web site](#).

2. Strategic and Other NPS Plans

General management plans establish a basic philosophy and direction for park management and a framework for future actions. Detailed plans to achieve specific goals, such as transportation plans, tier from the more general planning at the GMP level. These processes are laid out in the previously referenced NPS Management Policies 2006. In summary, the three other elements of NPS planning are as follows:

- **Strategic Plans**—Strategic planning is conducted at three levels: park, program, and servicewide, in conformance with the Government Performance and Results Act of 1993, which also was described in Chapter II. At the park level, the strategic plan must be consistent with the general management plan. The basic goal is to set mid-range priorities for the next three to five years. Consideration of resource conditions, including infrastructure, is a key focus.
- **Implementation Plans**—Implementation planning is needed to develop action plans for accomplishing goals, recommendations, and

desired outcomes of the general management plan and strategic plans. Implementation plans usually address actions needed in a shorter time frame than management plans.

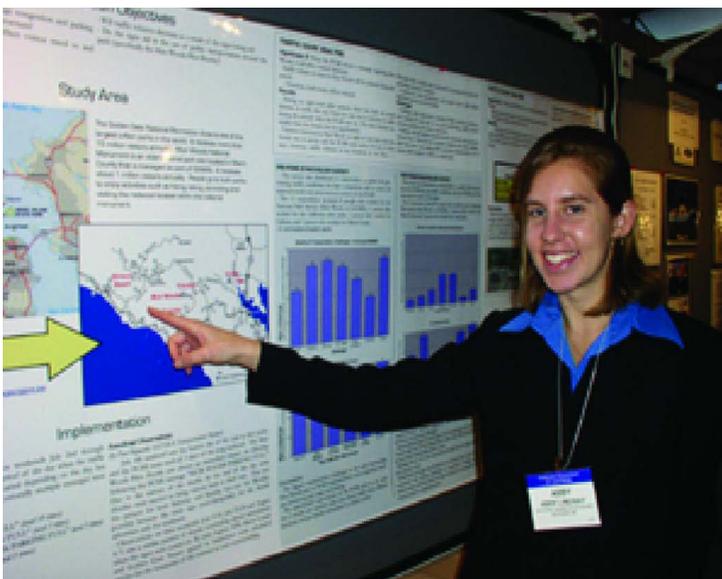
- **Annual Performance Plans**—These plans are for the near term—one year—to ensure that goals and outcomes expected are achieved. These plans include budget and staffing and are part of the annual budgeting process.

This is not a neatly ordered process, with one tier of planning progressing to the other. According to The National Park Service, Transportation Planning Guidebook (1999), “components may be missing or be out of sequence, but eventually the cycle will be completed.” Plans for specific transportation projects or engineering studies that may apply to a park road or an entire park are examples of implementation plans. These transportation studies are usually authorized through the Coordinators; they can occur at many stages of the planning process.

B. TRANSPORTATION PLANNING AND U. S. DEPARTMENT OF TRANSPORTATION REQUIREMENTS

Legislation authorizing the PRP Program (23 United States Code 204), including the most recent law, the Safe, Accountable, Flexible, and Efficient Transportation Equity Act—A Legacy for Users (SAFETEA-LU),¹⁵ requires the National Park Service to follow planning and coordination procedures that are consistent with metropolitan and state planning processes established for the federal highway and transit programs (23 USC 134 and 135, and 49 USC 5313 and 5303, respectively). These procedures must be adopted by rulemaking by the Secretary of Transportation in consultation with the Secretary of the Interior. Although the specifics of the type of plans and programs are generally left to the rulemaking, there are individual requirements for the National Park Service in the law: (1) to prepare a transportation improvement program (program of projects) for the PRP Program resulting from the planning process, (2) to develop regionally significant projects with the appropriate state and metropolitan planning organizations; and (3) to develop four management (information) systems—pavement conditions, bridge conditions, safety management, and congestion management.

As of March 2007, rules and procedures for the PRP Program are under discussion between the two agencies but have not been adopted. What follows is a summary of the basic planning requirements under the relevant highway and transit laws as background for regions and parks.¹⁶



1. Transportation Planning Processes and Coordination

The entire federal surface transportation program relies on planning at two levels: the state transportation agency, usually known as a department of transportation (DOT), and the metropolitan planning organization or MPO. The metropolitan planning organization is a special association of local governments and interests that has been required since the mid-1970s to support transportation planning in areas with a population of more than 50,000. There are more than 380 metropolitan planning organizations in the country. Information on their location and activities can be found at <http://www.ampo.org>.

The cornerstone of the federal transportation planning process is the development of a long-range transportation plan to cover a period of at least 20 years. These plans must be adopted by state transportation departments, metropolitan planning organizations, and other recipients of federal transportation funds. State-level plans should reflect statewide goals as well as incorporate consideration of MPO plans. There are specific requirements for public involvement and for consultation with affected groups and organizations. Planning factors are spelled out for each type of plan.

The nature and scope of the long-range transportation plan, however, is subject to interpretation. Some states, for example, have short policy and goals documents, and others have detailed plans with corridors and major projects identified. Long-range transportation plans are to be updated every five years, except in metropolitan areas that are in nonattainment for air quality or designated a maintenance area for air quality where they must be updated at least every four years. SAFETEA-LU requirements specify more use of the World-Wide Web in disseminating planning products and seeking input and the use of visioning techniques and technologies in developing the plan.

The National Park Service does not have a long-range transportation plan at the servicewide level, nor do most parks have such a plan. As described in Chapter II, however, servicewide goals and objectives have been proposed for transportation, which is an important first step in the long-range planning process.¹⁷

Another important transportation planning requirement is the development of a multiyear budget of capital improvement projects, usually referred to as a program of projects and officially known as the Transportation Improvement Program (TIP). Law requires that the Improvement Program include all modes of transportation and that this

program be revised at least every four years, with updates at any time. Both state transportation departments and metropolitan planning organizations develop transportation improvement programs as part of their project selection process.

The PRP Program has a multiyear program of projects, which varies by category. This program is developed from the park unit submissions of projects at the time of the servicewide consolidated call, which is part of the annual budget process. However, the PRP Program is included in the Washington Office call only every three to four years, depending on the funding levels and project backlog from prior calls. Regions can elect to participate in the call or continue to rely on their previously identified priority projects. (See Chapter VI for detailed discussion of the servicewide call and project submission procedures.)

Under the law, the planning process and resulting plans are to receive wide public involvement. Specific groups, such as transportation providers, Indian tribes, bicycle and pedestrian interests, and the disabled, are to be consulted as well as the general public. For the latest requirements under federal transportation law, see <http://www.fhwa.dot.gov/safetealu/factsheets.htm> or see Appendix C of this document for selected sections of the law. For specific guidance on planning and more information on how the state and MPO process will work under the latest authorization, see rules published in FY 2007 at the [FHWA Web page](#), then click on the link to Part 450.

Since 1998, federal transportation law has set more specific requirements to incorporate the plans and proposed programs of the federal land management agencies (sometimes called FLMA), such as the National Park Service, in the state and metropolitan planning programs. These requirements encourage partnerships with states and gateway communities and have resulted in non-NPS financial support for transportation initiatives at a number of park units. To meet these coordination requirements, the FLH divisions submit project information from the approved multiyear PRP Program to the appropriate states and metropolitan planning organizations to ensure that projects will be incorporated in their transportation improvement programs or TIPs. (State transportation improvement programs are known as STIPs, and metropolitan transportation improvement programs are known simply as TIPs.) This is important because federal transportation funds are not to be approved if projects are not in the appropriate state or metropolitan planning organization's transportation improvement program.

The multimodal transportation plans developed at the region or park level also should be coordinated with the appropriate state or metropolitan planning organization as well as other local officials not in metropolitan planning organizations, especially gateway communities. It needs to be stressed that the development of all regionally significant transportation projects, regardless of funding source, is to be coordinated with these same organizations. Recommended procedures for meeting these requirements have not been developed, nor is there yet a definition of a regionally significant project.

Projects are developed through specific project planning procedures of the two agencies and under the National Environmental Policy Act. Relevant references for project planning and development include the following:

- For NPS requirements, Director's Order 12, NPS Management Policies 2006, and Chapter VII of this document.
- For DOT requirements, see CFR Parts 450.200 and 450.300.

In 1997 a "Memorandum of Understanding" was signed by the U.S. Department of the Interior and the U.S. Department of Transportation outlining mechanisms and issues for cooperating on transportation planning and public transportation. A number of joint initiatives followed that agreement, including the U.S. Department of Transportation providing support and advice to the National Park Service in setting up a special program to oversee transit and transportation planning, now known as the Transportation Management Program (TMP).

2. Management Systems

In addition to the plans and programs described previously, four management systems are required and have become important decision support tools for the PRP Program. These systems provide parks and regions with basic condition, performance, and cost information to help set priorities in requesting budgets for park unit proposals. They provide servicewide information to NPS managers concerned with overall performance, which is used in (1) reports to the Office of Management and Budget (OMB) to meet requirements such as OMB Circular A-11, (2) to Congress to show progress in meeting congressional directives, and (3) to help set servicewide policies. It is important to note that the transportation management systems are part of a broader group of information systems for the National Park Service including cultural resource and natural resource management systems.

The four systems are being jointly developed by the two agencies and are in varying stages of implementation. Because of the need for regular updates and maintenance, the management systems will continue to require the support of NPS and FLH staff.

a. Pavement Management System

The FLH Office and the National Park Service have made substantial progress in developing and maintaining a pavement management system for the PRP Program. This system is intended to help identify potential road resurfacing, rehabilitation, and reconstruction projects and to assist in making informed decisions when selecting projects. The pavement management system is based on data from the Road Inventory Program (RIP), which includes condition and inventory information on NPS roads. The pavement management system provides information to support recommendations regarding optimal expenditure of road maintenance funds.

The Road Inventory Program collects data by use of an automated road analyzer, which (1) provides an inventory of maintenance items (pavement type and quantities), point (culverts, etc.), and linear features (ditches, guardrails, etc.), (2) identifies pavement distress, and (3) evaluates the condition of existing park roads. The information provides the National Park Service, at all levels, with the basic information for effective road system planning, management, operations, and maintenance, as well as providing timely, cost-effective, and accurate roadway inventories and pavement surveys of all NPS roads. The information is specifically used as follows:

- as a basis for formula calculations for allocation of funds by region
- to prioritize road maintenance needs by condition assessments
- to project funding requirements for future needs
- to determine and describe specific maintenance items
- as a video log of existing conditions

A true pavement management system (PMS) goes beyond collection and assessment of pavement condition data as is done with RIP. When these data are analyzed in combination with treatment cost information, a PMS can generate

several kinds of sophisticated modeling results. This includes preparing spending strategies to optimize a given road network pavement condition for a set amount of funding or the determination of funding requirements for a desired pavement condition. In FY 2004, a PMS was selected by FHWA in conjunction with the NPS for use in the PRP Program. The software selected is called the Highway Pavement Management Application (HPMA). Implementation of the pavement management system began in FY05 with a pilot in the NPS Northeast Region and a subsequent pilot in the Pacific West Region. However, RIP data was helping to identify needs and informing the regions' priority setting for the multiyear program in FY03. NPS staff expects that pavement management system information increasingly will provide decision-makers with quantified inputs in developing their annual and multi-year program of 3R projects. However, the purpose of such a system is only to provide recommendations to the process; pavement investment decisions must be made using engineering judgment within the broader context of the Park Service's mission and goals.

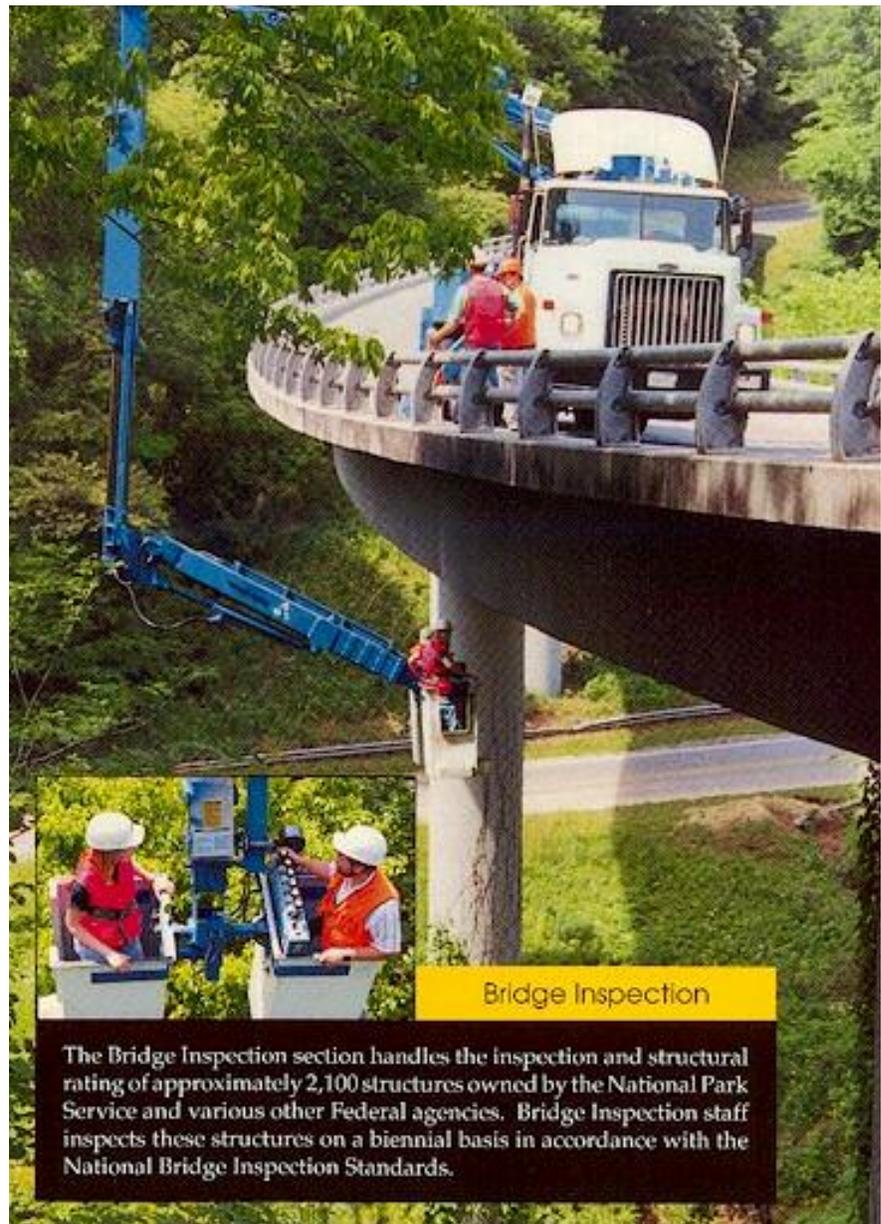
b. Bridge Management System

The bridge management system is intended to improve decision-making about the type and priority of bridge investments. It will be based on inspection data now collected as part of the Bridge Inspection Program (BIP), which is required under 23 USC 144. For more than 20 years, NPS staff has collected condition data on all bridge structures (>20 feet in length). Under this inspection program, the following occurs:

- Safety inspections are performed on public bridges and tunnels (vehicular) and nonpublic bridges (vehicular and trail), as defined and required by the

National Bridge Inspection Standards (NBIS), to ensure public safety.

- Inspection reports are produced for each structure to summarize condition and corrective action needed.
- NBIS data is provided to FHWA headquarters on an annual basis.
- In-depth field testing is performed as indicated by initial analysis to determine the bridge needs.



The advantage of the bridge management system, when fully developed, is that it will provide a basis for recommendations for optimal expenditure of funds and will identify critical needs on nationwide and regional levels. The information collected also will provide input for the preparation of rehabilitation plans and specifications and for construction support.

c. Safety Management System

Growing traffic, increasing size of vehicles, and inevitable clashes with wildlife and vehicles are just a few of the factors contributing to increased concerns for visitor and staff safety on park roads. Legislation in 1998 required the Park Service to establish a safety management system as one of the PRP Program's decision-making tools and this system will help to unify required safety activities. This system is being developed with the Federal Lands Highway Office to be compatible with, as well as part of, the DOI-wide incident management analytical reporting system, or IMARS. With this system staff can identify potential safety issues and needs and better understand the effects of road condition and design on safety.

The collection and transmission of accident data to a national database by each park forms the basis of this system. Park rangers and police are key to acquiring the accident data and understanding traffic conditions. Traffic counts are conducted as part of a national count program managed in the NPS Washington Office.

As with other management systems, the safety system is being built in stages, with the parks with the most visitation or vehicle miles of travel and/or accidents being included first. As of FY06, both traffic and accident data were available and being analyzed for some 35 parks. These parks represent 92% of accidents, 55% of visitation, and 69% of park route miles.

d. Congestion Management System

The 1998 legislation also required the development of a congestion management system, which an NPS-FLH team is doing in stages. One important assumption of this effort is that, for leisure travel in a park environment, congestion may involve other factors and user perceptions than



Buffalo crossing



Visitor crossing

those for a commuter whose primary concern is time lost in traffic. In its first stages, NPS and FLH staff are collecting basic traffic data and assessing traffic conditions, as well as visitor experience gauged from annual park surveys. At the same time, NPS Washington Office staff and Western FLH division staff are studying factors that might produce a special level of service standard for parks called the composite level of service. When completed, the study should provide a method to identify priority congestion-related projects affecting NPS and other federal land management agencies. The composite measure should also help state transportation departments that are struggling to preserve scenic byways and make them accessible to a growing number of tourists.

C. OTHER REQUIREMENTS AND PROGRAMS AFFECTING INVESTMENT DECISIONS

Other laws and directives affect the NPS approach to transportation planning and investment. Notable among these are environmental requirements that can overlap

with planning (especially at the project level) and requirements for better managing assets and incorporating life-cycle costing in budgeting processes. NPS environmental requirements are set forth in Director’s Order 12 and are discussed in Chapter VII of this document. Key issues in asset management are described below.

Sound asset management is a priority for both the Park Service and the Federal Highway Administration. During the last decade, the PRP Program investment strategy has shifted toward life-cycle asset management, with most program dollars going to system preservation rather than to new or expanded facilities. In 2004, Executive Order 13327, “Federal Real Property Asset Management,” was issued to ensure stewardship of federal property, including infrastructure, buildings, and capital equipment. The Park Service and the Federal Highway Administration, with their different missions and legislative requirements, have each been developing systems and are implementing [Executive Order 13327](#) in different ways.

The asset management system that has emerged for the PRP Program is based on improving asset condition servicewide. Projects proposed for NPS funding must show improvement in the Facility Condition Index, or FCI. This index is the total deferred maintenance divided by the replacement cost value. A lower Facility Condition Index means a better condition of the asset. In 2006 the NPS National Capital Region was the only one of the seven NPS regions that had a Facility Condition Index of less than .08 for their paved roads, which indicates generally

good road condition. As shown in table V.1 below, all other regions’ FCI ratings were in the fair or poor range. Even with concentrating funding on 3R improvements, conditions are not expected to improve much by FY09. Although, with current funding levels, roads in the Alaska region also are expected to be in generally good condition. It should be noted that the table only reflects data on road pavement and does not include culverts, walls, embankments, and other features that make up a value that often far exceeds the cost and value of the pavement.

Another means of considering road condition is information developed through the pavement management system (PMS), described previously. A pavement condition rating (PCR) is one important measure from the pavement management system. As indicated in figure V.2, this data also indicates that the immediate future does not look better. Even with a 29% increase in funding from SAFETEA-LU over the prior authorization, the projected road condition in FY09—the end of the current authorization of SAFETEA-LU—will not come close to the NPS goal set in 2002 of 85% of roads in good condition. In fact, PMS data show that road conditions are once again projected to decline due in part to the high rate of inflation in the 2004–2007 period.

Figure V.2—Estimated Road Pavement Conditions FY2009

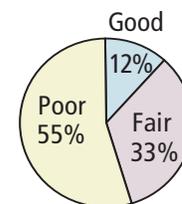


Table V.1. FCI Levels per NPS Region

Region		FY 2006 Actual	FY 2007 Planned	FY 2008 Planned	FY 2009 Planned
	Asset Type*				
Alaska	Paved roads and structures	0.13	0.09	0.05	0.01
Intermountain	Paved roads and structures	0.24	0.24	0.23	0.22
Midwest	Paved roads and structures	0.23	0.22	0.21	0.20
National Capital	Paved roads and structures	0.07	0.06	0.06	0.05
Northeast	Paved roads and structures	0.30	0.29	0.28	0.28
Pacific West	Paved roads and structures	0.25	0.24	0.23	0.23
Southeast	Paved roads and structures	0.16	0.16	0.15	0.14
Servicewide	Paved roads and structures	0.21	0.20	0.19	0.19

* Paved roads and structures includes paved roads, paved parking areas, bridges, and tunnels.

Table V.2. PCR and FCI Comparison

PCR Range	Corresponding FCI Range	Qualitative Descriptor
85 ≤ PCR ≤ 100	0.08 ≥ FCI ≥ 0	Good
60 < PCR < 85	0.20 ≥ FCI ≥ 0.09	Fair
PCR ≤ 60	FCI ≥ 0.21	Poor

Although FCI and PCR measures represent different ways of assessing road condition, FHWA analysis shows that results generally can be compared. This relationship is shown in table V.2. The projected NPS-wide average Facility Condition Index of 0.19 for 2009 hovers on the border of fair and poor, which is consistent, but not equivalent to the PCR projection.

The NPS Facility Management Software System (FMSS) tracks inventory and condition for the key eight industry standard infrastructure assets applicable to the National Park Service, including roads. By comparison with the other seven infrastructure assets, FMSS analysis shows that most deferred maintenance in the national park system is in roads and bridges.

For more information on asset management in parks or regions, contact the appropriate Regional FLHP Coordinator.

¹³ Park or park unit refers to the about 390 national park system properties, such as national parks, seashores, monuments, trails, historic sites, battlefields, etc.

¹⁴ This section is largely excerpted from The National Park Service, Transportation Planning Guidebook (1999). This publication provides an in-depth view, with case examples, of the NPS and US DOT planning requirements and how park units and regions can benefit from these processes. It is available at: <<http://www.nps.gov/transportation/alt/nptg.html>>. Although it is somewhat out of date due to new laws, it continues to be an excellent resource for considering how and what to do in planning for transportation in park units. Key issues described in the guidebook that were changed by legislation in 2005 are updated in this chapter. The most important one is that transportation plans and improvement programs involving federal transportation dollars are now required to be updated at least every four years.

¹⁵ The two predecessor acts establishing these requirements were the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991 and the Transportation Equity Act of the 21st Century of 1998 (TEA-21). These acts modify the highway and transit titles of the United States Code. Those sections affecting transportation planning and funding of the PRP Program and other applicable road and transit programs are found in Chapter 1 of Title 23 and Chapter 5300 of Title 49. Uniform planning requirements for both highways and transit were established by ISTEA. To obtain copies of the law, see <<http://www.fhwa.dot.gov/legsregs/legislat.html>>, or see Appendix C of this guideline for key provisions.

¹⁶ Planning provisions also are being considered by the two departments for the Alternative Transportation in Parks and Public Lands Program, which was established in SAFETEA-LU and codified in 49 USC 5320.

¹⁷ This chapter was written when several key planning issues and procedures were under consideration by the National Park Service and the Federal Highway Administration.