The National Park Service

Transportation Planning Guidebook

NATIONAL PARK SERVICE

DEPARTMENT OF THE INTERIOR

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THE INTERIOR

Letter from the Director

The mission of the National Park Service is to preserve the precious lands in our care and to provide for the enjoyment of those lands in a manner that will leave them unimpaired for future generations. Planning and developing sustainable, environmentally sensitive roads and transportation systems is central to fulfilling that mission.

The history of the National Park System is inextricably linked to transportation systems. In the early part of this century, the great railroads promoted parks in order to entice tourists to travel out west. Magnificent scenic roads and parkways, designed in partnership with the Federal Highway Administration, have been central to defining visitor experiences over the past one hundred years. Park planners, landscape architects and engineers have designed and built roads and bridges that harmonize with the environment and provide views of and access to our extraordinary natural and cultural resources.

As visitation to the parks continues to increase dramatically, so too does the challenge of ensuring resource protection while accommodating visitors and providing meaningful and enjoyable experiences for them. We cannot simply build and widen roads and parking lots. We must find sustainable transportation alternatives that preserve the resources in our care and work with partners and gateway communities on long-term integrated transportation plans. Creative transportation solutions often lie outside park boundaries.

The Transportation Equity Act for the 21st Century (known as TEA-21) was signed by President Clinton on June 9, 1998. This comprehensive legislation charts the course for transportation policy nationwide and has critical implications for the National Park Service. In addition to providing funds for park roads, transit, trails, historic sites, scenic byways and heritage areas, TEA-21 provides the framework for working with new partners on transportation systems. This guidebook is intended to help you understand how to work within that framework to solve transportation problems and create new opportunities. Of course, it is also important that you refer to NPS Management policies, which are currently being updated, during your transportation planning efforts.

Many park managers have already begun to grapple with increasingly complex transportation challenges. An important purpose of this guidebook is to share their experiences with other park managers who may be facing similar challenges. In addition, NPS partnership programs have been enormously successful in working with state and local governments and citizens groups to obtain transportation funding for trails and heritage areas. There is much to be learned from those successes.

I believe that as we move forward into the next century, some of the greatest threats to National Parks will come from encroaching development and activities outside of park boundaries. For that reason, our ability to understand transportation planning and laws is vital to our success as park managers. I extend my thanks and gratitude to all National Park Service staff who contributed to this guidebook. I encourage park managers to look at this volume as a phonebook. Each of you has valuable experiences to share with your colleagues and I encourage you to do so.

Robert Stanton
Director

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Why We Care About Transportation

The National Park Service has long realized the importance of sensitive design in planning transportation facilities. This concern was stated by Director Mather in 1918:

> *"In the construction of roads, trails, buildings, and other improvements, particular attention must be devoted always to the harmonizing of these improvements with the landscape."*

The NPS continues to implement this policy. All of our design and planning efforts are directed to ensuring that facilities lie lightly on the land and enhance the experience of our visitors. Transportation is an integral, defining feature of the national park experience, and a means by which the park mission of protecting resources for the enjoyment of future generations can be realized.

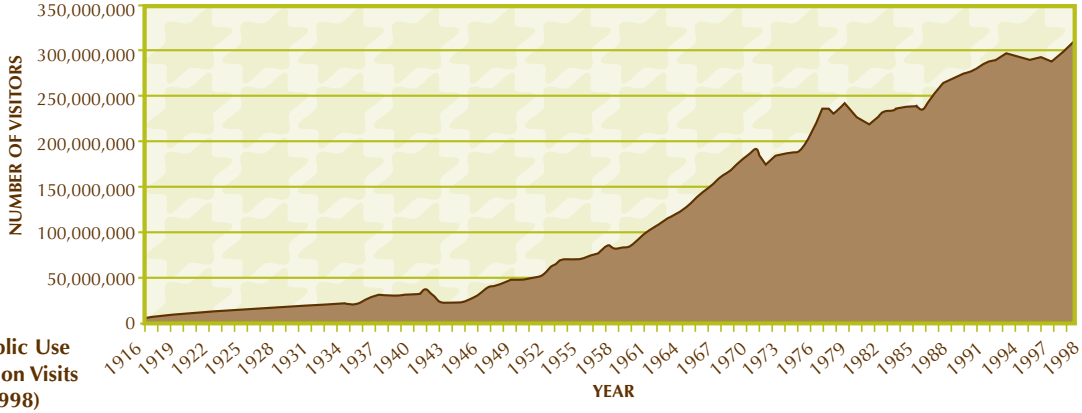
Much has changed in the past 80 years. Parks* have become so popular and so readily accessible that many park roads are inundated with increasingly long lines of vehicles. Many NPS facilities and infrastructure are stretched to their limits. Congestion and its accompanying pollution threatens to degrade the visitor experience as well as the priceless natural and cultural resources that have been so carefully preserved.

This means that alternative modes of transportation must be explored to provide access and a quality visitor experience, without adversely impacting our resources and the "traditional" visitor experience. In this era of unprecedented park visitation, new strategies must be explored to address the new challenges.

Visits to our national parks have risen from a few hundred thousand visits per year in the early 1900s to well in excess of 280 million recreation visits in 1998; the equivalent of a visit from every United States resident to a national park unit each year. This tremendous growth in visitation has created pressures on the NPS to respond with infrastructure improvements and resource protection measures.

Most visitors come to parks by automobile. The increasing number of vehicles have stretched some roadways beyond their limits, causing a deterioration of facilities that exceeds our ability to repair and replace them. The effects can be seen in potholes, deteriorating bridges, and other dilapidated features. Visitor parking areas at some of our major

* For the purpose of this guidebook, the terms "unit," "park unit," "park," and "park area" will be used interchangeably. The definition includes National Heritage Areas, National Historic Areas and Sites, National and Scenic Trails, Wild and Scenic Rivers, National Monuments and other affiliated areas and programs.



NPS Public Use Recreation Visits (1916-1998)

SOURCE: NPS Public Use Statistics Office

parks are routinely over-capacity. Cars and buses spill onto roadside shoulders and into vegetated areas. Air quality is compromised and natural resources are degraded. Noise and congestion create frustration for park visitors, and diminish their experience. In short, continued growth in visitation may threaten significant park resources and the ability of visitors to enjoy themselves. Yet there are alternative strategies, such as shuttle bus systems, transit loops, walking trails and articulated trams, that work well in parks where they are being used.

The intensive use of park resources is seen every summer day in places like Yosemite and the Grand Canyon. Given the limitations on funding and technical assistance, park managers have been hard-pressed to come up with appropriate solutions to address the capacity constraints being faced by many of our parks. Proposed solutions for alternative transportation systems often require training and specialized expertise for NPS personnel, and the enlistment of outside specialists.

Recognizing the need for the NPS to draw upon transportation specialists, an agreement was reached between the Department of the Interior and the Department of Transportation in the fall of 1997. This agreement sets forth goals and strategies for establishing a mutually beneficial relationship to improve transportation in and around NPS facilities.

Passage of the Transportation Equity Act for the 21st Century (TEA-21) in the summer of 1998, offers the NPS additional opportunities to address our transportation needs. This Guidebook helps NPS park managers, staff and partners to share their experiences, expand their knowledge about sources of funding within TEA-21, and provides guidance on what to do, how to go about it, and who to contact in all phases of transportation planning and design.

Chapter 1

NPS Planning Policy and Transportation Planning

NPS management policies are explicitly aimed at protecting park resources and values, and are a vital component of all aspects of the park and transportation planning processes. While it would be impossible to accommodate a reasonable level of public use and enjoyment of the parks without causing at least some degree of adverse impact on a park's physical resources or values, NPS must take all practicable steps to avoid or mitigate those impacts. This means parks must engage in a comprehensive, inter-disciplinary planning process. The result should be sustainable transportation systems that will define the quality and integrity of the our parks into the next century.

To comply with NPS policy, transportation facilities will be constructed only as and where necessary, to provide access for the protection, use, and enjoyment of park resources. They should be planned to preserve the integrity of the surroundings, respect ecological processes, protect park resources, provide the highest visual quality, and meet engineering and safety standards to ensure a rewarding visitor experience. NPS policy also requires that we look beyond park boundaries and take into account the way park transportation planning is linked with regional transportation planning.

NPS Policy: Where do I start?

Before embarking on the planning process, it is important to know why we plan. First and foremost, we plan to make effective and efficient decisions to carry out the NPS Mission:

> *"The National Park Service preserves unimpaired the natural and cultural resources and values of the national park system for the enjoyment, education, and inspiration of this and future generations. The Park Service cooperates with partners to extend the benefits of natural and cultural resource conservation and outdoor recreation throughout this country and the world."*
>
> National Park Service Strategic Plan, 1997

The Mission provides an overarching policy for everything we do. Beyond the mission statement and enabling legislation, NPS policy is guided by service-wide policy directives, including:

1. **Management Policies:** The 1988 NPS Management Policies (Chapter 9) address transportation under "Access and Circulation Systems." Those policies are currently in the process of being updated for release in early 2000.
2. **Director's Orders:** Provide a comprehensive planning framework for all NPS decision-making.
3. **Handbooks and References:** Provide direction, instruction and advice on solving transportation challenges.

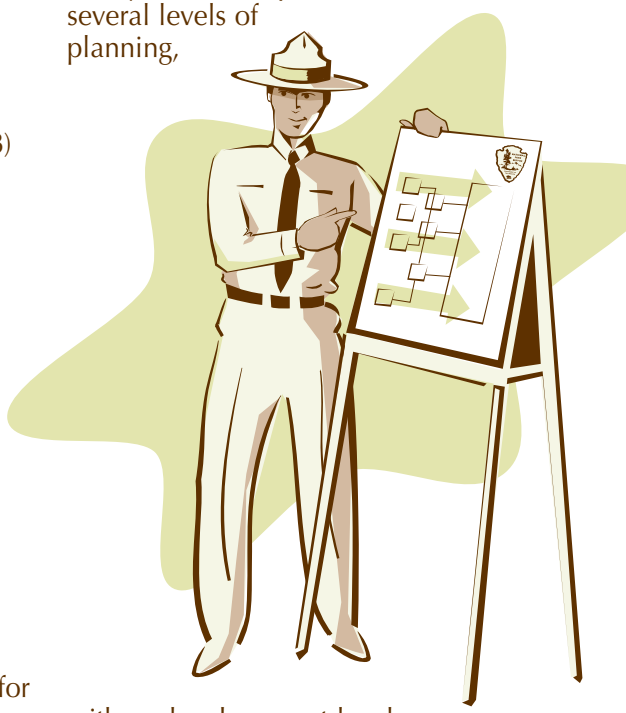
In addition, NPS must follow legislative and administrative mandates, including:

- Antiquities Act (1906)
- Organic Act (1916)
- Wilderness Act (1964)
- National Trails System Act (1968)
- Wild and Scenic Rivers Act (1968)
- National Environmental Policy Act (1969)
- National Historic Preservation Act (1978)
- National Parks and Recreation Act (1978)
- Government Performance and Results Act (1993)
- National Park Service Strategic Plan (1997)
- Park specific mandates and missions in their enabling legislation
- Other applicable legislation, mandates and policies

These documents form the context for National Park Service planning and operations.

NPS Planning Framework

Planning is the link that ties day-to-day decision-making to a park's vision and long-term goals. Planning decisions flow from the specific legislation that governs individual park units and the mission of the NPS. The NPS planning process is outlined in *Director's Order 2: Director's Order on Park Planning (DO-2)* and its companion document, the *Planner's Sourcebook*, which describes the NPS planning process in complete detail. DO-2 lays out a comprehensive approach to planning how resources, visitors, and facilities will be managed to carry out the NPS's mission and the missions of individual parks, using logic, analysis, public involvement and accountability at each step. DO-2 defines several levels of planning,



with each subsequent level becoming increasingly detailed. Four primary tools are used in this process:

1. General Management Plans
2. Strategic Plans
3. Implementation Plans
4. Annual Performance Plans

Each stage of the planning process involves a specific level of decision-making. But at each stage the focus should be on: **Why** we are planning; **What** we want to achieve; and **How** we expect to meet the articulated goals.

- The **Why** focuses on legal requirements, mandates, and most important, vision. The time frame is on-going.
- The **What** focuses on the transportation conditions we want to

achieve. It deals with the intended outcomes of an action and on achieving results to move toward the vision. The time frame is long-term.

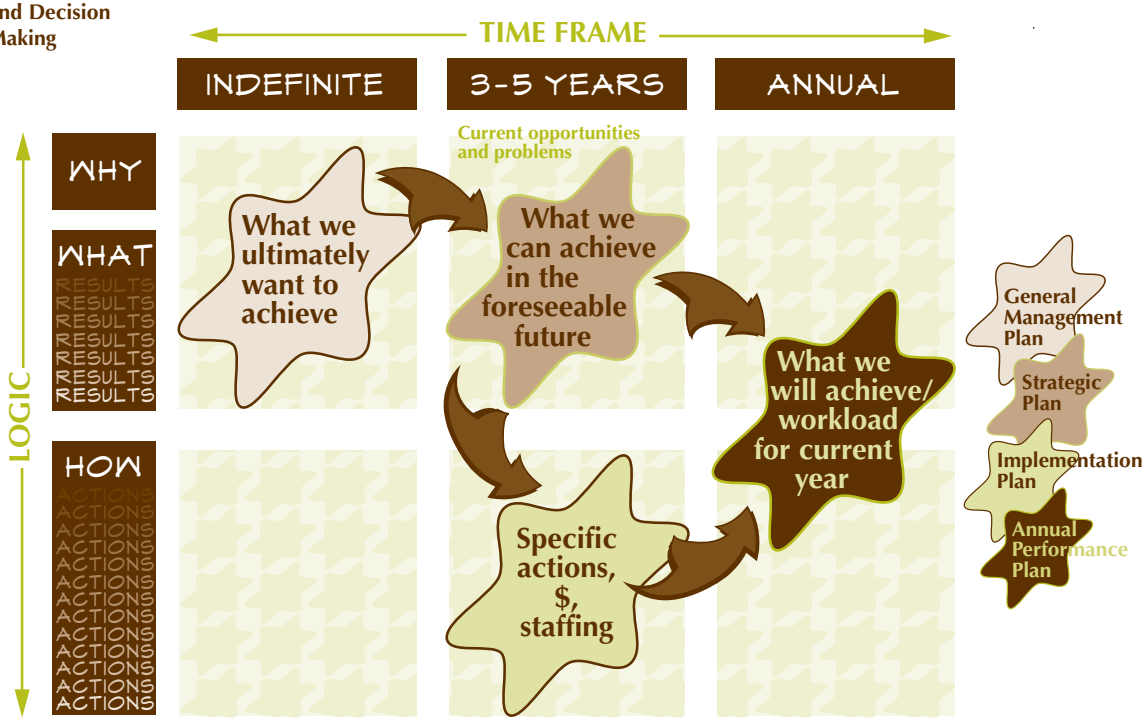
- The **How** deals with approaches for reaching these desired conditions, using the transportation options available. The focus is on types of actions and tools to achieve results toward the vision. The time frame is near-term.

Transportation and the NPS Planning Process

Transportation defines many important aspects of the park visitor's experience, from the choice of attractions to view, to where to stay and how long to visit. Transportation planning is a process that can be used to steer visitors from highly sensitive areas to areas that can sustain higher volumes of traffic. Each park unit, area and trail has unique transportation challenges, such as roadway congestion, overflowing parking areas, the poor condition of infrastructure and limited funding for improvements, to name just a few. Usually, there are no quick or easy answers. Successful solutions emerge over time, through implementation of a carefully-designed plan that has widespread acceptance.

Each of the four NPS Planning Elements (General Management Plan, Strategic Plan, Implementation Plan and Annual Performance Plan) work

Framework of Park Planning and Decision Making



together to create an integrated park planning framework that is meant to:

- Provide a logical rationale for decisions, one in which specific actions can be traced back to a park's mandate and the broader needs of the public;
- Allow for adaptability and creativity within the set of agreed-upon goals;
- Reduce duplication of effort and the potential for contradictory decisions when work is proceeding on a number of plans and projects.

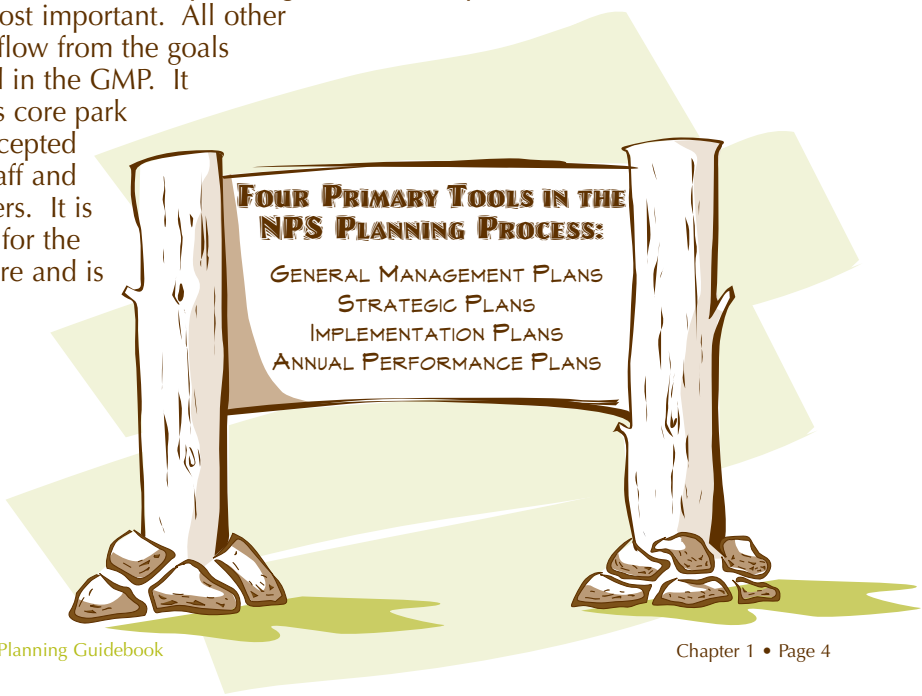
This process is not always linear; opportunities may arise that require immediate attention. Components may be missing or be out of sequence, but eventually the cycle will be completed.

The General Management Plan

Transportation planning for national park units begins with comprehensive management planning. The General Management Plan (GMP) defines transportation-related challenges. It is the broadest level of NPS planning, and the most important. All other decisions flow from the goals articulated in the GMP. It establishes core park values, accepted by park staff and stakeholders. It is the vision for the park's future and is concerned more with goals than with details. As a conceptual plan, the GMP should clearly define the desired future resource conditions and visitor experiences envisioned for the park. The planning horizon for a GMP is 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.)

GMPs are developed through the efforts of a multidisciplinary team. For instance, if your park has significant transportation issues, a Federal Lands Highway transportation planner, or a transportation expert from a local or state transportation agency should be involved in the GMP process. Transportation considerations for a GMP include:

- Legislation relating to transportation in your park;
- How transportation serves the park's purpose and significance;
- How park resources relate to



transportation systems and facilities;

- The role transportation plays in protecting these resources;
- The way transportation systems and facilities reinforce the visitor experience and sense of place envisioned over 20 years;
- The transportation issues occurring outside the park that need to be considered;
- The types of transportation facilities and services needed to support the vision; and
- Staffing and long-term operational needs to support transportation systems.

GMPs provide a forum for involving the public and serve to document that the environmental consequences of our park management decisions are carefully considered. Remember that there are legal requirements associated with GMPs.

Environmental clearances and public involvement provisions must be met. The National Environmental Policy Act (NEPA) and National Historic Preservation Act (NHPA) detail the requirements for considering impacts on natural, cultural, and socio-economic environments. An integral part of park planning is evaluating the impacts of alternatives on natural and cultural resources and socio-economic conditions in and around the park. NPS seeks to provide leadership by example in environmental planning and conservation of cultural resources. Transportation projects within and around parks require a careful evaluation of potential impacts on natural and cultural resources.

"Once you create a vision, it commits you to certain actions for the future..."

GMPs establish a basic philosophy and direction for park management, and a framework for future actions. The GMP provides a general overview of desired future conditions and the types of management actions and visitor experiences that are appropriate. Detailed plans for specific actions are "tiered" from the more general planning at the GMP level. Once completed, the GMP should provide an ongoing point of reference for decision-making. This was accomplished at **Grand Canyon National Park** with the appointment of an Implementation Team, or "I-Team," by Superintendent Rob Arnberger. The I-Team's mission is to focus exclusively on implementing the GMP. Superintendent Arnberger states, "Once you create a vision, it commits you to certain actions for the future. It is very important to communicate this message to your staff." He emphasized this point, telling his staff, "The GMP doesn't sit on a shelf collecting dust. There is nothing we do at the park that doesn't relate back to the GMP vision."

The Strategic Plan

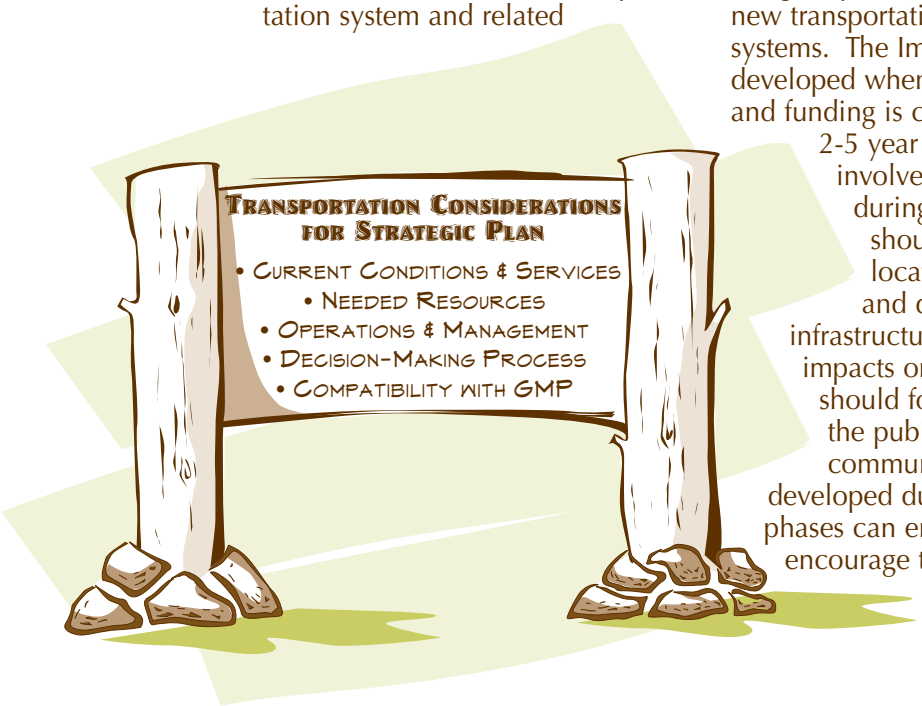
Strategic Plans are required by the Government Performance and Results

Act of 1993 (GPRA) and are designed to integrate programs and set priorities for the foreseeable future (3-5 years). Strategic Plans are developed according to an eight-step performance management process developed by the NPS for GPRA compliance. Components include:

- Description of the operational processes and resources required to meet the GMP goals;
- Identification of key factors, external to the park, that could significantly affect the achievement of general goals (including land use, economic development, and transportation projects and plans that may affect visitation and access to and within the parks);
- Resource assessment, including a description of the condition of the park's infrastructure.

Transportation considerations include:

- Current condition of the transportation system and related facilities and services within the park boundaries;
- Current services that provide access to the park;
- Transportation facilities, services, or other resources needed to achieve the park's mission and long-term goals;
- Transportation operations and management processes;
- Decision-making processes (including transportation, land use, and economic development) occurring outside the NPS boundaries;
- Compatibility of the transportation-related actions proposed in the Strategic Plan with management prescriptions in the General Management Plan.



The Implementation Plan

Project planning and development involves decisions on the location, design, operation and maintenance of new transportation services and systems. The Implementation Plan is developed when action is imminent and funding is committed within a 2-5 year period. Public involvement and partnering during project planning should ensure that the locations of new roadways and design of new infrastructure will minimize impacts on resources. It also should foster acceptance by the public and local communities. Relationships developed during the planning phases can energize partners, and encourage them to take on roles in marketing,

operating, or maintaining a project or service. Typically, the Implementation Plan:

- Specifies immediate or near-term actions to achieve long-term goals adopted in GMP and Strategic Plan;
- Is developed when action is imminent and funding is committed within a 2-5 year period;
- Requires a greater level of detail and analysis than the GMP or Strategic Plan;
- Focuses on ways to implement transportation projects to achieve long-term goals;
- Consists of transportation infrastructure development and improvement projects that will likely require formal environmental analysis of alternatives (ideally begun during the GMP process).

PROFOUND DECISIONS, COMPLEX TRADE-OFFS

Yosemite National Park is currently developing a comprehensive plan for the Yosemite Valley. NPS has established unequivocally that natural resource preservation will be the most important consideration in developing the plan. This does not imply that we expect to restore the Valley to its original conditions—we are striving to protect a natural system. What it does mean is that each decision will be looked at individually and no decision will be made that does not fully weigh its impact on the Valley's highly sensitive natural resources or the significant cultural resources that constitute our heritage.

In most instances those goals are complementary. After all, at the most visceral level, it is the park's beauty and its natural and cultural resources that attract visitors. Compromising those resources would, by definition, compromise the visitor experience. Nevertheless, for much of this century, development and use patterns in the Valley—cars and their supporting infrastructure, in particular—have degraded the park's natural resources and set up conflicts between perceived visitor benefits and natural resource protection.

Traffic congestion exists in Yosemite approximately 100 days of the year. This problem needs to be addressed in order to provide a high quality experience for visitors; to improve air quality; and to reduce resource degradation, such as compaction from off-road parking.

Continued on next page

While reducing traffic congestion is important, lessening the impacts of the transportation infrastructure is even more important for the preservation of natural resources. Much of the park's transportation infrastructure—roads, parking areas, and bridges—is placed so that it degrades the very resources NPS is supposed to be protecting. Roads run through meadows; parking areas cut off riparian sectors; and some bridges are constructed so that they constrict a river. These conditions exist year-round. The reduction and relocation of transportation infrastructure is an important element of the Valley plan. But this relocation must be done in a manner that protects park resources.

As part of this effort, NPS will determine the Valley's most sensitive and critical natural resource areas. Of particular importance are resources that are fragile, rare, or critical in maintaining biological diversity and an intact system. Recent studies confirm that the main component of the Yosemite Valley ecosystem is the Merced River. Its related tributaries, wetlands, meadows, and riparian habitat, and the rich soils and vegetation associated with these areas are absolutely crucial for maintaining the natural processes in the Valley. Studies have also shown that the California black oaks' acorns are a key source of food for Valley wild-life. Yet it is these very resources within the ecosystem that are shrinking.

This information and input from staff in all divisions of the park was used to develop a "highly valued resources" map that identifies sensitive areas within the Valley. This map is an important tool that allows park managers to more precisely determine the tradeoffs for alternative land use decisions, including the layout of the transportation system.

This approach—developing "overlays" of key resources—is also effective for other park activities. Using the best available data to identify the most sensitive resource areas enables the development of park plans that ensure the highest degree of resource protection.

For additional information on planning efforts at Yosemite National Park contact: **Russell Galipeau,** *Chief of Resource Management,* **(209) 372-0472**, or **Chip Jenkins,** *Chief of Strategic Planning,* **(209) 372-0288**.

The Annual Performance Plan

Annual Performance Plans for each park are also required under GPRA. These plans set work goals and objectives for the coming year, and identify funding sources and staff requirements. The Annual Performance Plan provides a logical and trackable rationale for decision-making at the operational level. This allows for long-term consistency in planning and the flexibility to deal with specific issues. Annual Performance Plans should contain:

- Annual performance goals that identify the outcomes expected in the current fiscal year;
- An annual work plan, detailing how goals will be achieved;
- Linkages to budget formulation and executive budget documents.

In addition to the Annual Performance Plan, an Annual Performance Report documents progress in meeting the previous year's goals.

Transportation issues addressed in the Annual Performance Plan are limited to activities and budget items identified for that fiscal year. Many transportation projects, such as implementing a visitor transportation system or completing a trail network, may take several years of incremental progress before being completely achieved.

For additional information and technical support on NPS planning Processes and policies, contact the planning program leaders in your region:

- ALASKA:
  Lucy Gonyea
  Chief, Planning, Design & Maintenance
  (907) 257-2655

- INTERMOUNTAIN:
  Wayne Gardner
  Chief, Planning, & Environmental Quality
  (303) 969-2833

- MIDWEST:
  Sandra Washington
  Planning Program Leader
  (402) 221-3351

- NATIONAL CAPITAL:
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- NORTHEAST:
  Sarah Peskin
  Program Manager, Planning & Legislation
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  Program Manager, Park Planning & Special Studies
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  Kevin Percival
  Transportation Design Specialist
  (303) 969-2429

  Mike Spratt
  Alternative Transportation Program Project Manager
  (303) 969-2248

FOR ADDITIONAL INFORMATION ON PLANNING EFFORTS AT GRAND CANYON NATIONAL PARK, CONTACT:

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Superintendent of Grand Canyon
(520) 638-7945

Brad Traver
Manager of the GMP Implementation Team
(520) 774-1239

PARK PLANNING PUBLICATIONS:
Park Planning—Director's Order 2, The Planner's Sourcebook, and *NPS National Environmental Policy Act Guideline (NPS-12)* are available via the Internet at:
http://www.nps.gov/planning/

National Park Service, *Park Road Standards,* 1984

Chapter 2

Finding Your Way Through the TEA-21 Transportation Planning Process

The New Planning Framework

The Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) and its successor, the Transportation Equity Act of the 21st Century (TEA-21), provide a new institutional framework that integrates local, regional and statewide transportation decision-making. The purpose of TEA-21 is to allocate federal funding for transportation projects, based on a comprehensive and coordinated set of metropolitan and statewide transportation policy plans and project programs.

The department of transportation in each state is responsible for setting transportation policy with regard to future projects and funding decisions. Local governments advise their state on policy direction, either through their representatives in the Metropolitan Planning Organization (MPO), or in the case of rural communities, through direct participation in the statewide transportation planning process. Projects affecting local communities are defined at the local level; those involving larger jurisdictions are defined and developed in partnership with affected political jurisdictions and the state department of transportation.

The Promise of TEA-21

In June 1998, President Clinton signed TEA-21. TEA-21 amends Titles 23 and 49 of United States Code, the legislative authority for Federal Highway Administration and Federal Transit Administration programs, respectively. These amendments give the NPS increased responsibilities in the area of transportation planning. TEA-21 greatly increases funding opportunities within the NPS Park Roads and Parkways program, and through numerous high priority program projects at NPS sites. TEA-21 expands the role of federal land managing agencies, including the National Park Service, in metropolitan and statewide transportation planning and requires the Park Roads and Parkways program Transportation Improvement Program (PRP TIP) to be included in appropriate state and metropolitan planning organization plans and programs.

Participation in these processes will enable NPS units to bring their transportation plans to transportation officials who make funding decisions at the statewide and metropolitan level. For example, a state, in carrying out its statewide transportation planning responsibilities, will consider the concerns of federal land management agencies and Indian tribal governments that have jurisdiction over lands within state boundaries. Additionally, where a metropolitan planning area includes federal public lands or tribal lands, the affected federal agencies or tribal

governments will be involved in the development of regional transportation plans and programs. This provides NPS with greater opportunities to partner with states and local governments on transportation projects, since funds from the Federal Lands Highway Program (FLHP) can now be used as the local match on a number of federally-funded transportation programs.

Who Are the Players?

Metropolitan and statewide transportation planning processes include participation of state, local, and federal agencies, transportation providers, tribal governments, the general public and interest groups. Federal land management agencies, including representatives of affected tribal governments and national parklands, are also required participants in transportation planning. Some of the major players are:

- ***State Departments of Transportation.*** State departments of transportation (DOTs) are the key government agencies responsible for transportation planning and funding. State DOTs set transportation policy and make transportation program and project funding decisions.
- ***Transportation Providers.*** Statewide and metropolitan transportation planning agencies frequently coordinate transportation services to maximize the efficiency of the transportation system. Private, non-profit, and public sector transportation providers, such as bus operators, shuttle services and transit operators, have an influence on plans, projects, and programs that affect them.
- ***Metropolitan Planning Organizations,*** or MPOs, are planning bodies with responsibility for making transportation decisions and developing transportation services in urban areas with populations of more than 50,000. The MPO policy board membership is created in an agreement between the governor and local governments. Membership generally includes local elected officials, officials of agencies that administer or operate major modes or systems of transportation, and appropriate state officials. MPOs provide a

forum for transportation decision-making at the local level, develop transportation plans and programs, conduct transportation studies for specific corridors, and work with the state and transportation providers to develop transportation projects. For NPS sites within a metropolitan area, the focus of their influence will be in this area. Decisions made by the MPO are coordinated with the state and integrated into statewide transportation plans and programs. Most funding is allocated to projects at the statewide level; however MPOs are beneficiaries of federal planning money. For NPS sites that lie outside the jurisdiction of a MPO, the focus will be at the statewide transportation planning level.

- ***Indian Tribal Governments.*** Indian tribal governments that have jurisdiction over lands within the boundaries of a given state or metropolitan planning area need to be involved in the process in order to ensure that their concerns are incorporated into the planning process.
- ***The Public.*** All statewide and metropolitan transportation planning processes include public involvement. All transportation plans, programs and projects using federal funding require public involvement.

The Issue of Air Quality Conformity

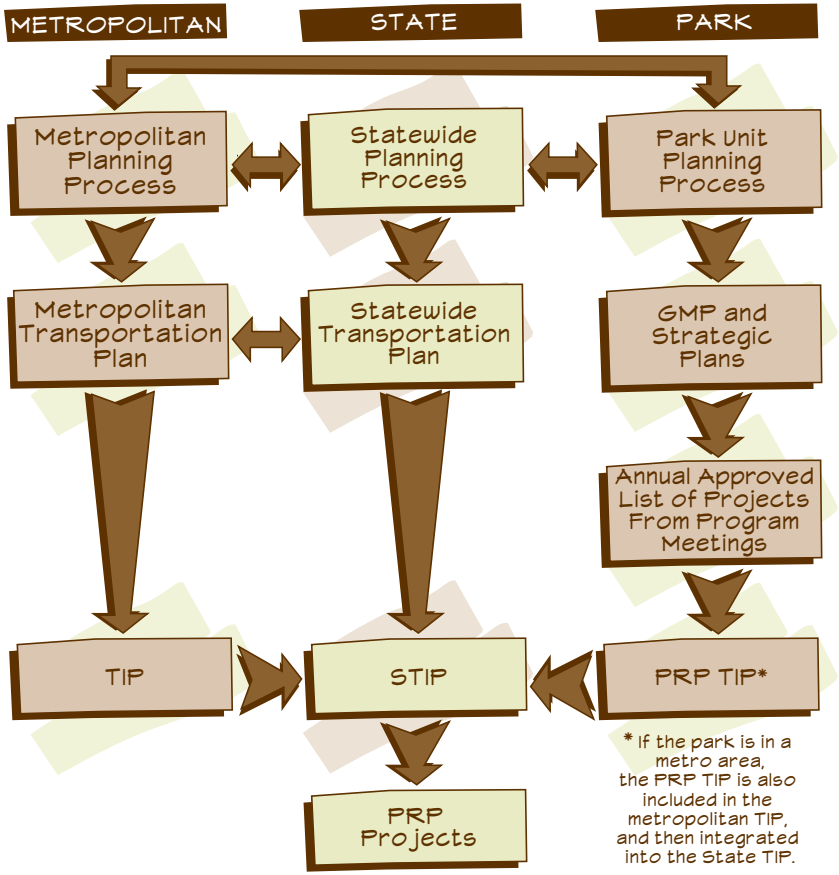
TEA-21 requires the integration of transportation and air quality planning in areas that fail to meet National Ambient Air Quality Standards (NAAQS) under the Clean Air Act Amendments of 1990. The four transportation-related pollutants are ozone, carbon monoxide, nitrogen dioxide and particulate matter. EPA classifies areas as being in "non-attainment" when they fail to meet EPA standards for one or more transportation-related air pollutant.

MPOs and states have specific responsibilities to bring non-attainment areas into compliance with EPA clean air standards. In general, transportation plans and programs in non-attainment areas must demonstrate a commitment to reducing motor vehicle use and emissions, the dominant source of transportation-related air pollutants. That is, plans and programs may not worsen air quality conditions. Similarly, they cannot delay the clean air conformity schedule. "Maintenance" areas are previously designated non-attainment areas which have subsequently been redesignated by the EPA as meeting clean air standards. (Maintenance areas are still required to submit "maintenance plans" to the EPA, which contain projects and programs designed to maintain their attainment status.)

How It Fits Together: Products of the Transportation Planning Process

NPS transportation projects should originate as project concepts from the General Management Plan, and be linked, to the extent possible, with local land use and transportation planning. Local coalitions developed by parks during the planning process can add the political will needed to influence decision-making by Metropolitan Planning Organizations (MPOs) and statewide transportation planning agencies. Parks that have no adjacent community should partner with adjacent landowners, environmental groups and non-profit agencies. MPOs set transportation policy for their areas and assign priorities for funding projects. Thus, solid relationships with regional (MPO) and statewide transportation agencies are crucial for state and federal project funding.

The federal transportation planning process is described in the following schematic:



Metropolitan and Statewide Transportation Planning Process Under TEA-21

TIPs and STIPs: What's it all about?

The Transportation Improvement Program (TIP)

Each state and metropolitan area must develop a Transportation Improvement Program (TIP), which is a prioritized list of transportation projects covering at least a three-year period. MPOs take the lead in planning and producing TIPs for metropolitan areas. States are responsible for state TIPs. TIPs are also developed by federal land management agencies. Each TIP must identify public and private resources that are expected to be available to carry out the proposed projects. The TIP includes only those projects expected to have full funding within the anticipated time period for project completion. However, TIPs may include an "illustrative" list that includes additional projects that would be included if additional resources were available. The TIP is updated at least every two years to incorporate changes in project priority and status.

In addition to TIPs, each state and metropolitan area must develop a long-range plan that includes the facilities and programs needed to address transportation needs within the area over a 20-year period. Long range plans provide the policy framework for project decisions. TEA-21 requires that each state or MPO planning process consider seven broad planning areas:

1. *Economic vitality* of the state or metropolitan area;
2. *safety and security* of the transportation system for users;
3. *accessibility and mobility*;
4. *protection and enhancement* of the environment;
5. *integration and connectivity* of the transportation system;
6. *efficiency* in system management and operation; and,
7. *preservation* of the existing transportation system.

In metropolitan areas, the total cost of project plans and programs cannot exceed reasonable estimates of available transportation revenues over the life of the plan and program and must meet air quality targets established by the Environmental Protection Agency (EPA). Likewise, the total cost of projects in STIPs cannot exceed reasonable estimates of available transportation revenues over the life of the program, and projects must meet EPA air quality targets.

The Statewide Transportation Improvement Program (STIP)

The Statewide Transportation Improvement Program (STIP) is a staged, multi-year, intermodal program of transportation projects that is consistent with the statewide and metropolitan long-range plans and the Transportation Improvement Program (TIP) planning processes. The STIP includes all federally-funded projects prioritized over a three-year period. It also contains all regionally-significant transportation projects, even if federal transportation funds are not used for their construction. Included in the STIP are Park Roads and Parkways program (PRP) projects from non-metropolitan areas. Metropolitan TIPs, including all appropriate PRP projects, are rolled

into STIPs. (See Sidebar on Other Types of TIPs.) States submit the entire proposed STIP to the Federal Highway Administration (FHWA) and Federal Transit Administration (FTA) for joint approval at least every two years; amendments can be submitted at any time.

Transportation Projects

Transportation planners use a variety of decision-making tools to ensure that transportation investments meet local, state and federal transportation needs and priorities.

Complying with the National Environmental Policy Act

All federally-funded highway and transit projects are required to undergo one of three levels of environmental review:

- **Categorical Exclusions.** Most proposed projects do not undergo detailed review because they fall into a category that has a blanket exemption. For example, an exclusion from NEPA exists for basic repairs to existing roads or bus replacement.
- **Environmental Assessment.** For projects not subject to a categorical exclusion, a scan of effects, called an "environmental assessment," is performed. Most assessments turn up few negative effects, and the project proceeds. If there is no significant impact, a Finding of No Significant Impact (FONSI) is issued and the project proceeds.
- **Environmental Impact Statement.** If an environmental assessment finds significant effects, the project sponsor must prepare an Environmental Impact Statement (EIS). Before analysis begins, the sponsor must define the "purpose and need" of the project and look for alternative ways to achieve it.

When the analysis is completed, the sponsor releases a draft EIS that identifies one option as the "preferred alternative." The draft EIS is sent to the U.S. Department of Transportation and other federal agencies and the public for comment. After comments are received, a full EIS is prepared and the U.S. Department of Transportation can approve the project, ask for a rewrite of the EIS to better reflect its impacts, or ask for changes to reduce its impacts. No project can proceed until it receives this final federal approval, called a "record of decision."

Other Types of TIPs

Metropolitan TIPs

Metropolitan TIPs are similar in purpose and scope to the STIP. They are staged, multi-year, intermodal programs of transportation projects in the metropolitan area which are consistent with the metropolitan long-range plan. Metropolitan TIPs include a three-year list of project priorities for the MPO that is normally updated every two years to accommodate changes in the program, including but not limited to additions or deletions of regionally-significant projects. Projects from the Park Roads and Parkways Program in metropolitan areas are directly included in the Metropolitan TIP. TIPs in non-attainment air quality areas must demonstrate conformity with the State Implementation Plan (SIP), the purpose of which is to eliminate or reduce air quality violations. Metropolitan TIPs also contain all regionally-significant transportation projects, even if federal transportation funds are not used for their construction.

Federal Lands Highway Program TIP

TEA-21 requires federal lands management agencies to develop a coordinated Federal Lands Highway Program TIP. FLHP TIPs are incorporated into the appropriate Metropolitan and Statewide TIPs. Regulations for implementing Sections 134 and 135 of Title 23 (metropolitan and statewide planning provisions) are under development. These regulations will stipulate that all FLHP projects must be included in Metropolitan and Statewide TIPs. Currently, the Park Roads and Parkway program (PRP) is being developed jointly by NPS and the FHWA Federal Lands Highway Division offices through annual program meetings. PRP projects are usually grouped together, while regionally-significant projects are listed separately and must be coordinated with other organizations that have jurisdiction in the project area. These projects are then submitted to the states by the Federal Lands Highway Division offices to be included in the STIP. Because these projects use PRP funds rather than other federal transportation funds, they do not affect the STIP program budgets.

Management Systems

TEA-21 requires the development of management systems in the areas of bridge, pavement, safety and congestion, as appropriate, for roads funded by the Park Roads and Parkways Program. Bridge and pavement management systems focus on existing infrastructure; information from these systems is used for investment decisions both system-wide and for individual projects. Safety and congestion management systems look at the performance of the transportation network in these areas. Congestion management systems assess alternatives for managing congestion on specific transportation corridors. Thus, TEA-21 provides a role for federal land management agencies in developing management systems for transportation decision-making on FLHP-funded projects.

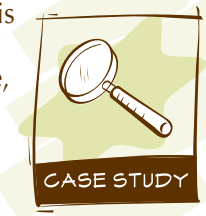
Environmental Process

Projects using federal funds are subject to comprehensive environmental analyses as provided by the National Environmental Policy Act, the National Historic Preservation Act, and related policies, such as the Executive Order on Environmental Justice. These processes, like those required for NPS's General Management Plans, provide comprehensive assessments of transportation system improvements, and an assessment of the impact on natural, cultural, and socio-economic resources. The required level of analysis depends on the severity of the potential environmental impact.

Environmental Justice

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, requires all federal agencies to achieve environmental justice by identifying and addressing disproportionately high and adverse environmental impacts of their programs on minority and low-income populations. Impacts include those directly and indirectly imposed on a community, including social and economic impacts (for example, exclusion from access to a bus system); environmental impacts, including air, noise, and water pollution; and, the destruction of community and cultural resources. An important tool for identifying and avoiding impacts to communities is public involvement. All communities potentially affected by transportation plans and projects should have a voice in the planning processes.

A Local Initiative Becomes a State-Funded Project



Acadia National Park is situated on Mount Desert Island in Maine, a community of small towns with a population of about 3,500 during the off-season. It is a multiple destination park, with attractions woven throughout the island. About three million visitors arrive annually, the vast majority in the months of June through September. The economy and life on Mount Desert Island is linked with the park. Over the years,

increasing traffic congestion from park visitors and related parking shortages and air pollution have threatened the quality of life for residents and the quality of the visitor experience. Support for a regional approach to public transportation emerged from public involvement associated with park and local planning efforts beginning in the late 1980s. By the mid-1990s, this support was reflected in the Acadia National Park General Management Plan, a regional vision plan called "MDI Tomorrow," and in the comprehensive plans developed by local towns.

The interface between the local and statewide planning processes first took place through regional planning bodies called the Regional Transportation Advisory Committees (RTACs). The Maine Department of Transportation (MDOT) established RTACs throughout the State of Maine for each rural region as a central component of their public involvement process to involve citizens in the local and statewide transportation planning processes.

The RTAC for the Mount Desert Island region produced a report that strongly recommended a regional public transportation system for Acadia National Park and Mount Desert Island. In 1996, the Mount Desert Island League of Towns and Down-east Transportation submitted an application to MDOT for a statewide competitive grant called Transportation 2000, which offered up to $500,000 of Federal Congestion Mitigation and Air Quality (CMAQ) funding for proposals that used alternative transportation modes to address congestion in rural areas. The RTAC, coupled with strong local support (evidenced in local plans and in financial contributions towards the grant's local matching requirement), resulted in the project receiving the entire $500,000 CMAQ grant. The project was then integrated into the Maine State Transportation Improvement Program. For information on this case study, contact

- Len Bobinchock
  Deputy Superintendent
  (207) 288-0374

FHWA Contacts with Transportation Planning Responsibilities by State.

These names may change over time. If so, ask for the transportation planner in your state, or visit the FHWA web site at

www.fhwa.dot.gov/service.html.

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	Samuel Herrera-Diaz	(787) 766-5600
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	Kenneth Myers	(803) 765-5411
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	Barbara Maley	(512) 916-5917
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Virginia	Roberto Fonseca-Martinez	(804) 281-5100
	Bruce Turner	(804) 775-3353
Washington	Gene Fong (DA)	(360) 753-9413
	Bill Kappus	(360) 753-9485
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	Jonathan Ventura	(304) 347-5329
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	James Sinnette	(703) 404-6293
Central Federal Lands	Larry Smith (DE)	(303) 718-2003
	Renee Sigel	(303) 716-2025
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FTA Contacts with Transportation Planning Responsibility by Region

These names may change over time. If so, ask for the transportation planner in your region, or visit the FTA web site at www.fta.dot.gov.

•Region 1 — Boston
(617) 484-2065

-Richard H. Doyle,
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-Bill Gordon,
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-Andy Motter,
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-Letitia A. Thompson,
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-Erwin Kessler,
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-Nancy Danzig,
Community Planner

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-Sheldon A. Kinbar,
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-Herman Shipman,
Deputy Regional Administrator
-Michelle Destra,
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-Florence Bicchetti,
Transportation Program Specialist
-Tony Tarone,
Transportation Program Specialist

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-Susan E. Schruth,
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-Roger Krahl,
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-Elizabeth Martin,
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-Alex McNeil,
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-Leonard Lacour,
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•Region 5- Chicago
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-Vanessa Adams-Donald,
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-Louise Lloyd,
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-Louis F. Mraz Jr.,
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-Dave Beckhouse,
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-Dave Johnson,
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-Leslie T. Rogers,
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-Tim Pennington,
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-Erv Polka,
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•Region 10 — Seattle
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-Helen M. Knoll,
Regional Administrator
-Bill Fort,
Director, Office of Planning & Program Development
-Nick Hockens,
Community Planner

Other Resources

- For information on TEA-21 and on Metropolitan and Statewide Planning, see **www.fhwa.dot.gov/tea21**.
- To obtain further information on TEA-21, go to the Surface Transportation Policy Project's (STPP) web site at **www.tea21.org**. It contains on-line information about TEA-21's funding, programs and opportunities, and links to the other major on-line transportation resources. This site will also link you to STPP's other on-line resource, **www.transact.org** which contains general information about transportation policy and links to organizations that work in specific areas. To get a copy of TEA-21, call the Government Printing Office at **(202) 512-1808** or download it from the Federal Highway Administration web site at **www.fhwa.dot.gov**.
- Federal Highway Administration and Federal Transit Administration Statewide and Metropolitan Planning Rule, 23 CFR Part 450 and 49 CFR Part 613, October 23, 1993. (Being updated to comply with TEA-21.) See **www.fhwa.dot.gov/legsregs/legislat.html**
- Federal Highway Administration and Federal Transit Administration Management and Monitoring Systems, Final Rule, 23 CFR Parts 500 and 626 and 49 CFR Part 614, December 1, 1993. (Being updated to comply with TEA-21.) See **www.fhwa.dot.gov/legsregs/legislat.html**
- *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, Executive Order 12898, February 11, 1994. See **www.envirojustice.com/12898.html**
- *Federal Highway Administration Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, December 2, 1998. See **www.fhwa.dot.gov/legsregs/directives/orders/6640_23.htm**
- *Transportation Conformity: A Basic Guide for State and Local Officials*, US DOT, Federal Highway Administration, Federal Transit Administration, Publication Number FHWA-PD-97-035. Copies are available from the Federal Highway Administration Office of Environment and Planning, 400 7th St. S.W., Washington D.C. 20590
- Responsibilities under the EPA Conformity Rule are published in the *Federal Register 40 CFR Parts 51 and 93*, November 24, 1993 and amendments published under the same title on July 9, 1996. See **www.fhwa.dot.gov/legsregs/legislat.html**

Chapter 3

Success Through Partnerships

Value of Partnerships: Why Partner?

The National Park Service has long relied on partnerships with outside organizations to enhance resource protection and the visitor experience. The influence of the national parks is felt well beyond its borders; we are part of a larger community of local, regional and state interests. Our dedication to resource protection and providing quality visitor experiences affects a broad array of citizens, government agencies and interest groups. Partnerships allow us to tap the skills and resources of the larger community, and enable NPS to extend its mission outside park boundaries.

Partnerships are an outgrowth of relationships formed through working on specific projects and activities. Relationships are fostered by reaching out to community leaders, sharing information and learning about community interests. Trust is developed when you respond to those interests as a "good neighbor."

Park needs and interests affect gateway businesses, landowners, developers, state and local governments, park visitors, and environmental, recreational and historic preservation groups. The expertise of these groups can help identify the root causes of a transportation challenge and help create solutions for solving them.

These relationships should be established at the beginning of the planning process. By reaching out to a diverse range of interests you will encourage these groups to define and address their differences and explore suitable solutions. If participation is limited, you risk alienating those who are not consulted. Failure to reach out to affected groups may also result in a lost opportunity to coordinate work on current or future projects. A local challenge to a plan or project can result in serious delays in implementation, if not outright rejection.

Organizations or coalitions of groups that support your park or project can influence local and statewide transportation and land use decisionmaking. Partners can also help build a constituency for specific projects through their relationships with other national, state and local organizations.

Partnerships allow us to tap the skills and resources of the larger community, and enable NPS to extend its mission outside park boundaries

Stretching Park Resources

Park resources are immeasurably enhanced through the expertise, skills, energy and money that are contributed by partner organizations. Experiences at Acadia National Park and Lowell National Historic Park offer excellent examples of ways partnerships support and extend park programs.

Acadia National Park was part of a project planning team that developed a new transit network to join the park with the greater community. Members of the planning team, including local Chambers-of-commerce, town governments, the Friends of Acadia and community support organizations, donated extensive staff time over a three-year period to plan and develop the new regional transit system which initiated service on June 21, 1999. Aggressive fund-raising and donations on the part of the partners during the initial stages of the project planning generated almost $300,000 to cover the required local match for the use of Federal Congestion Mitigation and Air Quality funds as well as operating costs for the first year of service (see Chapter 6 for more details on this program). The project planning team continues to be involved on future phases of a comprehensive set of improvements designed to support the transportation needs of tourists in the region.

Lowell National Historical Park in Massachusetts, benefits from a public-private partnership that allows the park to use canals for guided boat tours of the area's historic sites. Boat tours of the Pawtucket Canal are part of an integrated system of interpretive visitor services at historic sites along the canal that also includes walkway and trolley tours. The Massachusetts Department of Environmental Management (DEM) acquired many of the land rights from the former canals, including a 20-foot wide strip along the canal, recreational air rights over the canal, and the historic gatehouse structures. Boott Hydropower, a local utility, owns the canal waterflow rights, the canal bottom and the operational mechanisms within the gatehouses. The utility's Federal Energy Regulatory

A partnership with a local utility allows Lowell National Historical Park to provide an integrated system of interpretive tours of historic sites that include a walkway and trolley.

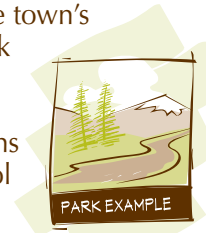
Commission license authorizes the recreational use of the canal in a partnership arrangement with NPS to provide recreational tours. Thus, the park is able to offer a scenic attraction that would not have been possible without partnering.

Plan Integration

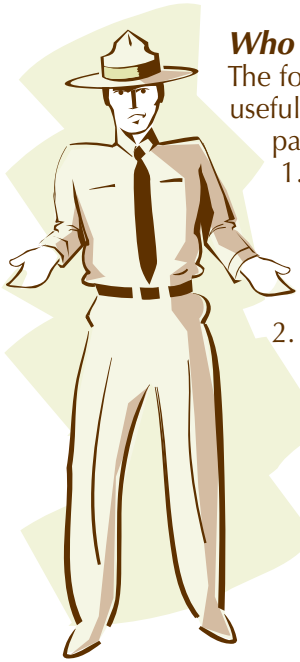
As a member of the greater community, park superintendents and other managers should work with area leaders to create transportation, land use, and economic development strategies that preserve natural resources while supporting local economic and other community objectives. The unintended consequences of poor land use and transportation decisions can be as harmful to local and state economies and their quality-of-life as they can be to NPS.

Poorly-designed commercial strips at the park entrances can detract from the visitor's experience with traffic jams, noise, spoiled scenic vistas and pollution. For example, a local and state decision to address traffic problems with a six-lane highway next to your park may not be an appropriate solution. Or, adding through-lanes or additional turning lanes onto park land may promote use of the park road system as a commuter route. Such decisions can damage wildlife and other natural resources, as well as deter visitors who come to a park to "get away from it all."

Uncontrolled development of fast food restaurants, motels, and tourist shops along the highway leading to the famous civil war battlefield at Gettysburg threatened the town's historic integrity. The Park Service and **Gettysburg National Military Park**, working with local citizens and landowners to control the spread of commercial development in historic Gettysburg, won Congressional approval for an 11,000-acre historic district of buildings, homes, businesses, and farms of historic value. Under the historic district agreement reached in 1990, the National Park Service provides landowners and governments with resources for preservation of the area.



The community relationships formed in developing this protected district have led to further cooperative efforts to address historic preservation and other needs in the region. A 1998 Letter of Intent between the park, the National Park Service, and the Borough of Gettysburg outlines a plan for linking the historic resources of the town and the park area. Parties to the agreement are cooperating on several projects, including development of a shuttle system linking the community and the park, acquisition and renovation of a train station and other historic structures for public use, and revisions in the park's tour brochure that directs visitors to other lesser-known historic sites in the borough.



Who Are My Partners?

The following steps may be useful in identifying potential partners:

1. Identify activities and areas for which support from other organizations would be useful;

2. Draw up an initial list of contacts for your project, based on established relationships and partnerships. Consider who should or needs to be involved. Identify and invite the participation of these stakeholders early in the planning process;

3. Identify organizations and individuals who may be helpful, based on information from other sources, such as current partners and the media. Groups may include those who support parkland and historic preservation, and other special interests such as hikers, bikers and fishermen. Neighborhood preservation and public transportation advocacy groups are also appropriate organizations to contact;

4. Seek suggestions from your "core" partners about groups that are active in park-related planning and activities;

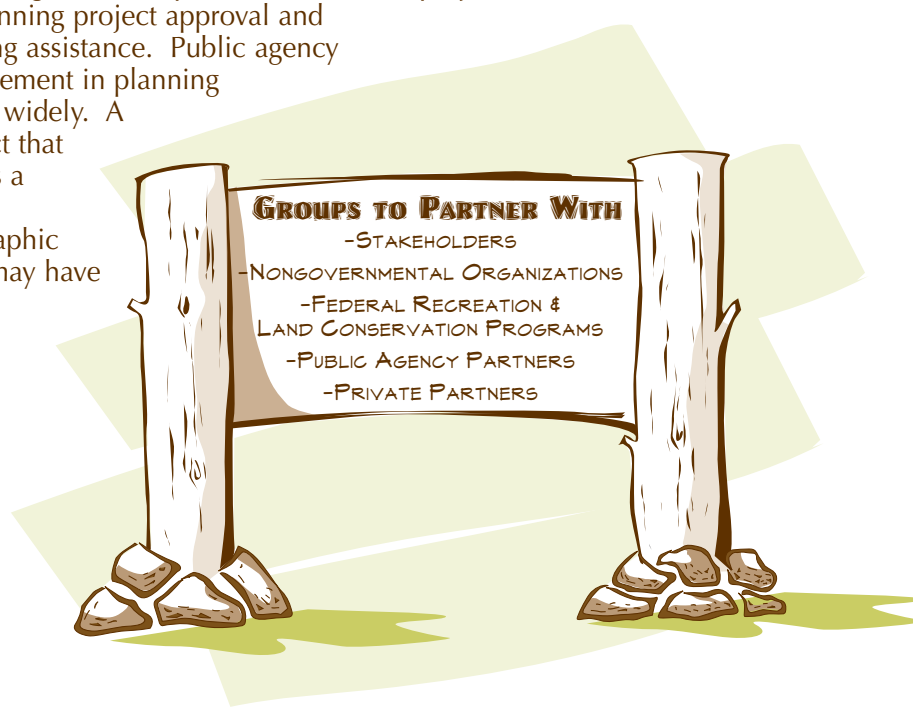
5. If you have no "core set" of partners, develop them! Not all parks have a "Friends" organization, parkland preservation group, or other cooperative association. This should not stop you from developing relationships with community leaders and other organizations in your community. Become the park's advocate by participating in community planning. Identify groups with common interests and team-up on projects of mutual benefit. "Let your fingers do the walking," using the Yellow Pages to identify groups that may support your project, based on their recreational, environmental, economic, or other interests. Partnerships and relationships are not developed overnight; they must be carefully nurtured over a period of time.

Types of groups to partner with include:

- *Stakeholders*. Potential stakeholders include area residents, park employees, park visitors, local, county and state elected officials, local transportation providers and agencies. Federal law requires that stakeholders be involved in transportation and park planning and project development. Providing stakeholders with a direct role in the development of transportation projects frequently results in better transportation solutions that more fully meet the needs of these stakeholders.
- *Nongovernmental Organizations.* A broad array of citizen volunteer and non-profit groups, typically organized around a single issue or set of issues. "NGOs" typically focus on community issues, including parkland and greenspace conservation, environmental protection, historic preservation, economic development, transportation and recreation. These groups can provide a forum

for community involvement on a specific issue, such as access for persons with disabilities or historic interpretation in a travel corridor. Others can play an advocacy role or take on specific activities, such as community education and outreach.

- *Federal Recreation and Land Conservation Programs.* A wide range of nonprofit and federally-supported organizations are devoted to transportation and land preservation issues and projects. The NPS Rivers, Trails and Conservation Assistance Program *(Rivers & Trails)* estimates there are so many local groups working with them on projects that it is impossible to maintain a complete list. (For more information on the *Rivers & Trails*, see Partnering Tools in the next section.)
- *Public Agency Partners.* Representatives of local, state, and federal agencies are powerful allies for winning project approval and funding assistance. Public agency involvement in planning varies widely. A project that affects a large geographic area may have representatives from each county or municipality. In urbanized areas, city council members may be active. Involving state and federal officials will help ensure a project meets state and federal funding criteria. Partnering with elected officials is useful for securing funding. Managers of nearby or adjacent federal lands are also important partners, particularly for resource protection projects.
- *Private Partners.* Economic development groups, landowners, land developers, Chambers-of-commerce, American Automobile Associations and other business interests from adjacent lands, nearby neighborhoods, and gateway communities are valuable resources for generating funding support and a powerful constituency for your projects. The key to support from these groups is the economic potential of the project.



Partnering Tools

The interaction and involvement of partners varies by location and circumstances. There are, however, tools and approaches that are being used successfully to organize or formalize the role of partners.

Advisory committees, councils, and task forces. Partnering is similar to public involvement when specific roles or responsibilities are assigned to a group as part of a planning or project development process. Councils, task forces, and committees offer a forum for interaction between representatives of diverse interests. Ideally, products generated from these groups reflect a consensus among group members. Recommendations for solving a given transportation problem will then reflect the priorities and needs of group members. A chairperson should be designated to be responsible for the work or products developed by the group.

San Antonio Missions National Historical Park offers an example of the benefits that can accrue through advisory committees. The park is actively involved in a multimodal transportation project designed to join the five Spanish Colonial Missions of San Antonio, Texas. "Mission Trails," as the project is called, will use TEA-21 Transportation Enhancement funds for road improvements, bicycle trails, signage, and other improvements to link the missions. A committee of more than 30 representatives of community, neighborhood and environmental groups, and government leaders was formed to oversee the planning and design of the project. The urban nature and the complexity of the project meant that substantial coordination of a wide range of interests was needed to successfully develop the project. Superintendent Steve Whitesell of the San Antonio Missions National Historical Park credits the committee as being crucial to the project's success. "This has been an extremely complex project which has worked primarily because the numerous players involved have been able to work cooperatively toward a mutually agreed end."

Memoranda of Understanding (MOUs), letters of intent, and cooperative agreements spell out specific roles for partners in meeting common objectives. Public Law 95-224 "permits federal agencies to enter into cooperative agreements to accomplish a public purpose of support or stimulation for the direct benefit of the federal government." MOUs between the National Park Service and the participating parties specify activities that are the responsibility of the parties.

An example of a successfully implemented MOU is in place at **Great Smoky Mountains National Park**. In September 1998, the park entered into a MOU with the Great Smoky Mountains Regional Transportation Alternatives Committee (RTAC), and the Knoxville Urban Area Metropolitan Planning Organization (MPO) to address

regional transportation needs. The greater region surrounding the park consists of 14 gateway communities, in five counties. The park is outside the jurisdiction of the Knoxville MPO, yet the park's impact on the regional transportation system is extensive. The MOU calls for a regional transportation alternatives study for the entire Knoxville Metropolitan Statistical Area and adjacent counties in Tennessee, including transportation initiatives to serve the park. The National Park Service provides staff, technical assistance, data, and financial assistance for the project. The park also contributed $25,000 to the MPO to study regional transportation needs. Outside support for the planning study includes political support from a state senator and a $250,000 grant from the Tennessee Department of Transportation.

Rivers, Trails and Conservation Assistance (Rivers & Trails). Rivers & Trails is the NPS partnership program that fosters partnerships between communities and landowners on non-motorized transportation issues and resource protection, such as heritage and historic preservation and greenways preservation projects. It provides assistance on projects that link parks to surrounding communities and natural and recreational resources and helps parks respond to needs in adjacent communities. Parks should consider working with *Rivers & Trails* transportation projects that have links with nearby communities. An example of a *Rivers & Trails* project is a cooperative effort with **Zion National Park**, the town of Springdale, Utah, the NPS Denver Service Center, and the Virgin River Land Preservation Association, to develop a trail system as part of a regional bus shuttle system to serve the park and gateway community. Visitors and residents will have the option of walking to and from the park, or walking part of the way and using the shuttle system. *Rivers & Trails* staff are involved in designing and constructing non-motorized trails in the park and in the town. The trail system, which is expected to be operational in May 2000, will significantly reduce motorized traffic both in the park and in town.

Collaborative planning between Zion National Park and the gateway community of Springdale, Utah created a shuttle bus system that provides tourists with access to local businesses and park sites.

A Partnering Success: Cuyahoga Valley National Recreation Area

The **Cuyahoga Valley National Recreation Area** (CVNRA) in northeast Ohio, is a veteran when it comes to partnering on transportation-related projects. Its partnership with the Cuyahoga Valley Communities Council includes representatives from 17 communities

Partnering Caveat

The *Federal Advisory Committee* Act sets strict limits on establishment of committees or similar bodies made up of federal and non-federal members with the intent to advise the Federal Government. The National Park Service must maintain its oversight of decision-making that deals with NPS issues. Legally, it is the only entity that can make formal policy and investment decisions for properties within its jurisdiction. The legal staff or the Office of the Solicitor is available to answer questions concerning this Act and partnering activities. Contact Robert Moll at the Office of the Solicitor: (202) 208-5216, or Sue Waldron, NPS Partnership Liaison: (202) 208-5477

that border the recreation area. The council provides a forum for the CVNRA and officials from dozens of municipalities to discuss land development, planning, police and fire protection, improvements to roads and public transportation and other issues of common concern. Although the council has no binding authority, its recommendations facilitate decision-making by communities and landowners.

CVNRA's partners have been essential for every step in its ambitious recreational development program. The park's three-phase corridor development project involves its partners in providing multimodal transportation for the 87-mile Ohio and Erie National Heritage Corridor, stretching between Cleveland and Zoar, Ohio. Community participation in the trail, rail, and road components, contributed greatly to its success.

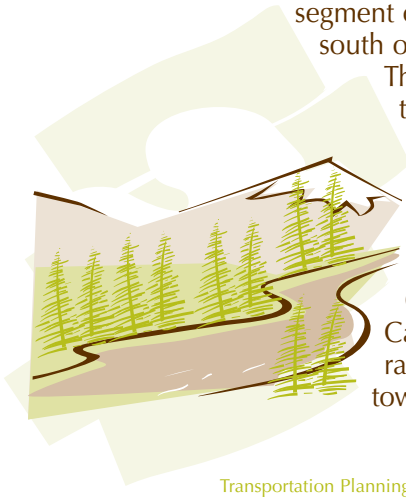
Recreational travel improvements began in 1990 when the NPS initiated a restoration project for a 20-mile portion of the Ohio and Erie Railroad Canal towpath, within the park's jurisdiction, for bicyclists, runners and hikers. The trail restoration sparked a grassroots effort to extend the trail over a much larger area. Regional support for the towpath and a complementary scenic railway prompted Congress to designate the Ohio and Erie National Heritage Corridor in 1996. Support from the many political jurisdictions along the corridor will be crucial for the completion of the 87-mile towpath between Cleveland and Zoar, which is expected within the next five years.

Towpath renovation is being underwritten by federal transportation funds, foundations, the National Heritage Corridor, the state department of transportation, and municipalities. The trunkline scenic pathway has spurred a rash of interconnecting east-west trail links being planned by

communities on either side of the corridor. According to CVNRA Superintendent John Debo, a "regional linear open space network is coming together quite aggressively," with the enthusiastic support of the municipalities in the region.

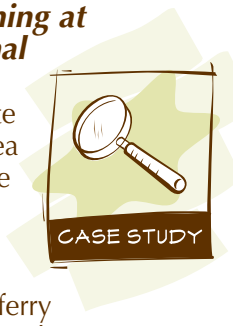
A historic railroad, alongside the towpath, is being operated by NPS as an interpretive excursion passenger rail service, in cooperation with the Cuyahoga Valley Scenic Railroad, a non-profit organization dedicated to preserving the historic railroad. The National Park Service owns and maintains the rail line and its infrastructure, including rail tracks, signals and bridges. The non-profit partners are responsible for operations and administration, including ticketing, marketing and maintenance of all rolling stock. Park Service rangers provide narratives on the trains. The railroad operates on a $1 million annual budget funded by farebox recovery and grants.

The partnership currently operates a 26-mile segment of the railroad that runs within the park. The NPS expects in the near future to acquire rights to operate another 25-mile segment of track that will run south of the park to Canton. The final six-mile leg of track in downtown Cleveland is expected to be in service within six years, making a 57-mile corridor connecting Cleveland, Akron and Canton a reality. The railway intersects the towpath in numerous locations, providing opportunities for visitors to use the train in combination with hiking and biking.



Partners are working on the final component of the Ohio and Erie Railway Canal corridor development, pursuing National Scenic Byway designation for the two-lane route that parallels the canal. The highway recently received designation as a state Scenic Byway, a crucial step in gaining federal designation. Superintendent John Debo expects all three transportation components, the towpath, Scenic Railroad, and Scenic Byway, to be completed by 2004.

Transportation Planning at Golden Gate National Recreation Area



Park staff at Golden Gate National Recreation Area (GGNRA) appreciate the rewards of partnering with local agencies on transportation projects. The need for improved ferry access was highlighted in the GMP for Golden Gate in 1980. The GMP built on recommendations from a 1977 Recreational Travel Study. Few of the study's recommendations had been implemented some 20 years later. To reinvigorate transportation planning at GGNRA, Superintendent Brian O'Neill and Director of Strategic Planning Mike Savidge met in December 1998 with the Metropolitan Transportation Council (the local Metropolitan Planning Organization) and local Federal Transit Administration and Federal Highway Administration representatives to discuss the transportation priorities for GGNRA. They develop-

ed an action plan and formed a working committee to follow-up on the recommendations and identify funding for specific projects.

The action plan links GGNRA's transportation needs to the priorities identified in regional planning efforts. Metropolitan Transportation Council Deputy Director Bill Hines agreed to help GGNRA identify Federal Congestion Mitigation and Air Quality Program and Surface Transportation Program funds for specific projects and to identify partners on the local and regional level. Golden Gate is now a participant at the region's quarterly transportation meetings and has a voice in transportation priorities for the region. Mike Savidge is a strong supporter of partnering:

> *"Institutionalizing our relationship with our MPO through a Parklands Transportation Task Force has been critical to our success in developing transportation solutions for Golden Gate. Improving the context in which projects are developed for the National Parks requires the mutual commitment, understanding, time and resources of park staff, stakeholders and regional transportation players. All parties benefit from this partnership."*

Working with your Neighbors: Gateway Communities

Gateway communities and the federal lands that border them are inextricably linked. National parks adjacent to gateway communities have a significant impact on the economies, cultural identity and quality-of-life in these communities. Parks are a magnet for people seeking scenic beauty, recreation, and the economic opportunities that come from being near a national park. As a result, many gateway communities experience explosive growth. This growth has consequences; it can change a community's character and spur fears about the loss of the "small town" feel. An influx of new residents can raise living costs, create traffic jams, and encourage the proliferation of tourist-oriented businesses. The presence of a NPS area can create a regionally important transportation destination.

The interdependence of gateway communities and national parks provides an opportunity to combine resources and work toward the resolution of area-wide transportation, economic development, and land use issues. An important strategy to achieve this objective is to link gateway communities and the areas around them to park planning initiatives. Such coordination offers the opportunity to collaborate on specific transportation and infrastructure projects, and to share the costs of planning and public involvement activities.

This was the case for the gateway communities of **Grand Lake and Estes Park** and the **Rocky Mountain National Park**. The communities and the park worked together to resolve local development issues. This relationship led to close coordination on shared concerns over traffic

congestion and diminished visitor experience. In the spring of 1998 the park hosted a transportation forum for local officials, business leaders and citizens to address mobility concerns in and around the park. As a result of this forum, Rocky Mountain National Park and Estes Park both pursued and obtained planning funds to coordinate their efforts. The initial data collection in the park began in the 1999 summer season. The transportation study will include an evaluation of existing turnouts, traffic congestion and the potential for a visitor transportation system, including bike paths, linking the town and park. Due to funding limitations, the study is being done in two phases, with the park responsible for the first phase, and the town for the next phase. Both phases will be linked with common goals. This project would not have gotten off the ground without the commitment of all parties to the common goal of protecting the quality of the visitor's experience in the park.

Partnering with gateway communities on transportation projects increases access to community resources and greatly magnifies the chances that projects will obtain state and federal support. Transportation projects that add to an existing transportation network or support local transportation priorities benefit from gateway partnerships. For example, working with a local transit agency to develop alternative transportation services for park visitors offers a way to share transit service expertise, vehicles, equipment and facilities and to learn from a "seasoned" grantee on how to receive federal transit funds.

Building "Win-Win" Partnerships

Sharing benefits is the key to successful and lasting partnerships. Groups that fail to realize benefits from the partnership are unlikely to participate in the future. The following tips on building lasting partnerships with gateway communities reflect the lessons shared in seminars, guidance manuals and articles.

- *Look outside your boundaries.* Integrate the park within the local political, cultural and economic environment. Develop transportation and other plans and projects that support the community's economic, environmental and political objectives and promote these benefits to potential community partners. Efforts to solicit support from the business community should stress the project's economic potential.

  Invite public officials, local schools, adjacent landowners and other community leaders to tour the

park and participate in park activities. A factor that led to **Acadia National Park's** successful transit planning was the park's participation in the local League of Towns and as a board member of the local transit agency.

- *Participate in community activities.* Work with local landowners, developers, businesses, and education institutions on their projects, even if they have no direct relation to your park. Staff at **Zion National Park** took advantage of a day off during the federal government furlough to paint a community gazebo in Springdale, Utah. Such occasions build goodwill and trust with individuals and community groups. These are occasions to influence decision-making on projects that affect your park and to inform the community about your park's resources, programs and projects.

- *Build a constituency.* When building community support for a project, seek out groups that have interests in common with the park, beyond the specific project. For example, if you want support for a project that links the park's bicycle trail network with the community, seek help from national or locally-based bicycle advocacy groups.
- *Empower your partners.* Support from your partners will flounder if they believe their participation has not contributed to the finished product. Similarly, in situations where a relationship was developed for one segment of a larger process, follow up with progress reports and let them know how their input was used.
- *Be a leader outside the park.* Take every opportunity to advocate for your park. Attend community events. Set community standards and influence decisions outside the park. Participate with other community leaders on the planning and design of projects outside park boundaries.

A Gateway Planning Partnership

Zion National Park will inaugurate a new transit system that circulates within the park and links the gateway community of Springdale, Utah. The transit system includes a 31-vehicle fleet; ten vehicles travel a 3.3-mile loop within Springdale and bring riders to the park's visitor center at the boundary of the town and the park. The remaining vehicles circulate on an 8.6-mile journey within the park, allowing visitors access to trailheads and park attractions.

The partnership is recognized as a model between a national park and a gateway community. Springdale, a close-knit community of 350 people, is surrounded on three sides by the park. The town considers itself a "resident" of majestic Zion Canyon. As visitation to the national park has grown to its current level of 2.5 million visitors, tourism in Springdale has matured. In the words of Dave Karaszewski, Special Projects Manager for Zion National Park, "There are far more beds than people in Springdale."

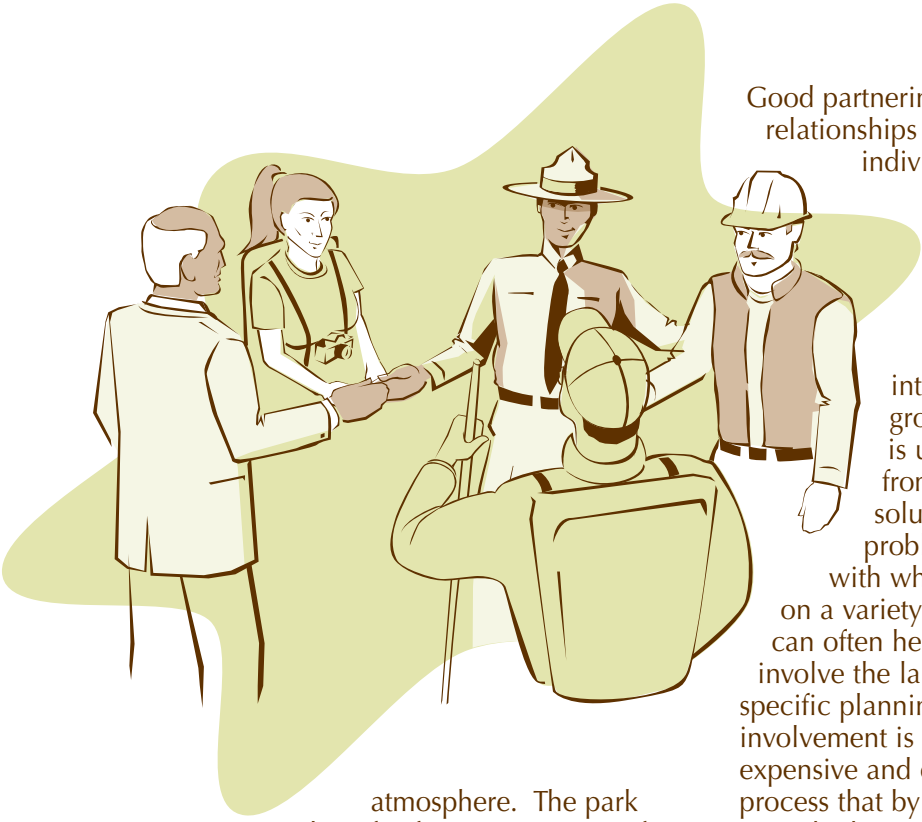
As cozy as it sounds, the park and Springdale have not always been friendly neighbors. In the early 1990s, the park and the community came head-to-head on plans to build a 50-foot high giant theater screen at a park entrance. Concerns were expressed by the park and other interested groups about its proximity to the park and the resulting impact on the scenic qualities at the park's south entrance. Some residents felt the park had no business involving itself with issues outside park boundaries. The town council subsequently approved development of the theater. Despite the acrimony, theater developers were responsive to the design issues raised by park officials and revised their plans accordingly.

Relations between Springdale and the park were repaired in the mid-1990s through the leadership of Mayor Phillip Bimstein and newly-arrived Zion Superintendent Don Falvey. Their partnership grew on a personal and an institutional level. The superintendent and his family became active in the community. Mayor Bimstein sought interaction with the park on many issues, including the proposed transit system. Together, they appointed a ten-member Springdale-Zion Liaison Committee to address local issues. These initial steps have grown into a strong partnership between the community and the park, one that has weathered many challenges.

In the early 1990s, the park considered implementing a mandatory bus shuttle to the inner canyon. As proposed, the system would have begun service at a visitor center located near the park entrance. The community's reactions were divided. For supporters, the shuttle bus system would relieve the town's traffic headaches during the peak summer season; others were concerned that removing cars from the canyon would deter visitation and hurt tourist businesses. Some businesses wanted to share in the business potential by having bus stops close to their doors. The community suggested a compromise that would extend bus service into the town, and thus encourage visitors to leave their cars behind.

"We were able to capture the concerns of the Springdale community and blend our common interests around a new way of handling visitors."

The park accepted the compromise and cooperative planning for the system continued for the next five years. As Superintendent Falvey noted, "We were able to capture the concerns of the Springdale community and blend our common interests around a new way of handling visitors." The shuttle system now has something for everyone: businesses benefit from the extra incentives for visitors to stay in Springdale; residents ride the shuttle for free; and, the town has a safe, pedestrian-friendly



atmosphere. The park benefits from a congestion-free environment that enhances the visitor experience and from a restoration of resources affected by high visitation levels. With parking and shuttle buses available in town, and at the new visitor center, congestion will no longer be an issue in the inner canyon. The inner canyon will be served by alternative fuel vehicles, alleviating air quality concerns. A central transit and visitor center near the theater provides visitors with an orientation to the park and the shuttle system enhances their visit.

Public Involvement: Early and Often

Community buy-in is the key to success. Public involvement by the residents, whose lives are affected by the way a NPS site is managed, is a crucial component of NPS planning.

Good partnering develops lasting relationships with groups and individuals. Public involvement, in contrast, attempts to broaden understanding of a specific program or project for all interested and affected groups and citizens and is used to solicit ideas from the public for solutions to transportation problems. "Core" partners, with whom you regularly work on a variety of issues and efforts, can often help you identify and involve the larger public for a specific planning effort. Public involvement is a time-consuming, expensive and often frustrating process that by its nature has many jagged edges. Creativity and flexibility are essential for implementing successful public involvement processes. As the process unfolds it may be useful to keep in mind three principles:

- Good public involvement, with buy-in from interested parties, will result in a better project and fewer delays in the project development process.
- Public lands belong to the public. The public has a right to participate in decisions about public lands;
- Good public involvement is expensive, but poorly-designed public involvement is even more expensive in terms of project delays and community rancor.

Tips and Tools for Public Involvement

- **Define your public involvement goals, including:**
  - Issues to be addressed in the planning process;
  - Outcomes or products expected from the process;
  - Role of the public in achieving those goals.

- **Define your "publics" as those who might be affected by your project, including:**
  - Visitors;
  - The gateway and other affected communities;
  - Business leaders/chambers of commerce and owners of locally-owned businesses;
  - Local officials, both elected and appointed, including town and county managers and planners;
  - Transportation providers and officials, including representatives of local, regional and state transportation agencies;
  - The general public, including residents who are affected by your site;
  - Groups whose cultural resources are affected by a proposed project, such as American Indians and their tribal governments or descendents of soldiers who fought on national battlefields;
  - NPS partner agencies and area employees who use your site's transportation system and other facilities.

- **Design the public involvement process:**
  - Maximize the input of the public in the planning and design process;
  - Use mailing lists, advisory committees, and public meetings to market your program or project;
  - Public involvement tools also include focus groups, task forces, surveys, hotlines, e-mails, newsletters, web pages and brochures;
  - Reach out to traditionally "under-served" populations, such as low-income and minority residents.

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  Superintendent
  Cuyahoga Valley NRA
  (440) 546-5903

Experiences with gateway/National Park partnerships are discussed in the following books and articles:

- *Balancing Nature and Commerce in Gateway Communities* by Jim Howe, Ed McMahon, and Luther Propst, 1997.
- *Building Gateway Partnerships: A Process for Shaping the Future of Your Community* by Sue Abbott and Sally Sheridan of the NPS Rivers, Trails and Conservation Assistance, 1997.
- *National Parks and Their Neighbors: Lessons From the Field on Building Partnerships With Local Communities*, a summary of lessons learned from two seminars sponsored by the National Park Service and conducted with the assistance of the Sonoran Institute, 1997.
- *National Park or Bust* by Kurt Culbertson. Published in *Planning*, the magazine published by the American Planning Association, November 1997.
- *A Seamless Canyon: Zion National Park and Springdale, Utah Discover the Powers of Partnership* by Sarah B. Van de Wetering. Published in the Chronical of Community, Northern Lights Institute, pp 5-14, Winter 1999.

Chapter 4

The ABC's of Transportation Planning

Transportation planning is a blend of technology, social science and politics. Planning decisions are shaped by regulations, agency policy and public opinion. Transportation professionals use a variety of techniques to analyze and evaluate transportation problems and solutions. This chapter provides an overview of these techniques.

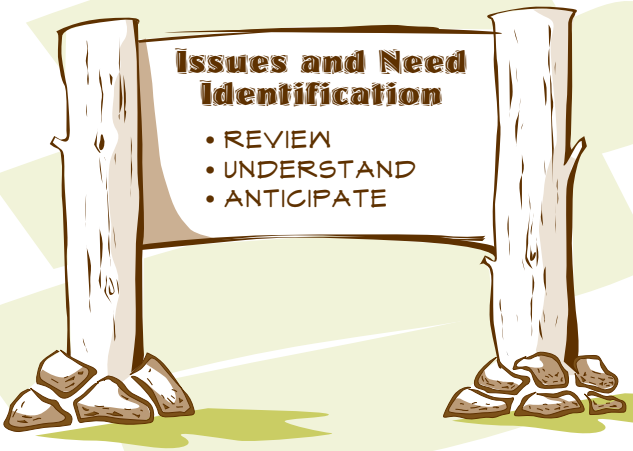
Keep in mind that the most important principle that guides NPS transportation planning is the need for the park transportation systems and facilities to respect and enhance park resources and the visitor experience.

Technical Elements of Transportation Planning

Transportation planning for individual projects follows a formal, sequential process that defines and addresses transportation needs. It is based on input from technical analyses, empirical data and a general political consensus from stakeholders. The building blocks of the process in the sequence they usually occur are:

- Identification of issues and needs;
- Development of goals and objectives;
- Data collection and analysis;
- List of possible solutions;
- Evaluation of possible solutions based on their ability to meet the goals and objectives; and
- Selection of a preferred solution.

Each step is completed within the context of the overall mission statement, enabling legislation, policies and fiscal limitations of the agency, environmental regulations, and the stated desires of elected officials and the public.

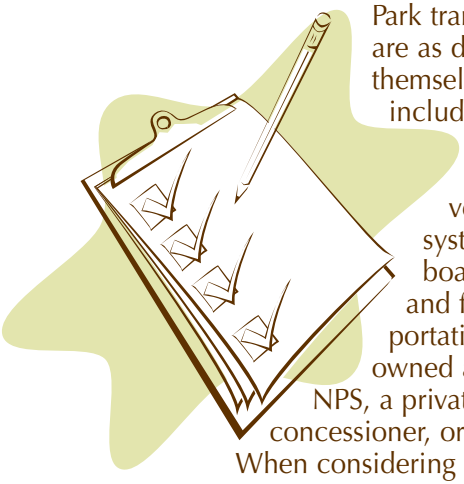


Issues and Need Identification

A critical first step is to precisely define and enunciate the need to be addressed and the desired future condition. Resulting goals, objectives, and the criteria applied to evaluate alternatives must all be based on this clearly delineated purpose and need statement.

Data on existing conditions of the transportation system will help in defining the purpose and need. During this stage, **review** the existing transportation system, **understand** transportation system users and their habits, and **anticipate** changes and emerging trends that affect future transportation system needs. The key here is to refrain from jumping too quickly to a solution based on preconceived notions.

Review the Existing Transportation System



Park transportation systems are as diverse as the parks themselves; they may include roads, parking areas, surface and waterborne vehicles, shuttle systems, trails, docks, boat ramps, seaplanes and footpaths. A transportation system may be owned and/or operated by NPS, a private contractor or concessioner, or a public agency. When considering the park's existing transportation system, begin with an evaluation of the major elements of the transportation system based on its condition, degree of use ("level of service"), and relationship to the park's enabling legislation.

Broader issues and opportunities that extend beyond park boundaries should be considered on a regional basis. External planning issues include: connections with public and private transit systems; level of service and condition of the regional roadway network; use of satellite parking facilities; rideshare programs; and the availability of regional air and marine services.

Understand Transportation System Users

Transportation needs are defined through an understanding of the habits of visitors, employees, concessioners, and residents entering and leaving the park. Such information may be gathered through a survey which will provide data on:

- Why visitors come to the park;
- The number and type of visitors (age, disabilities, etc.);
- Where visitors come from and what they want to see in the park;
- Entrance and exit patterns and destinations within the park;
- Seasonal, weekly, and time of day visitation patterns;
- Length of stay (day users versus overnight stays);
- Travel modes (automobile, truck and camper, recreational vehicle, tour bus, public transportation, boat, bicycle, and pedestrian);
- Size and type of vehicles used by visitors;
- Visitation by groups and tours;
- Where and how long visitors park their vehicles;
- The most frequent transportation complaints; and
- Potential for visitors to use an alternative mode of transportation, such as a shuttle system.

Anticipate Change

Resource conditions and visitor characteristics change over time. These changes may fundamentally affect the way the park serves visitors; the transportation system may need to be modified to meet changing needs. In some cases, current demand already exceeds the capacity of the transportation system. In others, projected increases in use of the facility or changes in its physical conditions may exacerbate already pressing needs.

Projections of future transportation conditions are useful in defining the scope of a particular problem, and later in the process, in evaluating the viability of alternative solutions. Such forecasts should consider changes in park characteristics, area demographics and land use, and proposed transportation system changes outside park boundaries. Projections should be closely coordinated with adjacent federal, state and local land managers, and departments of transportation (DOTs). Many state agencies and metropolitan planning organizations (MPOs) have sophisticated mathematical models that project transportation conditions. Projections should incorporate the impacts of proposed and programmed improvements and take into account anticipated growth in park use and population growth in the region.

Goals and Objectives

Goals and objectives should be defined in the early stages of a transportation planning effort. Goal and objective statements should be narrowly defined, based on an identified purpose and need. They should precisely specify the ends to be accomplished. The goals and objectives will form the basis for the criteria for evaluating transportation alternatives.

Goals and objectives should be defined in the early stages of a transportation planning effort.

Data Collection

Depending on the type of project, transportation planners collect data on roadways, parking, transit and pedestrians. The level of detail depends on the specific transportation problem to be addressed. A common error in transportation planning is to initiate data collection without a clear understanding of its eventual use. This can lead to the collection of too much data or failure to collect the data that is critical for decision-making. The most frequently needed transportation data is described below.

Roadway Data

Traffic volume: The number of vehicles by type (car, light truck, heavy truck, bus, motorcycle) that pass a given location on a roadway in a specific time period. A typical unit of measurement for a 24-hour period is "Average Daily Traffic," or ADT. Volume data is generally summarized

as "equivalent vehicles" to account for space taken up by large vehicles (a bus may be "equivalent" to two automobiles). This data is usually collected by an automatic traffic recorder (ATR) placed on or in the roadway. Recorders count the number of axles that pass a given point. Resulting output is then factored to allow for heavy vehicles (trucks, buses and recreational vehicles) that have more than two axles. Traffic volumes are also manually counted at intersections.

Roadway capacity: The maximum rate at which vehicles can reasonably be expected to pass a given point of a lane or roadway during a given time period (usually one hour) under prevailing roadway, traffic and control conditions. Capacity measures the rate of vehicle flow and not the maximum volume that can be accommodated in a given hour. Capacity is measured at a given point; it is not a measure of the capacity of the entire system.

Level-of-service (LOS): A qualitative estimate of the performance and overall quality of traffic flow on a roadway as measured by average travel speed, traffic density, average delay, and physical characteristics of the roadway. Factors that influence level of service include roadway capacity, traffic demand characteristics, physical characteristics of the roadway, and traffic control devices. A rating system expresses a road's level of service, ranging from A (best) to F (worst). Typically, as traffic volume increases, congestion intensifies, delays are longer, and the level of service declines.

Vehicle occupancy rate: The average number of persons per vehicle that pass a given location in a prescribed period. The average vehicle occupancy (AVO) rate can be computed for a specific location or for an entire study area.

Roadway safety: The safety of a roadway can be measured in terms of an accident rate that is derived from the number of accidents per million or hundred million miles traveled, and then compared to rates compiled for similar roadways.

Parking Data

Demand estimates: The number of drivers who seek to park their vehicles in an area at any point in time (maximum demand or accumulation) or over an extended time period (total parkers). Usually, the most important factor is the number of parking spaces required during the peak hour on a typical day. Parking demand data is determined with surveys and comparisons of similar type facilities.

Parking Supply and Accumulation: The total number of legal parking spaces in a given area and the total number of vehicles parked in that area at a specific time.

Turnover Rates: The number of vehicles that park in a given space during a specific period of time.

Transit Data

Physical/Capital Inventory: Data on the characteristics, location and condition of the transit facilities and vehicles may include: size and condition of the terminal and maintenance facility; fleet size;

vehicle capacity; vehicle types; and average replacement cycle.

Operational Data: Data on the operational performance of the system may include: information about routes (coverage, length, service frequency); service type (express, local, paratransit); fare payment methods and route performance (on-time/schedule adherence, number of passengers boarding/alighting, and dead head vs. revenue miles/hours).

Financial Data: Data on the financial performance and needs of the transit system may include: operating and capital costs; revenue; fare box recovery of costs; and subsidy.

Pedestrian Data

Physical inventory: Information on the location, capacity, condition, and physical characteristics of trails, pathways, and related facilities, including foot bridges, tunnels, gates, controls, and compliance with the Americans with Disabilities Act (ADA) requirements.

Volume and level-of-service: Estimates of the number of pedestrians passing a given location in a prescribed period and the degree of crowding, including the level of use and congestion at key queuing and visitation areas.

Transportation Analyses

Transportation data is used to help make informed decisions about alternative transportation improvements. Typical transportation planning studies are defined below:

- ***Systems Analyses*** evaluate the efficiency, productivity and cost-effectiveness of a transportation system. They examine travel demand, traffic circulation, competing travel modes, capital and operating costs, environmental issues, and funding.
- ***Needs Assessments*** identify potential transportation solutions by comparing existing requirements to future needs. The assessment typically has a 10- to 20-year planning horizon. They define specific transportation alternatives, such as roadway widening, rehabilitation and reconstruction or the expansion of existing bus service.
- ***Feasibility Studies*** evaluate a proposed transportation project based on its effectiveness in meeting stated transportation goals and objectives. These studies will assess the project's ability to meet travel demand, engineering and design feasibility and cost, potential funding sources, environmental effects, and public support. The results of this effort may lead to a more detailed investigation of a specific set of planning or engineering issues.

Ferry Planning at Golden Gate National Recreation Area

Golden Gate National Recreation Area is currently developing a plan for a water shuttle/ferry service to park sites in San Francisco Bay. This complex and sequential process started with a clear definition of the objectives and involves an extensive analysis of environmental and economic factors. Here are some of the categories of issues being examined for the Golden Gate National Recreation Area:

- **Objectives:** How the service relates to the broader needs of the San Francisco region and the needs of the Recreation Area. For example, is the service primarily for traffic mitigation or for enhancing a visitor's view and understanding of the park?
- **Visitor Flow:** Baseline market data helps determine routes and terminals, craft types and numbers. This data could be collected by the regional MPO or ferry operator. Data will identify the types of visitors to be served, such as commuters, recreational visitors, or both. Mode preference surveys forecast the numbers and types of people who would use water access and under what conditions. To capture the potential market, surveys are conducted at both key destinations and potential departure locations. Market data is critical for projecting visitation and evaluating routes and profitability. Factors to consider include amenities to be offered, timeframes and ferry service charges.
- **Landside Considerations:** Potential terminal sites, including existing piers, are being identified, along with encumbrances to landside access and potential transit linkages to support visitor flow. The carrying capacity of the terminal site and the natural resources which would be affected by water transit are being examined, along with the need for landside facilities once visitors arrive and the relevant regulations concerning docking facilities, standards for landside support facilities, and Americans with Disabilities Act (ADA) access requirements.
- **Environmental Considerations:** State and federal regulations needed for environmental compliance are being examined. For example, the impact of waves, wake erosion and noise may need to be mitigated depending on sensitivity of habitat and the draft of the selected vessels. Other factors include tidal flow and range, depths around potential piers and the need for dredging.
- **The Transportation Network:** An inventory of the transportation network will help in analyzing how ferry access would affect the flow of vehicles and trip times between points. It also provides useful baseline data that may be needed to secure funding.
- **Ferry Routes:** Existing and projected visitor demand at identified ferry sites and the potential link with other

Continued on next page

destinations are being examined. For example, ferry routes could include a museum stop and a link to a park trail. The physical aspects of the route, such as wind and wave conditions, tides and currents, sandbars and silting, rain and fog will affect the choice of ferry craft.

- **A Business Plan:** Most operators recapture only 40-50% of their operations with fare box returns during commuter hours. The market for off-peak ferry service and leisure access to tourist destinations usually allows higher returns. A strong visitor flow is an attractive proposition for most operators. Both the capital costs of pier and landside facilities, and annual operations and maintenance costs need to be carefully compared with expected visitor flow and anticipated ferry revenue.

For more information, contact
- Mike Savidge
  Director of Strategic Planning at GGNRA
  (415) 561-4725

- ***Origin/Destination Studies*** identify visitor travel patterns between point-of-origin and intended destination. These studies are used to understand visitor circulation patterns to and from a park, and within a park.
- ***Circulation Analyses*** identify the direction, movement and speed of vehicles and pedestrians in a park or transportation corridor. These studies are used to understand visitor circulation patterns within a park.
- ***Impact Studies*** evaluate the specific mobility, environmental, social, cultural and economic effects of a proposed action. These studies are conducted under the guiding principles defined in a park unit's General Management Plan.

Identify, Evaluate and Screen Alternatives

Upon the completion of technical analyses, specific alternative courses of action should begin to emerge. These may range from a "no action" alternative to various types of new or modified transportation policies, facilities or services.

Identify Alternatives

Potential alternatives are identified based on:
- Evaluations of existing on-site and regional travel patterns and conditions;
- Evaluations of projected future on-site and regional travel patterns and conditions;
- Guidance from the interested parties;
- Resource conditions and needs; and
- Environmental considerations.

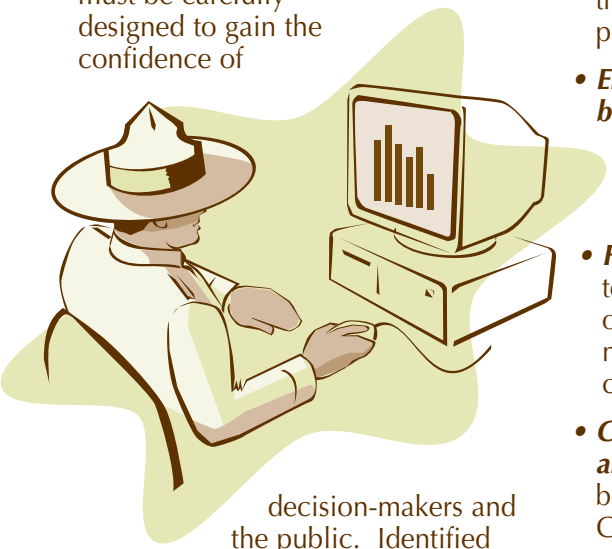
Potential alternatives include:
- A "no build" or "no action" alternative which assumes that currently programmed improvements are adequate. This option

is compared to the "build" alternatives;

- Low-cost solutions that optimize the existing transportation systems and can be implemented with a minimum of resources;
- More costly solutions that improve or expand existing transportation modes, such as roadway rehabilitation or reconstruction;
- Options that involve new transportation modes; and
- More ambitious solutions that seek to alter the travel habits of visitors and require at least partial implementation by regional or state agencies not under the direct control of the park.

Evaluate and Screen Alternatives

The evaluation of alternative plans must be carefully designed to gain the confidence of decision-makers and the public. Identified alternatives are generally tested using a two-tiered screening procedure. In the first tier, alternatives are evaluated to identify options that do not meet minimum levels of acceptability and should be discarded. Discarded options have "fatal" or "major" flaws, such as an inability to meet environmental laws or require substantial additional costs without compensating benefits. In the second tier, the remaining alternatives are evaluated on the basis of their relative ability to meet the identified project goals and objectives. Examples of criteria used in this analysis:



- ***Mobility improvements***, measured on the basis of travel time savings, ability to reduce congestion, and ability to improve access to key locations;
- ***Cost effectiveness***, measured on the basis of capital expenditures compared to mobility improvements;
- ***Operating efficiency***, measured on the basis of operating costs compared to mobility improvements;
- ***Environmental and cultural benefits and impacts***, measured on the basis of effects on critical environmental and cultural resources (see NEPA sidebar);
- ***Financial feasibility***, measured in terms of the ability to construct, operate and maintain the alternative within existing budgetary constraints;
- ***Consistency with existing plans and programs***, measured on the basis of conformance to the existing General Management Plan, regional land use and transportation policies, and agency mission statements; and
- ***Public acceptability***, based on the results of community outreach.

The criteria used to evaluate alternatives are tied directly to the goals and objectives of the planning study. It is critical to gain consensus from the study participants on these criteria as early as possible to avoid misunderstandings and conflicts in the final stages of the process. Tools for comparing alternatives include:

- ***Choosing by Advantage (CBA)***, a decision-making system that formulates alternatives and determines relevant attributes and advantages. The importance of each advantage is examined; if costs are equal, the alternative with the greatest number of advantages is chosen;
- ***Technical Findings Matrix***, which displays objective information about the attributes of competing alternatives;
- ***Evaluation Matrix***, which displays the relative ability of each alternative to meet study goals and objectives, using an agreed upon rating scheme ("exceeds goal," "meets goal," "fails to meet goal"); and

Since it is rare that all participants will agree on a single identified option, efforts should be made to incorporate the best attributes of several alternatives into a single option that closely meets study goals and on which consensus can be reached.

Planning Balance Sheet or Trade Off Analysis, which displays the principal advantages and dis-advantages of each alternative, relative to each other.

Select a Preferred Alternative

Selection of a preferred option generally requires discussion with NPS staff, stakeholders, and other participants and interest groups. Since it is rare that all participants will agree on a single identified option, efforts should be made to incorporate the best attributes of several alternatives into a single option that closely meets study goals and on which consensus can be reached. Environmental conditions also affect the selection of a preferred alternative. For example, if the park is an air quality non-attainment (air quality does not meet federal clean air standards) or maintenance area, options that reduce or more fully manage traffic congestion to improve air quality conditions must be considered.

The preferred alternative should be documented in a summary report that highlights the:

- Process used to select the preferred option;
- Relative advantages and disadvantages of competing alternatives;
- Reasons for selecting the preferred option;
- Major features of the preferred option; and
- Schedule for implementation, including anticipated sources of funding.

Alternatives Evaluation under NEPA

The National Environmental Policy Act (NEPA) requires that alternatives be identified and evaluated. Under NEPA, alternatives are identified through an environmental scoping process in which agencies and the public have the opportunity to:

- Comment on the need for the proposed action;
- Identify alternatives with the potential to meet the need for the proposed action; and
- Provide direction on the issues for assessment and the methodologies to be applied.

Scoping is a process, rather than an event, and the public should be given multiple opportunities to participate in identifying and screening options, particularly at the beginning of the process before decisions are finalized. Screening of alternatives is based on the degree to which the alternatives meet the goals and objectives of the proposed action, and their potential effects on the natural and man-made environment. National Park Service Guideline NPS-12, *National Environmental Policy Act Guidelines* (NPS, 1997) provides additional guidance on the NEPA process and the procedures to be used in identifying and selecting alternatives. NPS-12 is available at *www.nps.gov/planning/nepa/*.

Support is available from NPS units, federal agencies, state and regional planning organizations, and professional organizations. These include:

- **National Park Service Program Assistance**

The Alternative Transportation Program (ATP) is a new program managed by the Park Facility Management Division at the Washington Office (WASO). This program is considered to be Funding Category III of the PRP and receives $5-15 million annually (FY1999-FY2003) from the Park Roads and Parkways Program to fund transportation planning, project development, and implementation. The first multi-year call, for FY2000-FY2003, sets program priorities. Parks submit proposals to the regional office, where they are prioritized and sent to WASO for funding allocation or further prioritization. Projects can be funded through the ATP at every stage of planning, development and implementation. However, only projects using alternative transportation systems receive implementation support. The ATP Program also partially funds GMPs that have an alternative transportation component, such as helping to purchase buses at *Acadia National Park* and shuttle stops at *Zion National Park*. ATP funds at Zion are also being used as the match for TEA-21 enhancement funds for construction of a contact station at Grafton that provides shuttle information to arriving visitors.

For more information on this new program, contact

- **Lou DeLorme,**
  Team Leader for Facilities/ Transportation
  (202) 565-1254
- **Joni Gallegos,**
  Alternative Transportation Program Officer
  (202) 501-8926

- **Road Inventory Program (RIP)**

The NPS and the Federal Highway Administration (FHWA) established a Road Inventory Program in 1976. The Federal Lands Highway Division performs road inventories for parks with at least 15 miles of paved roads. Currently, 65 parks obtain road inventory services. Those parks contain 90% of total road miles in the National Park Service. The RIP reports contain basic information needed to perform effective road and road system planning, management, operations and maintenance. This information is usually augmented to include transit, bicycle and pedestrian data. RIP plans to inventory all paved roads within parks. For more information, contact

- **James Amenta,**
  FHWA RIP Program Coordinator
  (703) 404-6366

• **Traffic and Data Programs**
The NPS Field Operations Technical Support Center (FOTSC) manages a motor vehicle "count" program and supports traffic data collection efforts. For more information, contact

- **Kathryn Gunderson**
  FOTSC
  (303) 969-2177

• **Visitor Transportation System (VTS) Data**
The Denver Service Center has completed the "National Park Service Inventory and Assessment of Visitor Transportation Systems (VTS)," which includes VTS inventories for 50 parks. These inventories include information on existing transportation services, equipment, facilities, operations and maintenance procedures, ownership, ridership and costs. (Results are available at *www.nps.gov/transportation/alt/vts*).
In addition, the Federal Highway Administration (FHWA) and Federal Transit Administration (FTA) have begun a Congressionally-mandated study of transit needs for several federal land management agencies, including NPS. Contacts:

- **Kevin Percival,**
  Transportation Design Technical Specialist, National Park Service
  (303) 969-2429
- **Bob Stout,**
  Federal Transit Administration
  (202) 366-1628
- **Paul Schneider,**
  Federal Highway Administration
  (202) 366-6799

• **Visitor Services Project**
This NPS Socio-Economics Program has completed over 100 surveys, at the rate of about ten per year, on such topics as the travel behavior of park visitors. The surveys document who the park visitors are, what they do and what they need. The information can help to identify needed visitor services, and suggest potential programs to protect park resources. For Visitor Services Project information, contact

- **University of Idaho Cooperative Park Studies Unit**
  (208) 885-7129/7863,
  or e-mail:
- **Ms. Margaret Littlejohn**
  NPS VSP Coordinator,
  little@uidaho.edu
- **Dr. Gary E. Machlis**
  Sociology Project Leader
  gmachlis@uidaho.edu
- **Survey summaries are available at**
  www.nps.gov/socialscience

• **Bridge Inspection Program**
Through an interagency agreement between the Federal Highway Administration and the National Park Service, the Federal Lands Highway Division provides highway and bridge design, construction and inspection services for the NPS nationwide. The Bridge Inspection and Management Program (BIP) manages the bridge inventory for all NPS areas in compliance with the National Bridge Inspection Standards. The purpose of this program is to identify, evaluate and act upon existing bridge deficiencies to

ensure that bridges are safe. An essential part of the procedure is an evaluation of each bridge's load-carrying capacity. Following the evaluation, appropriate action is taken as necessary, such as the posting of signs to alert motorists of any load-carrying deficiencies or bridge closing. As a minimum, any public vehicular structure having an overall length of 20 feet or greater should be inspected as part of the BIP service. Tunnels, major trail bridges, loading docks and other significant structures may be inspected upon request.

In addition to the inspection of public vehicular structures, the National Bridge Inspection Standards also requires the use of a Bridge Management System (BMS) to assist in the prioritization of bridge needs. BIP generates NPS regional and nationwide structure priority lists based on the current BMS. Other structural management duties inherent in the program include the establishment of bridge load ratings, and the close scrutiny of assessment reports and seismic assessment reports. The program also serves the highway designers, planners and managers by supplying them with historic data and as-built plans of existing structures. For more information on the NPS Bridge Inspection Program or Bridge Management System, contact

- John Thiel
  FHWA
  (703) 404-6251

Additional transportation planning information and assistance can be obtained from:

- Federal Agencies
  (For a complete list of Federal Contacts, see end of Chapter 2):
  - National Park Service
    - **NPS Regional ATP Coordinators:**

Alaska	John Chekin	(907) 257-2676
Intermountain	Don Falvey	(435) 772-0140
	David Keough	(303) 969-2605
Midwest	Ted Hillmer	(402) 221-3424
National Capitol	Dave Hammers	(202) 619-7270
Northeast	Mike Alderstein	(212) 825-6881
	Bob Holzheimer	(617) 223-5096
Pacific West	Patty Neubacher	(415) 427-1305
	Dave Kruse	(415) 427-1379
Southeast	Leon Clifford	(404) 562-3124

- **www.nps.gov/transportation/**
  The Alternative Transportation Systems Program website shares information on NPS and DOT transportation planning initiatives including the MOU, TEA-21, a memo from Director Stanton on transportation opportunities, NPS and DOT contacts, training personnel exchange opportunities, Intelligent Transportation Systems (ITS), related links, press releases and frequently asked questions.

- **www.nps.gov/dsc**
  The Denver Service Center (DSC) is a multi-disciplinary planning and design office serving the primary needs of the National Park Service planning, design and construction program. Comprised of architects, landscape architects, engineers, resource specialists, contract specialists and graphic support services, the DSC personifies full-service capability for addressing the wide range of planning and design needs for the National Park Service. The DSC has been instrumental in assisting the parks, regions and other central offices in the planning and design of roads, trails, visitor centers, housing and other elements. It has also served as a primary focus for the design and planning support for the Federal Lands Highway Program and the Alternative Transportation Planning Program in past years, and has considerable background in all facets of leading and supporting those programs in projects throughout the NPS.
  For more information, contact:
  - Kevin Percival
    Transportation Design Technical Specialist
    (303) 969-2429
  - Mike Spratt
    Transportation Planning Program Project Manager
    (303) 969-2248
  - Patrick Shea
    Transportation Planning Technical Specialist
    (303) 969-2347
  - Joe Helmkamp
    Park Roads and Trails Technical Specialist
    (303) 969-2247
  - George Tait
    Park Roads and Trails Project Manager
    (303) 969-2688

- **www.nps.gov/planning/index**
  Current and completed NPS planning projects, NPS and NEPA procedures, Planners sourcebook and Internet planning information.
  - Federal Highway Administration
    - **Paul Schneider**
      (202) 366-6799
  - Federal Transit Administration
    - **Bob Stout**
      (202) 366-1628

– State and Regional Planning Organizations:

- State departments of transportation, metropolitan planning organizations, and councils of government in your area can provide technical assistance and support for transportation planning activities.

– Professional Organizations:

- **American Association of State Highway and Transportation Officials** (www.aashto.org). National membership organization for government agencies and state departments of transportation.

- **American Public Transit Association** (www.apta.com). A nonprofit international association of over 1,200 member organizations including transit systems; planning, design, construction and finance firms; product and service providers; academic institutions, and state associations and departments of transportation. For more information, contact
  - Greg Hull
    (202) 898-4015
    ghull@apta.com

- **Association of Metropolitan Planning Organizations** (www.narc.org/ampo/). A nonprofit membership organization serving the interests of metropolitan planning organizations (MPOs) nationwide. For more information, contact
  - John Swanson
    (202) 457-0710

- **Community Transportation Association of America** (www.ctaa.org). A national, professional membership association of organizations and individuals committed to removing barriers to isolation and to improving mobility for all people. CTAA conducts research, provides technical assistance, offers educational programs and is an advocate for coordinated community transportation that is affordable and accessible. CTAA projects include the National Transit Resource Center, a resource for transit projects, and the Transportation Assistance Project, which provides information on transportation accessibility and transportation providers. For more information, contact
  - Chris Zeilinger
    Assistant Director for Governmental Affairs and Training
    (202) 661-0217
  - Charles Rutkowski
    Assistant Director
    (202) 661-0219

- **Institute of Transportation Engineers** (www.ite.org). An international educational and scientific association of traffic engineers, transportation

planners and other professionals who are concerned with safe and efficient surface transportation. Their website contains information on state highway and transportation departments and an extensive library of transportation publications, products and service providers.

- **Intelligent Transportation Society of America or "ITS America"** (www.itsa.org). A congressionally-mandated organization that fosters public/private partnerships that increase the safety and efficiency of surface transportation through the use of advanced technologies. Membership includes federal, state, local and foreign government agencies; national and international companies involved in the development of intelligent transportation systems (ITS); universities, independent research organizations, public interest groups, and others with a stake in ITS. For more information, contact
  - Robert Puentes
    Director of Infrastructure Programs
    (202) 484-4663
    rpuentes@itsa.org

- **Transportation Research Board** (www.nas.edu/trb). A unit of the National Research Council, a private, nonprofit institution that is the principal operating agency of the National Academy of Sciences and the National Academy of Engineering. The Board's mission is to promote innovation and progress in transportation by stimulating and conducting research, facilitating the dissemination of information, and encouraging the implementation of research results. Their website has an extensive database of transportation research.

– Publications:

- **Institute of Transportation Engineers**
  Transportation Planning Handbook (Englewood Cliffs, NJ: Prentice Hall)

- **Institute of Transportation Engineers**
  Traffic Engineering Handbook (Englewood Cliffs, NJ: Prentice Hall)

- **Institute of Transportation Engineers**
  Manual of Transportation Engineering Studies (Englewood Cliffs, NJ: Prentice Hall)

- **National Park Service**
  Park Road Standards, 1984.

- **Transportation Research Board**
  Highway Capacity Manual, Special Report 209, Third Edition (Washington, D.C.: National Research Council, 1994, updated in 1997).

Chapter 5

Transportation Challenges and the Search for Solutions

This chapter presents strategies and tools for identifying and responding to the three transportation challenges most commonly encountered in NPS parks. A range of possible solutions is explored, along with examples of ways park officials have successfully resolved specific transportation issues.

The three most commonly encountered transportation challenges are:

- *Access:* Limited or impaired ability of visitors to gain access to a park because of vehicle congestion that limits visitor mobility, lessens the visitor's park experience and adversely impacts park resources, including air and noise pollution.
- *Circulation:* Limited opportunities for visitors to use non-motorized travel, such as bicycling, walking, hiking and alternative transportation modes.
- *Parking:* Insufficient, inconvenient or inadequately-managed vehicle parking.

While each of these challenges has distinct elements, the issues are intertwined; reducing congestion affects parking, circulation patterns, and access. Alternatives to automobile use, most notably Visitor Transportation Systems (VTS), also known as Alternative Transportation Systems (ATS), are an over-arching component that can address all three transportation challenges. Table 1 summarizes National Park Service transportation objectives for each of these challenges and provides examples of current transportation strategies and tools that may be appropriate to minimize or eliminate specific transportation deficits.

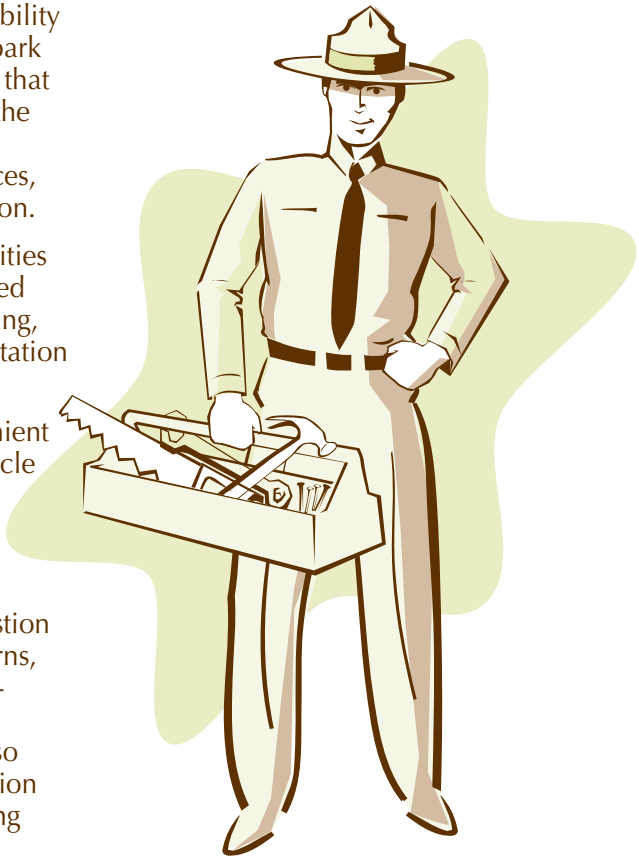


TABLE 1 – *Transportation Strategies and Tools*

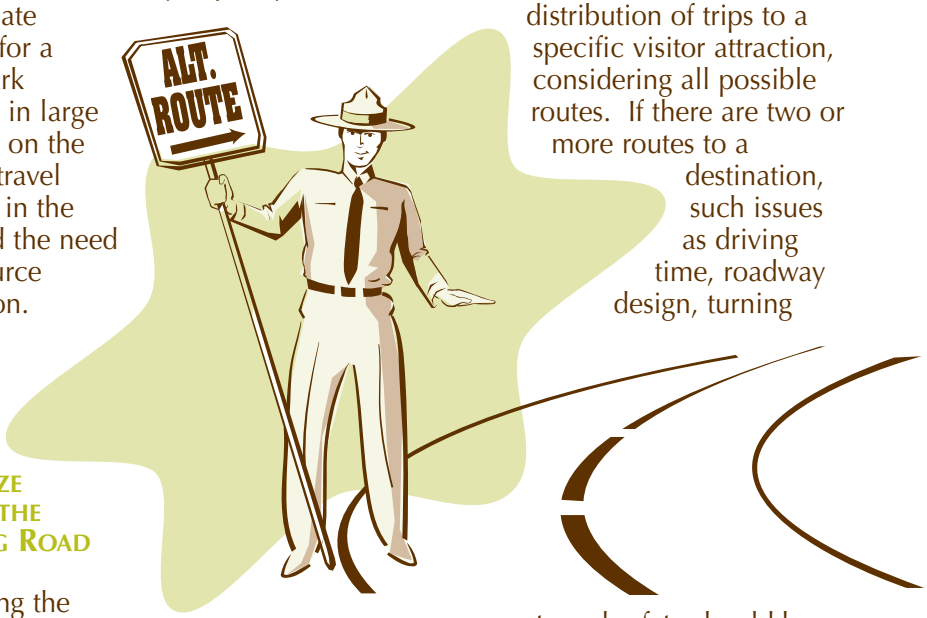
Transportation Challenges	NPS Transportation Objectives	Examples of Available Strategies/Tools
1. Improve Vehicular Access	• Manage transportation demand • Reduce traffic congestion • Reduce vehicular travel • Minimize adverse effects of vehicular traffic on sensitive park resources	• Selectively enhance roadway network capacity by adding roadways, increasing lane widths, adding or widening intersections, or adding turning lanes on roadways or at intersections. • Reduce/redistribute visitor demand by providing non-vehicular travel modes. • Encourage off-peak visits and park use. • Provide marketing and advanced traveler information. • Provide maps and brochures of travel routes, schedules and fees. • Use "way-finding" signage. • Restrict access to roadways. • Link in-park car use to overnight accommodation and/or day use permit. • Use trip reduction programs (carpooling, vanpooling) for NPS staff and concessioners. • Provide motorist aid and incident response services (towing or quick removal of disabled vehicles). • Implement a Reservation System.
2. Improve Circulation within Parks	• Improve visitor access to park features • Improve and expand bicycle and pedestrian access to trail/path networks • Reduce vehicular travel and congestion on trails and roads and at attractions • Minimize adverse effects of vehicular traffic on sensitive park resources	• Reduce/redistribute visitor demand in congested/overused park areas through improved information systems, marketing and reservation systems. • Enhance transportation systems/services by providing bicycle and pedestrian alternatives. • Remove transportation facilities from sensitive resource areas. • Amend park regulations to reflect improvements/modifications to circulation in parks. • Enforce laws and regulations governing circulation in parks. • Encourage use of alternate travel modes.
3. Improve Parking	• Eliminate parking lot overflow and related resource degradation • Manage transportation demand	• Coordinate parking with gateway communities and adjacent public lands. • Provide separate parking for overnight visitors and day visitors. • Coordinate Alternative Transportation Systems (ATS), bike and pedestrian facilities with gateway communities. • Enhance existing non-vehicular transportation systems/services to reduce parking demand. • Enforce parking laws/regulations. • Reduce/redistribute visitor demand using reservation systems. • Implement parking fees or vehicle "user" fees to recoup operating costs, discourage driving and encourage use of non-vehicular transportation modes. • Remove parking from sensitive resource areas. • Redistribute visitor circulation patterns to channel visitors away from sensitive areas. • Selectively add parking capacity, where necessary.

CHALLENGE 1
Improve Vehicular Access

Access is increasingly a problem in our national parks, as well as on scenic highways and heritage corridors. Traffic congestion restricts access, detracts from the visitor's experience and has environmental consequences for the preservation of sensitive natural and cultural resources. Congestion management strategies are available to address this growing problem.

Options to Improve Access and Reduce Congestion

Three principal options for improving access and reducing traffic congestion are: maximize use of the existing road system; implement a system for controlling demand (reservations or fees); and add roadway capacity. The appropriate strategy for a given park depends in large measure on the level of travel demand in the park and the need for resource protection.



Maximize Use of the Existing Road System

Enhancing the efficiency of the existing roadway system can provide significant benefits at a relatively modest cost. The method selected to improve management and operation of the roadway system should be based on examination of the roadway network and the numbers and types of vehicles in the park. The following information should be collected and evaluated to determine appropriate roadway improvements.

- ***Traffic Data.*** Traffic data will determine average travel speeds and the number and flow of vehicles at key intersections and along busy roadways at different times of day. Data includes traffic volume, percentage of total traffic represented by large vehicles, the nature and locations of conflicting vehicle turning movements, and incidence and locations of conflicting vehicle and pedestrian/bicyclist movements.
- ***Direction of Travel.*** The directional distribution of trips to a specific visitor attraction, considering all possible routes. If there are two or more routes to a destination, such issues as driving time, roadway design, turning movements and safety should be considered.
- ***Roadway Conditions.*** Visual inspection of the number of lanes, lane width, surface type, shoulder

width, curbs, gutters, guardrails, bridges, signs and culverts.

- ***Safety Data.*** Accident data, including high accident locations, and bike/pedestrian/equestrian conflicts, signage and striping.

This information will suggest specific actions to alleviate congestion, including:

- ***Roadway Modifications.*** Create one-way roads, realign converging roads to eliminate confusion, post speed limits and "way-finding" signs, and make other safety improvements at specific accident trouble spots.

- ***Traffic Restrictions.*** Limit use of certain roads to visitors holding campsite reservations and restrict vehicle types based on roadway width and parking availability. Vehicle-length and time of day restrictions are most effective when phased in over time. For example, **Glacier National Park's** mandatory vehicle-length restrictions were implemented gradually, with advance notice given to road users. **Sequoia National Park** introduced voluntary vehicle-length restrictions on the park's steep roads. (See Case Study, next page)

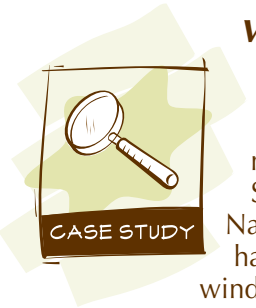
- ***Promote Off-Peak Park Use.*** Implement a publicity program to encourage off-season park use.

- ***Intelligent Transportation Systems.*** Intelligent Transportation Systems (ITS) take advantage of current technology to provide information to travelers and prospective park visitors via the Internet, changeable message signs on principal roadways, messages on highway-advisory radio broadcasts, kiosks, and a travelers-advisory telephone system. Information includes maps and brochures relating to the roadway systems and alternative travel routes; transit routes, bus schedules and prices; and bike and pedestrian paths. ITS also has other applications. At the **Grand Canyon**, it is being used for electronic collection of entrance fees.

- ***Trip Planning Information.*** Information available about transit and other services at the trip planning stage makes it more likely that it will be incorporated into travel plans. The **Yosemite Area Traveler Information System** (YATI) is an excellent example of an advanced traveler information system in a rural environment. YATI informs travelers via a network of high-tech communication systems including the Internet; variable message signs; highway advisories on radio; and a travelers-advisory telephone system. Project sponsors are the NPS, the California Department of Transportation and the five counties surrounding the park.

- ***Entrance Fees and Reservation Systems.*** Entrance fees can be set to encourage use of alternative transportation systems through reduced fees. Reservation systems can help regulate visitor travel demand by requiring parking reservations within the park.

- ***Offer Travel Options.*** For instance, improvements to existing bus/ferry service or adding new services; increasing frequency of service; new routes; constructing shelters and other amenities; and providing more comfortable and spacious vehicles.
- ***Motorist Aid Services.*** Institute or augment incident response services, such as towing and rapid removal of disabled vehicles and clearing of obstructions caused by accidents and other incidents.



Voluntary Vehicle Length Restrictions at Sequoia National Park

Traveling the steep mountainous terrain in the Sequoia and Kings Canyon National Parks can be a slow and hair-raising experience along its winding and narrow roads. Formerly, the park permitted diesel trucks and recreational vehicles to negotiate the turns and twists on all of its access roads. However, to reduce the potential for accidents, the park began to consider vehicle length restrictions on some roads. One such road is the General's Highway, a primary access road to the park, which contains 130 curves and 12 switchbacks while climbing from 1,500 to 6,800 feet in the 20-mile stretch between the Ash Mountain entrance station and Giant Forest. In the early 1990s an EIS for the roadway recommended the restriction of vehicles over 22 feet in length based on an analysis of turning radii. The park recommends that travelers use Route 180 as the alternative for vehicles exceeding the 22 feet limit. Other roads serving Crescent Meadow and Crystal Caves are so narrow that trucks and other large vehicles that met each other on the road were frequently unable to pass each other, forcing one to back up to let the other continue. A voluntary vehicle length restriction of 20 feet was implemented based on a thorough analysis of safety needs.

The business community was concerned that the recommended restrictions on General's Highway would discourage visitation and hurt business, particularly since road construction projects were already restricting the flow of traffic into the area. The park compromised with the business community by implementing voluntary rather than required length restrictions and by providing sufficient signage and other notification of available alternatives.

Public outreach provides visitors with advance information about the restrictions. Vehicle length restrictions are publicized on the Sequoia Kings Canyon National Parks web site, newspapers and other publications, and signage. Signs, located well in advance of the park boundaries, provide information on the vehicle length restrictions. The Park Service also posts signs within park boundaries. For more information, contact

- Jack Vance
  Park Engineer at
  Sequoia National Park
  (559) 565-3102

Signs...Signs

Just as the design of NPS publications and wayside exhibits contributes to establishing recognizable interpretive media, well designed and consistent signage can contribute to a familiar, distinctive NPS identity. Signage that evolves from common standards can significantly improve communication with park visitors.

Currently, NPS is implementing prototype "way-finding" signage systems in Yosemite National Park and other pilot parks. This system is being extended to other parks with the goal of eventual implementation system-wide. In contrast to existing NPS signage guidelines in the 1988 NPS Sign Manual (see *www.nps.gov/crweb1/npsigns/index.html*), the proposed way-finding standards provide a comprehensive system for the design and fabrication of the entire range of sign types. These signs will be distinctive, sturdy, reasonably priced, easy to maintain and replace, and effective in conveying critical information to all park visitors. For additional information on way-finding, contact

- Phil Musselwhite
  Harper's Ferry Center
  (304) 535-6046

Implement Reservation Systems

Park reservation systems can help manage and protect park resources and enhance visitors' enjoyment of park attractions. Reservation systems are used successfully for managing campgrounds and hotel rooms, access to wilderness areas, day use of the park and local bus systems. At **Yosemite National Park** a reservation system manages campground use and access to wilderness areas. **Golden Gate National Recreation Area** uses a reservation system for its Alcatraz ferry service. In Alaska, **Denali National Park** has a reservation system for its transit service, which is the primary travel mode for park visitors.

The volume of visitors and their circulation patterns are key to understanding their impact on the park. If there are more visitors than a park can handle on a peak day or if the number of people at a specific location makes the site less attractive, a reservation system may help control attendance. If one area of a park is heavily affected while others are not, reservations may be needed only for the most popular attractions. If traffic circulation is an issue, the appropriate approach may be to provide incentives, such as preference for those holding reservations and visitors who use public transit.

Issues to consider prior to implementing a reservation system include:

- Is the park at or above capacity in terms of providing an optimal experience for visitors?
- Do variations in levels of user demand affect the quality of the visitor's experience or the park's ability to protect its resources?
- Can a reservation system be effectively targeted to manage the impact of visitors?
- Would a reservation system increase operating costs?

Implementing a reservation system is a significant decision requiring careful consideration. The system can be managed by private providers (who assume full responsibility for reservation operations) or by NPS. The system can be multiple-service, for campground use, bus rides and educational tours, or a single-service, such as a campground. Reservations can be pre-arranged (before visitors get to the park) or made on-the-spot (filled on a first-come, first-served basis). There may be a fee for reservations or they may be free of charge. Reservations may be used year-round or seasonally.

Expansion or Addition of Roadways

Adding capacity to the existing roadway system is typically a high cost solution with significant environmental implications. Issues that arise when considering the appropriateness of adding roadway capacity include:

- *Design issues:* Alignment; lane width, and surface type; shoulder width and surface type; ditch width, angle of cut and fill slopes; turning and passing lanes; and pullouts, bridge locations and utility relocations.
- *Environmental and cultural sensitivities:* Natural and cultural resource protection; aesthetics, traffic-related noise and air quality; geology and soils hydrology; and land use compatibility.
- *Construction issues:* Contract administration (NPS, FHWA, state or consultant), traffic management during construction and construction schedules.
- *Project costs:* Costs typically include planning and design, environmental analysis, agency permits, clearance/demolition, and construction management.

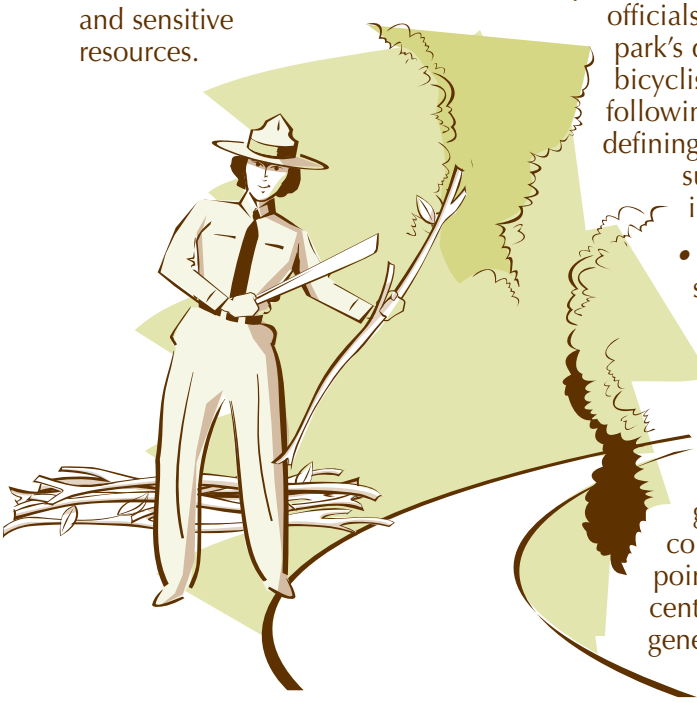
Resources:

References

- American Planning Association, *Transportation Demand Management*, 1998.
- American Planning Association, *Traffic Impact Analysis*, 1984.
- Institute of Transportation Engineers, *Trip Generation Manual, Sixth Edition*, 1997.
- Institute of Transportation Engineers, *Traffic Access and Impact Studies for Site Development*, 1988.
- Federal Highway Administration, *Flexibility in Highway Design*, 1997.

CHALLENGE 2
Improve Circulation within Parks

Visitor travel patterns within park boundaries shape their experience. The challenge is to establish circulation patterns that enhance the visitor experience and protect the park's natural attractions and sensitive resources.



Bicycling and walking, particularly when combined with affordable and efficient transit service, are effective and pleasurable alternatives to automobile travel. For these alternatives to gain popularity they must be safe, enjoyable and convenient. Ideally, visitors should learn about alternatives to automobile travel before they leave home so they can take full advantage of pedestrian, bike, and transit facilities and services available within the park.

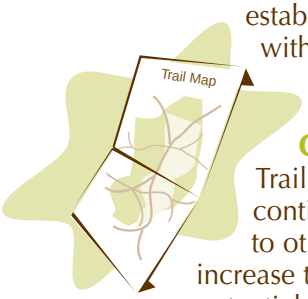
The separate and distinct needs of bicyclists and pedestrians should be accommodated in the planning and design of park facilities and services. Planning should include strategies for managing trail uses by bicyclists, pedestrians and other users. Before pursuing specific bicycle and pedestrian facility improvements, park officials should determine the park's deficiencies in serving bicyclists and pedestrians. The following data can assist in defining existing deficiencies and suggesting possible improvements.

- ***Visitor Use Surveys.*** These surveys document visitor perceptions about the attractiveness and utility of existing bicycle and pedestrian facilities and suggestions for improvements to encourage greater use. Surveys are conducted at trailheads, points of interest and at visitor centers. Questions address the general visitor experience on specific trails and pathways, existing pedestrian and bicyclist facilities, and potential improvements.
- ***Accident Reports.*** Accident reports reveal specific public safety concerns and may assist in identifying the types and locations of necessary or desirable improvements to bicycle and pedestrian facilities.
- ***Pedestrian and Bicyclist Counts.*** Counts of pedestrians and bicyclists along pathways and at points of interest provide useful data to determine locations where facility

improvements are needed. Park officials also use this data to project future demand for pedestrian and bike facilities and amenities.

- ***Length of Walks and Rides.*** The lengths of trail sections may be a good indicator of which sections are likely to be the most popular for both pedestrians and bicyclists. This information can help predict areas of potential user conflict between pedestrians and bicyclists, for which strategies to avoid such conflict may be warranted.

- ***Trail Networks.*** An inventory of trail networks outside the park is useful in directing development of new bike and pedestrian trails within the park so the two networks can be coordinated into longer and more varied trails. An inventory may also identify an organization outside the park that oversees trail networks. Park officials can then establish a working relationship with this group to coordinate trail use.



Creating Trail Linkages

Trails that are well-defined, continuous and provide linkages to other trails can greatly increase their attractiveness to potential users. In planning and building new trails, every effort should be made to connect existing trails, fill in missing sections and improve inadequate linkages. Tips for creating trail networks include:

- ***Develop a Map.*** Display trail networks in a broad conceptual map that shows existing trails and their connections to potential new trail corridors.

- ***Consider Regional Trails.*** Give special attention to major existing trail networks, such as the National Trails System. Linkages to these networks can create an interconnected, cross-country trail system.

- ***Seek Partnerships.*** Establish partnerships with cities and counties that abut the park, and with state transportation planning organizations. Partnerships with these groups will result in the most successful planning and implementation of new trail networks.

- ***Know Your Resources.*** Seek assistance from the Rivers, Trails, and Conservation Assistance *(Rivers & Trails)*, the Rails to Trails Conservancy (RTC), the National Center for Bicycling and Walking, and the Design and Facility Management Teams in NPS Regional Offices. They can provide important advice and organizational resources. (See "Trail Help" later in this section.)

Partnering on Trails Projects: The Santa Monica Mountains National Recreation Area

Less than one-fifth of the public parkland in this California recreation area is in NPS ownership. Thus, planning for the recreation area involves other federal land management agencies, California land agencies, private owners and user groups. Work on a Trails Management Plan began in the fall of 1998 as a large cooperative effort to supplement the area's General Management Plan.

The NPS took the lead in facilitating regular meetings with the California Department of Parks and Recreation and the Santa Monica Mountains Conservancy. The three agencies are developing an extensive trail inventory and system-wide planning for the entire recreation area. For more information contact

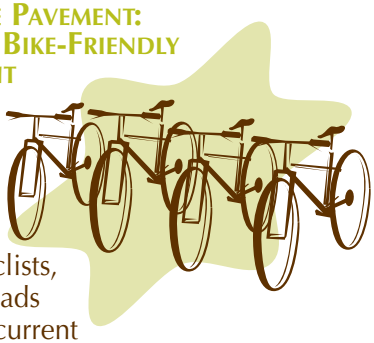
- Nancy Andrews
  Chief of Planning and Resource Management
  (805) 370-2331
- Melanie Beck
  Outdoor Recreation Planner
  (805) 370-2346
- Mary Devine
  Transportation Planner/Landscape Architect
  (805) 370-2347

Pedestrian-Friendly Amenities

Enjoyment of the park can be immeasurably enhanced by providing comfortable rest stops and easy access to points of scenic attraction. Improvements that encourage visitors to venture forth as pedestrians include:

- ***Pedestrian Furnishings.*** Attractive and durable seating and benches at major activity centers.
- ***Pedestrian Continuity.*** New sidewalks or pathways to connect existing paths where linkages are missing or inadequate.
- ***Linkages to Points of Interest.*** Pedestrian-friendly links between camping and picnic areas and scenic points of interest, such as trailheads, food stores and other visitor-orientated facilities.

Sharing the Pavement: Planning a Bike-Friendly Environment



While both paved and unpaved park roadways are used by bicyclists, many park roads pre-date the current popularity of bicycling. Sharing these older, often narrow roads with vehicular traffic can be unpleasant and dangerous for bicyclists. A few bicycle-friendly design improvements can help make roads more compatible with bicycling:

- ***Provide Signs.*** Add signs to heighten awareness of other park users ("Bike Route," "Share the Road," etc.) Provide signage to direct bicyclists to bicycle-friendly highways, locations of bicycle storage areas, and transit routes with buses equipped with bike racks.
- ***Distinguish Bike Lanes.*** Clearly distinguish between auto and bike lanes by marking shoulders with bold lane lines and directional striping.
- ***Improve Crosswalks.*** Provide marked crosswalks at busy intersections.
- ***Enhance Shoulders.*** Provide smooth, paved shoulders on popular bicycling routes.
- ***Create Safe Zones.*** Create bicycle "safe zones" for non-turning bicyclists in areas with vehicular right-turn lanes.

Protection Against Social Trailing

The GMP completed for **Bryce Canyon National Park** in 1988 stated that annual visitation would not pass one million until the year 2000. But this barrier was broken just two years later. Visitation has continued to increase at a rate of over 100,000 additional visitors annually. Many of the visitors are coming by way of commercial tours. Bryce Canyon now sees over 5,000 commercial buses annually.

Secondary barriers protect vegetation from "social trailing" at popular Bryce Canyon viewpoints.

Commercial tour buses drop off large groups of people at destinations and viewpoints, which overwhelm paths and trails originally designed for smaller groups of visitors. The problem is not always providing enough capacity to accommodate visitors. "Many trails can handle the additional use, the trick is keeping visitors on them" states Superintendent Fred Fagergren. As a result, walking off sidewalks and trails, commonly referred to as "social trailing," has become a big problem at Bryce Canyon. Visitor impact monitoring has shown that barren areas are increasing at the rate of five percent per year.

To help reduce visitor impacts and protect the sensitive areas around viewpoints, park staff have successfully employed a combination of different techniques:

- Observed visitor behavior and pedestrian travel patterns to better understand their walking "desire lines";
- Straightened and expanded walkways at popular destinations to accommodate tour shuttle masses along desire lines; and
- Installed secondary barriers to prevent further vegetation loss.

To date, the efforts at the modified viewpoints have reduced visitor impacts on vegetation. For more information, contact

- Fred Fagergren
  Bryce Canyon National Park
  (435) 834-5322

- ***Enhance Bridges.*** Incorporate facilities to safely accommodate bicycles on existing automobile bridges, or provide separate bridges and tunnels where no feasible alternative exists.

- ***Build Linkages.*** Build new sidewalks or bike lanes to link currently discontinuous routes. Discontinuous or inadequate pathways force bicyclists onto the roadway and into potential conflict with vehicular traffic.

- ***Rules of the Road.*** Require bicyclists to obey roadway rules and regulations that apply to motorists, including traffic signals, signs and pavement markings.
- ***Raise Visibility.*** Require reflectors or lights on bicycles for use between sunset and sunrise, and during periods of low visibility.
- ***Reduce Obstructions.*** Prohibit two-abreast cycling on narrow roadways.
- ***Regulate Trail Time.*** Create bike-only and pedestrian-only time periods on some trails to allow shared use and eliminate potential conflict. While much of the **Great Smoky Mountains National Park** is not particularly bicycle-friendly, the 11-mile loop road through the historic district of Cade's Cove is a favorite of cyclists. However, the one-way road often has bumper-to-bumper traffic, particularly in summer months, making biking conditions dangerous and unpleasant. To provide a safe and quiet experience for bicyclists and pedestrians, park officials closed the road to motor vehicles from sunrise until 10:00 a.m. The park tested the closure on a one-day-a-week basis. The closure was so popular it was extended to two days a week. The road is closed to vehicles on Wednesdays and Saturdays from early May to late September; and on Saturdays in December, the loop road is closed to cars until noon.

Bicycle Facilities

Amenities that increase convenience and encourage bicycling within national parks include:

- ***Increase Transit Compatibility.*** Provide bike racks on the exterior of park buses to make it easier for bicyclists to use park buses.
- ***Bicycle Storage.*** Visitors will be more inclined to bring bikes if safe bicycle storage is readily available and affordable; install bicycle lockers or "bicycle safes" in areas with heavy bicycle activity, such as campsites, trailheads and shopping areas.
- ***Bicycle Rentals.*** Provide a concessioner to rent bicycles for use in the park.

Trail Help

Rivers, Trails and Conservation Assistance (Rivers & Trails) Program

Park officials contemplating a specific trail project or the development of a trail network that links to a surrounding community or natural and recreational resource should contact *Rivers & Trails*, an NPS program that helps local groups, communities and agencies pursue conservation projects by providing technical assistance. While *Rivers & Trails* staff can provide expertise from project conception to implementation, they specialize in helping build the momentum needed to carry a project through its early stages. Typical *Rivers & Trails* activities might include:

- Helping to set project goals, a plan of action, and a timeframe for project development;
- Acting as a facilitator among local groups to identify common ground

and foster consensus;
- Providing contacts and helping local groups develop relationships with larger conservation organizations such as the Rails-to-Trails Conservancy, the U.S. Forest Service, and state departments of parks and recreation.

Rivers & Trails staff can offer varying levels of assistance, ranging from advice on a specific issue, to establishing a long-term relationship with community groups.

The program provides the following types of assistance:

- ***River, Trail and Greenway Planning.*** Assistance to implement specific projects, offering expertise on consensus-building, planning, design and environmental regulations.
- ***Regional Assessments.*** Assistance in regional areas to inventory and evaluate significant trail and river corridors to help local officials make informed decisions about trail improvements.
- ***Conservation Workshops and Consultations.*** Training and advice on trail and greenway conservation issues, and contacts with organizations that specialize in trail and corridor design, public involvement, and environmental regulation.

Groups seeking *Rivers & Trails* assistance must demonstrate that their projects have strong local support and seek to fulfill specific goals. Applications for assistance are reviewed annually; generally during the summer months. For more information, find the appropriate contact for your region at

www.ncrc.nps.gov/rtca/
or call
the National Program Office
(202) 565-1200

Rivers & Trails was an essential player in planning the **Monon Rail-Trail**, an ambitious metro-wide greenway project in Indiana. The 7.5-mile trail joins downtown Indianapolis with Marion County, connecting neighborhoods to natural areas and units of the Indianapolis Park System. By providing linkages to a variety of destinations, the trail has been extremely popular since its opening in 1996. With an estimated visitation over 1 million, the trail recently underwent a 4.5 mile expansion, and now connects to health clubs, shopping plazas, public and private schools, the Indiana State Fairgrounds and other area trails.

Rivers & Trails was involved in many aspects of project planning, and initially assisted with the development of a public participation program. The program helped to garner strong public support for the project, which has often been cited as a main contributor to the project's success. Planning officially commenced when the involvement of Marion County citizens led to the development of the 1994 Indianapolis Greenways Master Plan and the Monon Rail-Trail Comprehensive Plan.

Throughout the development of these plans, *Rivers & Trails* served as a clearinghouse for information useful to implementing the project. *Rivers*

& Trails staff provided information about potential funding sources, helping to attract $2.6 million in ISTEA grants, and match dollars from the Lilly Endowment ($800,000) and the City of Indianapolis Improvement Fund ($600,000). Staff also provided assistance with drafting operational plans for the trail, helping to draft design guidelines and other policies designed to minimize user conflict. These policies were important as the trail is designed to accommodate a wide variety of users, including pedestrians, in-line skaters, and bicyclists.

Due to the success of the project, *Rivers & Trails* is now involved with current greenway planning in the city and updating the overall greenway master plan. For more information about *Rivers & Trails* involvement in the Monon Rail-Trail project, contact

- Rory Robinson
  NPS Rivers & Trails
  (330) 657-2950

Rails-to-Trails Conservancy (RTC)

This nonprofit group is dedicated to creating a nationwide network of public trails from abandoned rail lines and the connection of trail corridors. It has an extensive network of contacts in the recreation, transportation and conservation communities. RTC works with park officials to develop trail networks in partnership with neighbor organizations. RTC activities include:

- Notifying trail advocates and local governments of upcoming railroad abandonments;
- Assisting public and private agencies in trail corridor acquisition;
- Providing technical assistance to trail planners and managers on trail design, development and protection, and rail-trail issues;
- Promotion and publicity.

The Rails-to-Trails Conservancy has 80,000 members and supporters with field offices in California, Pennsylvania, Ohio, Michigan and Florida. For more information about the Rails-to-Trails Conservancy, call
(202) 331-9696
or visit the National Transportation Enhancements Clearinghouse web site at **www.railtrails.org**

This is an information resource and technical assistance center for understanding transportation enhancements under TEA-21. It also provides points of contact for new partners in the federal highway program.

National Trail System Programming

National recreation trails are existing trails recognized by the federal government as contributing to the National Trails System. They vary in length, terrain, difficulty and accessibility. These trails may be managed by public or private agencies at the local, state and national levels and include nature trails, river routes and historic tours. Besides administering and coordinating national trails, the National Park Service conducts a variety of programs to enhance and build a national system of trails available to all. For further information on the National Trails System and its various components and programs, go to

http://www.nps.gov/trails/
or contact
Steve Elkinton
Program Leader
(202) 565-1177

Federal Highway Administration's Bicycle and Pedestrian Program

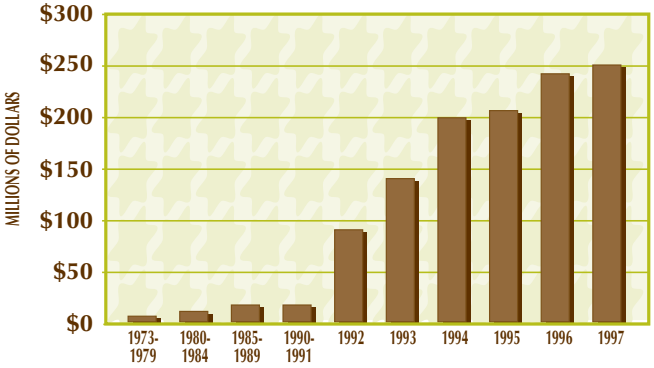
The FHWA's Bicycle and Pedestrian Program Office is responsible for promoting bicycle and pedestrian transportation use and safety. Building on successes of ISTEA, the new legislation under TEA-21 provides the funding, planning and policy tools necessary to create more walkable and bicycle-friendly communities.

Each state is required to fund a Bicycle and Pedestrian Coordinator position in its state department of transportation to promote and facilitate the increased use of non-motorized transportation, including developing facilities for the use of pedestrians and bicyclists and public educational, promotional and safety programs for using such facilities. In most states, the Coordinator is a full-time employee with sufficient responsibility to deal effectively with other agencies, state offices, and divisions within the state DOT. A list of these coordinators and their phone numbers is provided in the Resource area at the end of this section. For more information on FHWA's Bicycle and Pedestrian Program, see **www.fhwa.dot.gov/hep10/biped/biped.html**

Funding Opportunities

TEA-21 Funding for Bicycling and Pedestrians

TEA-21 is an important source of funding for bicycle and pedestrian programs. In fact it is widely recognized as "the bill to fund highways, transit and bicycle paths." TEA-21 creates a new standard for considering bicycle and pedestrian needs when road projects are undertaken. Bicycle and pedestrian facilities "shall be considered, where appropriate, in conjunction with all new construction and reconstruction of transportation facilities…" (TEA-21, Section 1202.) Consideration of bicycle facilities and pedestrian accommodations is mandated in preparing long-range transportation plans. Projects that protect the safety of bicyclists are eligible for federal safety funds, including publicly-owned bicycle and pedestrian pathways and trails and traffic-calming activities.



SOURCE: TEA-21 User's Guide, STPP, 1998, page 36

Figure 3: Federal Funds for Bike Projects

The following programs provide funding for pedestrian and bicycle facilities and services. Additional

detailed information on potential sources of transportation funding is provided in Chapter 6.

- ***Transportation Enhancements.*** TEA-21's funding program to states for transportation enhancements can be used for bike and pedestrian facilities, among a variety of other non-traditional surface transportation projects. Eligible projects include: bike racks on park buses, improving bike and pedestrian pathways, building bike lockers and safety and educational programs for pedestrians and bicyclists.

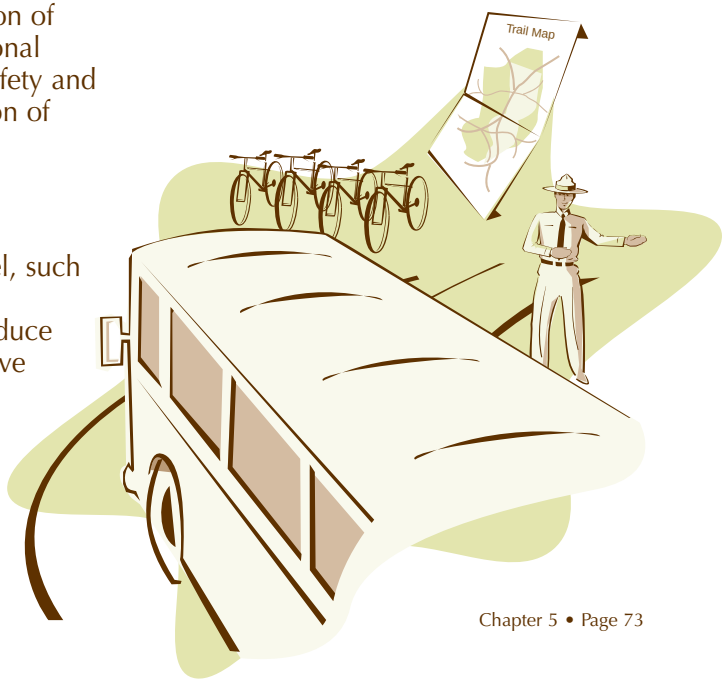
- ***Recreational Trails Program.*** TEA-21's Recreational Trails Program provides funds to states to develop and maintain trails and trail-related facilities. The state, through a designated agency, solicits and selects projects for funding, including construction of new trails, maintaining and restoring existing trails, developing and rehabilitating trailhead facilities and trail linkages, purchase or lease of equipment, acquisition of easements and educational programs to promote safety and environmental protection of recreational trails.

Encourage Alternate Travel Modes

Alternative means of travel, such as trains, buses, ferries, bicycling and walking, reduce traffic volumes and improve traffic flow. Several parks have addressed traffic congestion by limiting automobile access, offering travel options for visitor and employee use, and encouraging trail development for pedestrians and bicyclists.

A range of actions is available for encouraging alternative travel modes:

- ***Improve or Implement Transit Service.*** For existing transit service: augment service; provide convenient, durable bus shelters, intermodal transfer facilities and other passenger amenities; increase and enforce driver training. For new transit service: develop a convenient and reliable system that is responsive to visitors travel needs. **Grand Canyon National Park** is planning to implement a light rail system that will take the majority of day-use visitors from the town of Tusayan to Grand Canyon Village, a distance of six miles. **Zion National Park** is planning a clean-fuel-burning shuttle system that will carry visitors through the canyons from a new visitor center at the park entrance. (See VTS Sidebar.)



Visitor Transportation Systems

Visitor Transportation Systems (VTS) can mitigate the negative effects of private vehicles, such as traffic congestion, air and noise pollution and other associated resource impacts. A well-designed VTS can also offer interpretive opportunities, simplify travel within the park and make it easier to view park features. More than 50 NPS parks already use some form of VTS, such as vans, buses, watercraft, trains, tramways and seaplanes. Systems range in size from small buses or a tour boat, to large fleets. The NPS VTS Inventory describes the functional components and management structures for operating each VTS. The inventory consists primarily of a database for each of the operating VTSs, including surface and waterborne systems. It has data on vehicle fleet sizes and age; system ownership and management; fare collection procedures; and operating revenues, costs and funding sources.

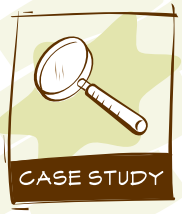
Generally, a VTS should be considered after other traffic and transportation demand techniques have been considered or implemented. Ideally, the system should function as part of an overall park transportation system and take advantage of linkages and connections to external transportation services and facilities.

The NPS uses specific criteria to judge whether a visitor transportation system is an appropriate service. The system must:

- Reduce traffic congestion, noise, air pollution, and their adverse effects on park resources and values;
- Be a cost-effective alternative to the construction of additional roads, parking areas, and support facilities;
- Enhance the visitor experience with new or improved interpretive or recreational opportunities, simplify travel within the park, or make it easier to see park features; and
- Conserve energy.

TEA-21 directed the USDOT, in consultation with the DOI, to prepare a comprehensive study of transit needs in national parks and on related public lands. This study will identify transportation strategies for national parks and assess their feasibility and costs.

New Travel Options: A Shuttle Service for Scotts Bluff National Monument



Responding to frequent requests for a shuttle service to the summit of Nebraska's **Scotts Bluff National Monument**, park managers in 1997 instituted an experimental shuttle service that takes them to the summit and allows visitors to hike down Saddle Rock Trail. Before the shuttle, visitors either hiked the trail in both directions, or had a member of the group shuttle the family vehicle from the summit to the visitor center.

VTS CONTINUED ON NEXT PAGE

The shuttle service alleviates parking congestion at the bluff's summit, and provides an opportunity to alert hikers to the dangers of rattlesnakes, dangerous cliffs and drop offs, and information on the wildlife, vegetation and geology of the area. The shuttle also opens access to the summit since recreational vehicles and motor homes are too large for the summit road's three historic tunnels. In the past, school and tour buses used the road only when it was closed to private vehicles so they could travel the centerline through the tunnels. With the availability of the shuttle, this is no longer necessary for the trip to the summit.

To institute the shuttle service, Scotts Bluff National Monument joined the NPS Recreational Fee Demonstration Program and increased the entrance fee from $4.00 to $5.00; the additional $1.00 supports the rental of the shuttle and the salary of two seasonal rangers. The shuttle currently operates on a half-hour departure schedule during peak visitor season, June through Labor Day. The popular shuttle uses a 15-passenger bus, which avoids the need for an operator to have a commercial driver's license. (The NPS Recreational Fee Demonstration Program is described in Chapter Six.) For more information, contact

- Superintendent
  Scotts Bluff National Monument
  (308) 436-4340

VTS Management

Most VTSs are owned and operated by a concessioner. Under most concessioner contracts, the NPS does not own the vehicles and is not responsible for repair and replacement; park staff are not involved in operating and maintaining the service. If equipment becomes obsolete, park staff can arrange with the concessioner to upgrade the equipment. However, using a concessioner gives park officials minimal leverage to make changes in the system. Examples of VTSs provided by concessioner include: ferry services to **Fire Island National Seashore**; seaplane services to **Isle Royale**; rubber-tired trolley service at the **Adams Historic Site**; and bus service at **Denali National Park**, which has one of the largest VTS fleets in the NPS.

An alternative management strategy that gives the park greater control, is to own the VTS and use a concessioner to operate the system. The advantages are that the park staff controls the equipment and thus has greater leverage with the operator; it may be easier to replace an unsatisfactory concessioner if the park owns the equipment. However, this approach puts greater responsibility on park managers. They must implement and fund a vehicle maintenance and replacement program, which may be subject to competing park needs. Examples of NPS-owned/concessioner-operated VTSs include the new bus system at **Zion National Park**; ferry service at **Curecanti National Recreational Area**; and transportation systems in **Yosemite National Park** and **Grand Canyon National Park**.

VTS CONTINUED ON NEXT PAGE

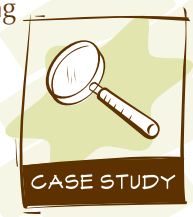
The greatest level of control is provided when the NPS owns and operates the VTS; park officials have full control of the service, including maintenance, operations and vehicle replacement. The downside here is that the VTS may have to compete with other funding priorities, making it difficult to provide timely vehicle replacement. The park is also responsible for providing drivers, dispatchers and maintenance personnel. This is particularly difficult if the VTS is seasonal, rather than year-round. Examples of government-owned-and-operated VTSs include a propane-fueled bus system at **Lyndon Johnson National Historic Park**; an electric trolley system at **Lowell National Historic Park**; ferry service at **Isle Royale**; and a shuttle system at **North Cascades National Park**. For more information on planning a VTS, contact:

www.nps.gov/transportation/

- Michael Spratt
  Alternative Transportation Program Project Manager
  (303) 969-2248
- Patrick Shea
  Transportation Planner
  (303) 969-2347
- Kevin Percival
  Transportation Design Technical Specialist
  (303) 969-2429

The VTS planning process is outlined in the *Alternative Transportation Modes Feasibility Study Volume I: Visitor Transportation System Alternatives For National Park Units* (1994). The report is available from the Technical Information Center (TIC) at the DSC **(303) 969-2130**.

Using Concessioners to Improve Access to Isle Royale National Park



Isle Royale is unique among the national parks in that motor vehicles are not permitted in the park. Isle Royale is a 45-mile long island, actually an archipelago, located on Lake Superior, about 20 miles southeast of Grand Portage, Minnesota and 53 miles north of Copper Harbor, Michigan. Transportation to and from the island is only available by boat or seaplane. Private concessioners are the primary providers of passenger transportation, including boat service from Copper Harbor, Michigan and Grand Portage, Minnesota and seaplane services from Houghton, Michigan. The NPS also owns and operates the Ranger III, a 125-passenger vessel that principally transports staff and supplies to and from the island and provides only limited passenger service. Competition among providers is limited, given the long ride to the island. Vessels operating out of Grand Portage generally serve visitors coming from west of Isle Royale; ships operating out of Houghton and Copper Harbor tend to serve visitors from Michigan and points east and south. The seaplane makes the trip in half an hour, compared with boat travel which takes between two and seven hours, depending on the ship's origin and destination. It also

VTS CONTINUED ON NEXT PAGE

offers refuge for people affected by motion sickness in the rough waters of Lake Superior. But the seaplane's round-trip fare of $215.00 is more than double the highest priced boat service. For more information contact

- Pete Armington
  (906) 483-3142

Alternative-Fueled Vehicles

An important issue in considering a VTS is how to lessen the environmental impact of providing transportation and access.

Because of our mandate to preserve resources unimpaired and our role in educating the public about environmental stewardship, NPS has a responsibility to be a leader in the use of environmentally sustainable practices. That includes making every effort to incorporate clean-fueled vehicles into NPS transportation systems.

Alternative transportation options, such as buses and light rail, can improve visitor access and at the same time mitigate negative impacts of transportation on park resources. Options that utilize cleaner alternative fuel technologies, such as natural gas and electric shuttle buses, can further mitigate the negative environmental impacts vehicles cause on park resources, and promote NPS as an environmental leader.

Many clean fuel technologies are currently used in transit vehicles, including compressed natural gas (CNG), liquefied natural gas (LNG), liquefied petroleum gas (LPG), biofuels (such as biodiesel), electric, hybrid electric, and alcohol fuels. Many of these technologies are also widely used in federal light duty alternative fueled fleets. Clean fuel technologies are promoted because they reduce tailpipe emissions of regulated pollutants, and reduce dependence on imported petroleum. Some clean fuel technologies also lower greenhouse gas emissions, a growing environmental concern linked to global climate change.

Several parks currently employ clean fuel technologies for transportation in and around park facilities. The new propane-fueled shuttle bus systems in operation at **Acadia National Park** and the system under development at **Zion National Park** are stellar examples of environmental leadership. Visitors who use the voluntary shuttles at Acadia are told that the choice to take a clean-fueled bus means less congestion on park roads, fewer cars parking on the sides of roads impacting vegetation, and improved air quality. The same will be true for the mandatory system that will be inaugurated at Zion next year. **Cape Cod National Seashore** also operates clean fuel vehicles, running two 57 passenger electric trams throughout the ten weeks of their summer season. Because these systems are widely used, they provide opportunities to spread our message of environmental leadership.

Some alternative or clean-fueled technologies are costly. Typically, initial capital costs are higher since they require costly infrastructure investments for

VTS CONTINUED ON NEXT PAGE

fueling facilities and safety modifications. Operating and maintenance costs can also be higher than conventionally-fueled vehicles. For these reasons, it is important to consider vehicle options in terms of the park transportation needs, the operating environment, and resources available to procure, operate and maintain the vehicles. Information on alternative fuels technology and funding, include:

- **The Federal Transit Administration's Office of Technology**
  Contact: Ms. Christina Gikakis
  (202) 366-4035

- **The Department of Energy's Office of Transportation Technologies, Office of Technology Utilization.**
  Contact: David Rogers
  (202) 586-9118

- **Department of Energy National Laboratories**
  Contact the Idaho National Engineering and Environmental Lab: Basil Barna
  (208) 526-6124

- **Defense Advanced Research Projects Agency Consortiums**
  Contact: Shang Q. Hsiung
  Federal Transit Administration, Transportation Systems Analyst
  (202) 366-0241

- **State energy and transportation agencies.**

Park planners should consider a number of factors when they are replacing existing conventionally-fueled vehicles with alternatively-fueled transit vehicles, and designing new transportation programs to include alternatively-fueled transit vehicles. Among the factors to consider are:

- Physical constraints, such as steep grades;
- The cost of facilities and infrastructure for clean fuels;
- Safety or environmental risks relative to conventional fuels;
- The need to modify standard transit specifications for vehicle acquisition;
- Expertise needed to evaluate alternatives;
- Expertise needed by park staff to manage, operate or maintain the system; and
- Potential funding sources for clean-fueled vehicles.

A number of parks have conducted analyses of clean fuel technologies. Lessons learned from these parks can benefit others looking to use alternative-fueled transit vehicles. Examples include:

- **Grand Canyon National Park** uses natural gas and electric transit vehicles;
- **Yosemite National Park, Golden Gate National Recreation Area and Cape Cod National Seashore** use electric vehicles;
- **Zion National Park, Acadia National Park** and **Lyndon Johnson National Historic Park** use propane vehicles; and
- **Yellowstone National Park** uses biodiesel.

For information on alternatively-fueled transit vehicles and related technologies, and staff in the NPS who can assist in the evaluation of technologies and acquisition of vehicles, contact:

- **Bob Jarcho**
  DOI Alternative Fuels Coordinator
  (202) 208-3329
- **Terry Brennan**
  NPS Energy Coordinator
  (202) 565-1248
- **Kevin Percival**
  NPS Transportation Design Technical Specialist
  (303) 969-2429
- **Len Bobinchock**
  Acadia National Park
  (207) 288-0374
- **Bill Fay**
  Yosemite National Park
  (209) 372-0363
- **Tim Hudson**
  Yellowstone National Park
  (307) 344-2301
- **Dave Karaszewski**
  Zion National Park
  (435) 772-0143
- **Ben Pearson**
  Cape Cod National Seashore
  (508) 349-3788 ext. 232
- **Mike Savidge**
  Golden Gate National Recreation Area
  (415) 561-4491
- **Jim Tuck**
  Grand Canyon National Park
  (520) 774-1697
- **Darryl Weisenbaugh**
  Lyndon Johnson National Historic Park
  (830) 644-2261 ext. 1

(p) part time
(f) full time

State and Federal Bicycle and Pedestrian Coordinators

These names may change over time. If so, ask for the coordinator in your state.

ALABAMA (p)
L. Dee Rowe . . . . . (334) 242-6085

ALASKA (f)
Bob Laurie . . . . . (907) 465-6989

ARIZONA (f)
Mark Mansfield . . . . . (602) 255-8010

ARKANSAS (p)
Steve Weston. . . . . (501) 569-2115

CALIFORNIA (f)
Richard L. Blunden . . . . . (916) 653-0036

COLORADO (f)
Nancy Cifelli & Gay Page . . . . . (303) 757-9982

CONNECTICUT (p)
David Head . . . . . (860) 594-2145

DELAWARE (p)
Elizabeth Holloway . . . . . (302) 739-2453

DISTRICT OF COLUMBIA (p)
Gilbert Williams . . . . . (202) 939-8016

FLORIDA (f)
Theo Petritsch . . . . . (850) 487-1200

GEORGIA (p)
David Crites . . . . . (404) 657-6692

HAWAII (p)
Michael K. Medeiros . . . . . (808) 587-2321

IDAHO (p)
Mark McNeese . . . . . (208) 334-8272

ILLINOIS (f)
Craig Williams . . . . . (217) 782-3194
(217) 785-2148

INDIANA (p)
Michael O'Loughlin . . . . . (317) 232-5653

IOWA (f)
Nancy Burns . . . . . (515) 239-1621

KANSAS (p)
Paul Ahlenius . . . . . (913) 296-7448

KENTUCKY (p)
Mark Q. Lee . . . . . (502) 564-7433

LOUISIANA (p)
Mitchell Lopez . . . . . (504) 358-9115

MAINE (f)
John Balicki . . . . . (207) 287-3318

MARYLAND (f)
Harvey J. Muller . . . . . (410) 545-5656

MASSACHUSETTS (f)
Josh Lehman . . . . . (617) 973-7329

MICHIGAN (f)
Michael D. Eberlein . . . . . (517) 335-2823

MINNESOTA (f)
Charles Cadenhead . . . . . (651) 296-9966
David Lein . . . . . (651) 297-1568

MISSISSIPPI (p)
Jim Moak . . . . . (601) 359-7685

MISSOURI (p)
Dennis Scott . . . . . (573) 526-2816

MONTANA (f)
Jennifer J. Dalrymple . . . . . (406) 444-9273

NEBRASKA (p)
Ron Schlautman . . . . . (402) 479-4338

NEVADA (f)
Eric Glick . . . . . (702) 888-7433

NEW HAMPSHIRE (p)
Michelle Marshall & Ram Maddali . . . . . (603) 271-1622/1624

NEW JERSEY (f)
Bill Feldman . . . . . (609) 530-4578

NEW MEXICO (p)
Ron Montoya . . . . . (505) 827-5248

NEW YORK (f)
Mary Reilly & James Ercolano . . . . . (518) 457-8307

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Curtis B. Yates . . . . . (919) 733-2804

NORTH DAKOTA (p)
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Sharon Todd . . . . . (614) 752-4685
Karen Young . . . . . (614) 752-5359

OKLAHOMA (p)
Tim Gatz . . . . . (405) 521-2454

OREGON (f)
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PUERTO RICO (p)
Martha Irene Bravo Colunga . . . . . (787) 723-3760

RHODE ISLAND (f)
Constance V. Daniels . . . . . (401) 277-2023

SOUTH CAROLINA (f)
Tom Dodds . . . . . (803) 737-1052

SOUTH DAKOTA (p)
Craig McIntyre . . . . . (605) 773-3155

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TEXAS (f)
Paul Douglas . . . . . (512) 416-2342

UTAH (f)
Vacant. . . . . (801) 965-3897

VERMONT (f)
Amy H. Bell . . . . . (802) 828-5799

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Kenneth E. Lantz, Jr. . . . . (804) 786-7352/2985
Susan Simmers . . . . . (804) 371-4869

WASHINGTON (f)
Mike Dornfeld . . . . . (360) 705-7258

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Shelia Samms . . . . . (304) 558-3063

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Jan Meyer . . . . . (307) 777-4719

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GUAM
Teresita B. Santos & . . . . . (671) 646-3211
Josephine Bello-Dueñas

VIRGIN ISLANDS
Barbara McMillen . . . . . (202) 366-4634
Andy Clarke. . . . . (202) 366-4071
Christopher B. Douwes . . . . . (202) 366-5013

Internet

- **http://165.83.219.60/trails/**
  The NPS Trails Bibliography website is a searchable database intended as a resource for trail managers and trail advocates nationwide. It contains material relevant to all aspects of trail management, from funding and legalities, to planning and design, to case studies and conference proceedings. (A related site is the SC Trails Program searchable bibliography, which contains over 1,200 trails-and greenways-related publications collected over the past six years. See *www.sctrails.net/Trails/library.html*)

- **www.trailsandgreenways.org**
  The Trails and Greenways Clearinghouse Online, sponsored by the Rails-to-Trails Conservancy and The Conservation Fund, is an excellent website geared toward information sharing. Its extensive resources include a catalog of bibliographical references, case studies, conference papers, a photo image library, and an online "Guide to Creating a Greenway or Trail." It also contains a bulletin board, calendar of conferences and other events, alerts on abandoned tracks & threatened greenways, and a referral database to search for contacts for state and regional agencies, experts, and trail and greenway organizations.

- **www.bikefed.org**
  The Bike Federation of America's Internet Resource Center is an electronic information center for bicycle and pedestrian advocacy and policy, including news, links, resources, and an online version of the 1998 FHWA report *Implementing Bicycle Improvements at the Local Level*.

- **The American Trails website** also has a searchable reference database; visit *http://www.outdoorlink.com/amtrails/resources/index.html*

Publications

- AASHTO, *Guide for the Development of Bicycle Facilities*, Spring 1999.

- Birkby, Robert C., *Lightly on the Land: The SCA (Student Conservation Association) Trail-Building and Maintenance Manual*. (Seattle: The Mountaineers) 1996. A manual of backcountry work skills, including design, survey, construction, maintenance, and repair of trails; plus safety, tools and leadership skills.

- Colorado State Parks Trails and Wildlife Task Force, *Planning Trails with Wildlife in Mind*, September 1998.

- Federal Highway Administration, *Implementing Bicycle Improvements at the Local Level*, September 1998. (For an online version, visit http://www.bikefed.org/local.htm)

- Flink, Charles A. and Robert M. Searns, *Greenways, A Guide to Planning, Design, and Development*. (Washington, D.C.: Island Press) 1993. Available from The Conservation Fund, **(703) 525-6300.**

- Little, Charles E., *Greenways for America*. (Baltimore: The Johns Hopkins University Press) 1990. Available from The Conservation Fund, **(703) 525-6300**.

- Ryan, Karen-Lee et al., *Trails for the Twenty-First Century: Planning, Design, and Management Manual for Multi-Use Trails*. (Washington, D.C.: Island Press) 1993. A 'How To' manual that gives step by step guidance in all aspects of the planning, design and management of multi-use trails, including physical and cultural assessments, public involvement, adjacent landowners, legislative compliance, user preferences, trail surfaces, landscaping and maximizing the trail's potential.

- Washington State Department of Transportation, *Pedestrian Facilities Guidebook*, September 1997.

CHALLENGE 3
Improve Parking

While parking improvements may be a convenience for visitors, park officials should first consider whether new parking is compatible with the park's resource protection goals. If not, alternatives should be examined.

Reduce Available Parking

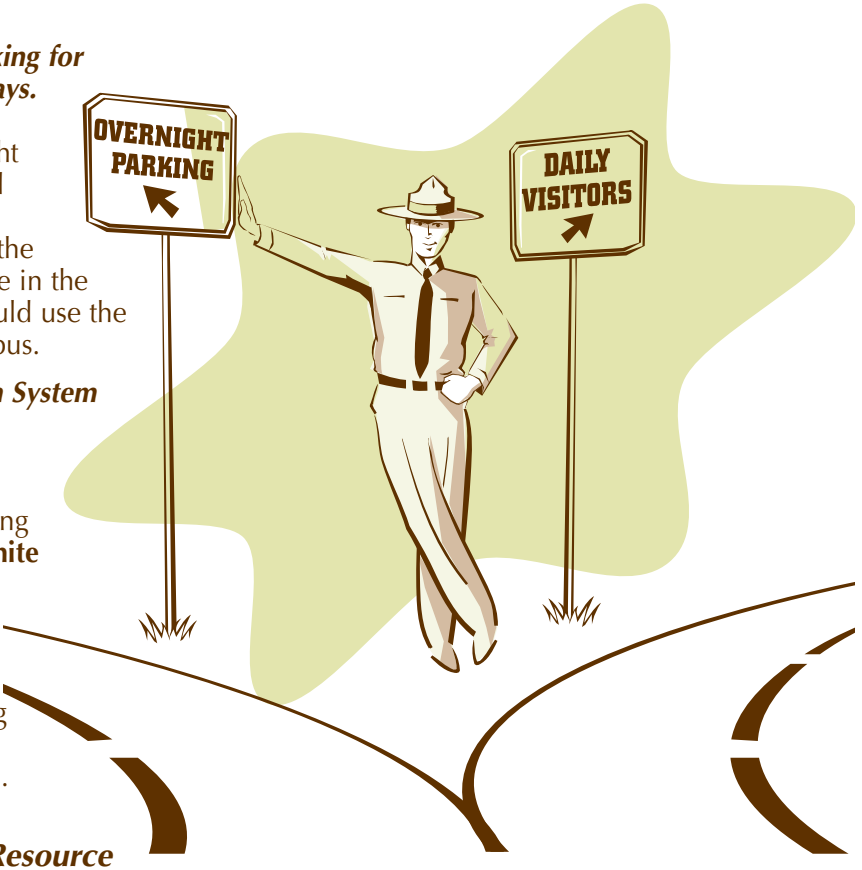
Several national parks, such as **Yosemite**, have implemented programs that balance the removal of parking spaces with increased transit service and the promotion of bicycle and pedestrian access. Whether this is a viable option, or whether parking demand can be addressed with actions other than parking expansion, depends on the specific characteristics of the park. Data collection and analysis will suggest appropriate strategies.

- ***Survey Data.*** A survey of park visitors and employees will help define current patterns and parking demand at particular sites. The survey may collect data on the number of park visitors on an hourly, daily, monthly, seasonal and annual basis; visitors' origins and destinations; the number of vehicle trips; and alternate travel modes.
- ***Data on Non-Auto Travel Modes.*** Data includes the availability of public transit for travel to or within the park, information on transit routes, frequency of service, and vehicle characteristics, such as seating capacity and operating speeds. Initiatives to encourage biking and walking within the park should also be considered since these programs may shift some trips from autos to other transportation modes.
- ***Environmental Conditions.*** Reducing available parking while offering alternate travel options may be an effective strategy to reduce automobile travel in the park. If bus transit is being considered, the type of fuel and the emissions from buses must be addressed to ensure that air quality is not adversely affected. Similarly, if traffic-related noise is a concern, it may be appropriate to reduce parking and enhance other travel modes.
- ***Cost Data.*** If reductions in parking are accompanied with increased transit use, transit operating costs will probably rise reflecting cost increases for labor, fuel, insurance, maintenance, and vehicle replacement. If ridership increases substantially, more buses may needed.

When reducing parking within the park appears to be an appropriate action based on analysis of the data, the following strategies might be employed:

- ***Parking at Gateway Communities.*** Gateway communities and nearby public lands may be able to accommodate overflow visitor parking. Visitors would use shuttle buses or vans to travel to the park. As an incentive to use these off-site lots, visitors could be offered discounts on entrance fees or free admission. Businesses in gateway communities may be eager to have potential customers use their locations as a point of entrance to the park.

- ***Separate Parking for Overnight Stays.*** Campers and other overnight visitors would bring their vehicles into the park, but once in the park they would use the local shuttle bus.
- ***A Reservation System to Manage Visitation.*** A number of parks, including **Denali, Yosemite** and **Grand Canyon**, have reservation systems for visitor lodging and/or bus transportation.



Parking and Resource Protection at Sequoia National Park

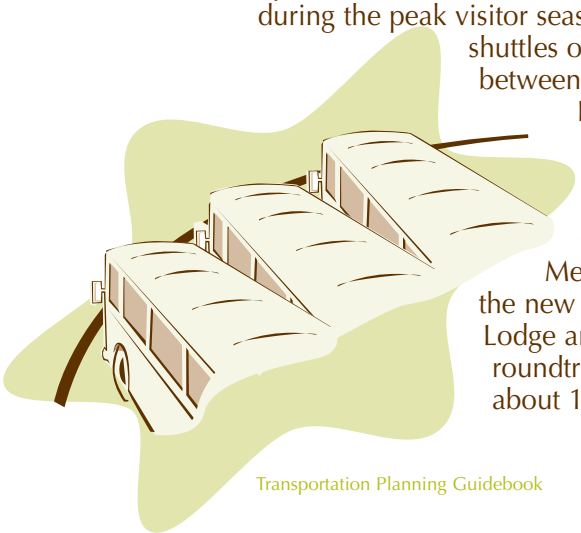
CASE STUDY

Sequoia is the second-oldest national park in the United States, established in 1890 to protect the Big Trees in Giant Forest, including the General Sherman Tree, the world's largest living tree. Given the popularity of Giant Forest, a visitor center and large commercial complex was built among the Big Trees during the 1920s and 1930s. This complex eventually included a lodging with 300 guest units, three major campgrounds, a gas station, market, employee housing and visitor-oriented facilities. The Park Service soon realized that all this commercial activity was damaging the trees, diminishing the visitor experience, and threatening the long-term sustainability of the park and its natural resources. In the 1960s, the National Park Service began to promote a plan to remove the commercial development and relocate it to less sensitive areas within and outside the park. According to Bill Tweed, Chief Park Interpreter at Sequoia, the Park Service "was able to sell the idea that (the trees) were not just scenery but living things." During the 1990s, nearly all the commercial buildings and lodges were removed and a large-scale restoration project was begun. As a result, the market will be converted into a museum and

the 100-room lodge will be relocated to a less-sensitive area.

Since the main park road travels directly through the grove of Big Trees, a challenge for the Park Service was reducing the impact of vehicles visiting the area. Park officials decided to reduce the amount of parking in Giant Forest. Once the program is completed, the number of parking spaces will be reduced by one-half, from 500 to 250. New visitor parking is being built approximately five miles from the grove with the hope that visitors will utilize shuttle vans to the area. This would enable the park to provide increased access to areas with existing and projected future parking shortages during the busy summer months while reducing parking in areas with sensitive natural resources. The Park Service encourages overnight visitors to rely on the shuttle service for travel around the Giant Forest area.

The shuttle service consists of four, 40-passenger buses which will operate on 20-minute headways during the peak visitor season. The shuttles operate between Giant Forest, Lodgepole, Moro Rock, Crescent Meadow and the new Wuksachi Lodge area. The roundtrip takes about 1.5 hours to complete. In 1998, the shuttle was funded through a $7 fee added to each hotel room rented in the park. This year, a new concessioner has been retained and is covering the cost of shuttle service without the $7 fee. However, Jack Vance, the Engineer for Sequoia Park, indicates that in future years the concessioner may choose to add a small charge on items it sells to fund the shuttle service within the park.



As for automobile access, the park chose to improve safety and the condition of local roads but not to add capacity, despite analyses of traffic volumes and traffic flows that show that roads serving the Giant Grove area and the Big Stump entrance road have the highest traffic volumes in the park. The shuttle bus coupled with condensed parking allows ample access to these sensitive resource areas while simultaneously protecting them. For more information contact:

- Mr. Bill Tweed
  Chief Park Interpreter, Sequoia National Park
  (559) 565-3130
- Mr. Jack Vance
  Park Engineer, Sequoia National Park
  (559) 565-3102

Provide More Parking

To determine parking needs for a specific visitor attraction, the following information is helpful:

- ***An Assessment of Existing Conditions.*** A survey of visitor parking patterns, the number of existing spaces, when and how

often the spaces are used, and the physical or other constraints that influence parking demand.

- ***Location and Site Access.*** Consider whether parking should be located near a popular destination or at a more distant site. If an existing parking facility is expanded, determine if there is sufficient room to accommodate more vehicles. Access data includes nearby road and traffic conditions, speed limits, signs, pavement markings and pedestrian facilities.

- ***Legal and Environmental Requirements.*** Physical constraints and legal limitations may affect parking demand. For example, a hotel operator may have the legal right to segregate or reserve parking for guests. Or, environmental constraints may influence the location, size and design of the parking area. These limitations should be recognized at the start of a project.

- ***Parking Demand at Similar Sites.*** A preferred method to determine parking demand is to study comparable facilities in parks of similar size and with a similar mix of land uses, auto use and auto occupancy.

If additional parking appears desirable, its design and cost should be considered. The cost for parking areas vary depending upon size, location and the nature of the improvements. Construction details include: the type of pavement, which varies in durability and serviceability; the need for curbs and sidewalks; drainage improvements; lighting; striping of parking area; and, landscaping. In general, an acre of land provides 100 parking spaces; large recreation vehicles and tour buses require more space. The most efficient parking facilities generally favor incoming traffic, even if exiting traffic is inconvenienced; efficient entry from the roadway minimizes vehicle queues and traffic conflicts. Exiting traffic generally moves more slowly than entering vehicles and can more easily negotiate turns to the exits.

The most efficient parking facilities generally favor incoming traffic...

Other Options

Several additional options are being used to manage and minimize impacts:

- ***Remove Parking from Sensitive Resource Areas.*** Potentially adverse impacts include: vehicle exhaust and noise; and the presence of oil, grease and other residue that contaminate roads, shoulders and groundwater. Erratic driving can also damage park property. These impacts can be minimized if parking is relocated from sensitive resource areas.

- ***Enforce Parking Laws/Regulations.*** Most parks regulate when and where people can park their vehicles. Enforcement of parking regulations, particularly those that limit how long one can park, will free-up parking for more visitors.

Enhancing Safety

Transportation planning for park safety is generally directed toward preventing or eliminating conditions, behaviors or conflicts that pose potential traffic hazards to visitors, employees and wildlife.

Traffic safety studies are conducted to identify traffic safety problems on park roads and to develop safety management systems. TEA-21 includes authorizations specifically for non-construction safety programs. Traffic safety studies typically review previous studies, analyze existing conditions, identify and assess high accident locations, and recommend physical or operational improvements. Traffic studies include sight-distance studies, speed surveys, pavement studies, and reviews of operations and maintenance procedures.

Accident data is the primary factor in traffic safety studies. Accident data can evaluate the park's overall safety performance and high-accident locations. An in-depth review of accident data will identify accidents by type, location, time of day, severity, alcohol-related and weather.

Field reviews are usually performed as a follow-up to accident and speed data collection efforts. They often uncover other issues and causes that relate to traffic safety problems such as sight-distance problems, poor signage and pavement markings, inadequate intersection design, and conflicts with pedestrian and bicycle movement.

Available Solutions

Many solutions to traffic safety problems are relatively low in cost and can be implemented quite easily. In some cases, however, when the root causes for high-accident locations have not been adequately analyzed before implementing the solution, the solution creates another problem. For example, designation of a one-way road may increase safety if a roadway is too narrow for two-way traffic; however, it may also encourage speeding and lead to more accidents. Some approaches for improving safety are:

- Traffic signs, pavement striping, raised pavement markings;
- Enforcement of speed limits and increased visibility of park rangers enforcing speed limits;

- Removal of sight-distance problems (vegetation removal, embankment flattening);
- Guardrail and guardwall installations;
- Repaving of roadways;
- Installation of turning lanes;
- Wildlife fencing;
- Acceleration and deceleration lanes;
- Auto restricted areas;
- Vehicle length and weight restrictions;
- One-way roads;
- Traffic calming techniques (traffic circles, speed bumps, narrow roads, landscaping);
- Travel time restrictions;
- Snow and ice removal capabilities;
- Widening and other improvements to roadway shoulders;
- Roadway realignment and widening;
- Prohibit parking on shoulders near pedestrian crossings;
- Install lighting and signals;
- Variable message signs;
- Removal of rocks that fall on the roadway; and
- Grade separation.

Safety problems at **Rock Creek Park**, located in Washington, D.C., are caused by high vehicle speeds and aggressive driving. High speeds, combined with limited visibility due to roadside vegetation, creates safety problems both for motorists and for park visitors walking and bicycling on park roads. To address these concerns, a traffic study recommended increased enforcement of speed limits, traffic calming methods to control aggressive driving, a system of pedestrian and bicycle paths, one-way roads in picnic areas, better roadway drainage, vegetation removal, improved signage, and guardrail replacement. For additional information, contact

- Adrienne Coleman
  Superintendent
  (202) 282-1063

A number of traffic studies on the **Natchez Trace Parkway** were prompted by data that showed that the number of severe accidents on the parkway was higher than average for rural roads. The parkway is a 438-mile long NPS corridor that averages more than 800 feet in width. Within the corridor are historical exhibits, public recreational areas, and administration and maintenance facilities. The parkway, initially conceived in 1937 as a scenic road, is a limited-access highway running through portions of Mississippi, Alabama and Tennessee. A recent study indicated that implementation of safety enhancements produced a decrease in the severity of accidents, although the number of accidents increased. The parkway's traffic safety program has resolved certain traffic safety problems and identified new problems to be addressed. For additional information, call

- Natchez Trace Parkway
  (601) 680-4025

- ***FHWA Contacts***
  (See list at end of Chapter 2)

- ***Great Smoky Mountains National Park***
  Shawn Berge
  Planner
  (423) 436-1237

- ***American Association of State Highway and Transportation Officials*** (AASHTO), *A Policy on Geometric Design of Highways and Streets*, 1994.

- ***Institute of Transportation Engineers***, *Traffic Engineering Handbook* (Englewood Cliffs, NJ: Prentice Hall).

- ***Institute of Transportation Engineers***, *Manual of Transportation Engineering Studies* (Englewood Cliffs, NJ: Prentice Hall).

- ***Transportation Research Board***, *Highway Capacity Manual, Special Report 209, Third Edition* (Washington, D.C.: National Research Council, 1994, updated in 1997).

- ***Federal Highway Administration***, *Flexibility in Highway Design*, 1997.

- ***National Main Street Center***, *The Parking Handbook for Small Communities*, 1994.

- ***Urban Land Institute***, *The Dimensions of Parking*, 1993 (note: much of the information in this publication is oriented towards public parking for commercial development).

- ***American Planning Association***, *The Aesthetics of Parking*, 1988.

- ***Institute of Transportation Engineers***, *Parking Generation*, 1987.

Chapter 6

Implementing Solutions With Your Partners

Planning for project implementation involves final decisions on how a project will be designed, funded and operated. An important implementation factor is funding; how capital costs are funded and how operating costs are covered.

Steps for project implementation are documented in National Park Service Implementation Plans. Large-scale infrastructure improvements frequently require an environmental analysis and documentation under the National Environmental Policy Act and Section 106 of the National Historic Preservation Act. Project alignments and designs that flow from these processes will be chosen to avoid or minimize impacts on cultural and natural resources.

Partnerships developed during the initial stages of planning and cultivated through the project planning process are crucial for successful project implementation. As discussed in Chapter Three, partnerships with external groups can expand resources that can be applied to project development. This same concept is applied to implementation. For example, the same partners who helped plan the Island Explorer regional transit system at ***Acadia National Park*** *are donating funds toward operating the system.*

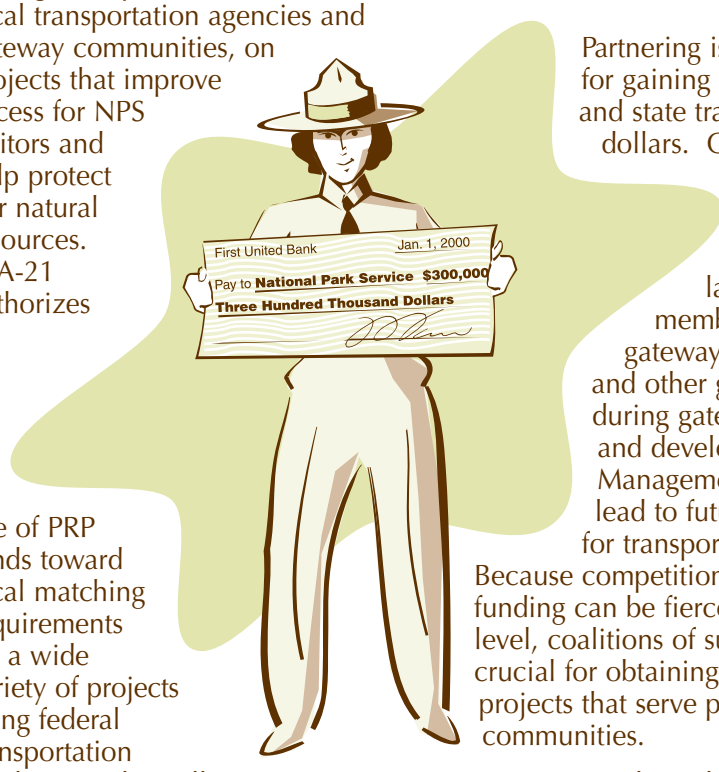
Similarly, partnerships are important for securing funds from local, state and federal transportation agencies. Partners provide a constituency for obtaining government funding and donations toward local matching requirements. This chapter identifies funding sources for moving projects from planning to implementation.

TEA-21 Program Funding

In June, 1998, President Clinton signed the *Transportation Equity Act for the 21st Century*, better known as *"TEA-21."* TEA-21 is a comprehensive transportation Act that authorizes a total of $217 billion in surface transportation funding over six years (1998-2003). TEA-21 provides a marked increase in annual funding for the Federal Lands Highway Program (FLHP), Park Roads and Parkways program (PRP), and for several high priority projects that directly affect NPS properties. TEA-21 also contains transportation programs allocated to states that could be applied to a wide range of NPS transportation needs, such as alternative transportation services and upgrading for trails systems.

Access to federal transportation dollars for NPS transportation projects requires the active participation of the NPS in local, regional and statewide transportation planning processes (described in Chapter Two). TEA-21

strengthens the ability of park managers to partner with state and local transportation agencies and gateway communities, on projects that improve access for NPS visitors and help protect our natural resources. TEA-21 authorizes use of PRP funds toward local matching requirements for a wide variety of projects using federal transportation funding. It also calls for a coordinated federal transportation planning process for all federally-funded transportation systems, including those on federal lands. As part of that process, the NPS and other federal land management agencies are required to develop Transportation Improvement Programs (TIPs) of priority transportation projects, similar to those required for MPOs, for integration into the Statewide Transportation Improvement Program (STIP). The STIP lists projects prioritized over a three-year period. The state allocates federal and state transportation dollars to projects throughout the state in accordance with the STIP.



Partnering is a powerful tool for gaining access to federal and state transportation dollars. Consider the following:

- Relationships with adjacent landowners, members of the gateway community, and other groups formed during gateway planning and developing a General Management Plan, can lead to future partnerships for transportation projects. Because competition for project funding can be fierce at the state level, coalitions of support are crucial for obtaining funds for projects that serve parks and park communities.
- NPS cannot be a direct recipient of federal transportation funds, with the exception of FLHP money or projects earmarked as high-priority. To access federal funding under TEA-21, partnerships must be formed with transportation providers, state and local governments, and other entities.
- Partnerships are key in generating the local matching funds required for many state and federal funding programs. Despite the new provisions of TEA-21 that allow PRP and other FLHP monies to be used as matching funds for federal transportation programs, limitations remain on the programs where

FLHP monies can be used. For example, FLHP money cannot be applied to matching requirements for a federal transit program grant. But alliances of groups, working with the project sponsor, can contribute money to meet the local match requirement. For example, a partnership helped obtain local matching funds for the construction of Berheisel Bridge on the **Appalachian Trail** across the Conodoquinet Creek in Cumberland County, Pennsylvania. The new bridge was needed to alleviate a dangerous situation in which hikers shared a narrow bridge with no shoulders or sidewalks with automobiles, farm equipment and tractor-trailers. A partnership between the Cumberland Valley Appalachian Trail Management Association (CVATMA), the Appalachian Trail Conference (ATC), PennDOT, Cumberland County Commissioners and the NPS worked with Cumberland County's engineers to develop a plan for constructing a 5-foot wide, cantilevered hiker bridge suspended from the original vehicle bridge. The hiker bridge cost $250,000, and the various partners shared the expenses. An ISTEA Recreation Grant paid $200,000 or 80 percent of the cost, PennDOT contributed $37, 000 (15%), and the remaining five percent was shared between Cumberland County and the ATC. The NPS carried out NEPA compliance and performed the design review. David Barr, former president of the Cumberland Valley Appalachian Trail Management Association, credits the project's success to everyone involved. It was a "unique partnership between federal and state authorities and a non-profit advocacy organization. PennDOT played a big part, and the volunteers really made it work." The new bridge was officially opened on May 31, 1997, just in time for the bulk of through-hikers to enjoy a safer crossing. For more information, contact

•David Barr
(717) 765-4587

- If a project addresses a statewide or regional transportation priority, its chances for state funding will be greatly enhanced. Ongoing communication with regional and statewide transportation officials will help in gaining insights on ways to integrate projects with statewide or regional transportation initiatives, such as efforts to reduce vehicle trips in urban areas, or the expansion of a state's pedestrian and bicycle network.
- The Memorandum of Understanding (MOU) signed in November, 1997 by the Secretaries of the Interior and Transportation

Federal agency partners will work with you to find a federal funding program that applies to your project.

provides the legal tool for initiating a relationship with federal transportation agencies. Take the opportunity to act on the MOU's mandates. Seek technical assistance and the participation of federal transportation officials in project planning and development. Federal agency partners will work with you to find a federal funding program that applies to your project. They can advise you on technical aspects of the project, such as the use of technology to meet a specific transportation challenge. And, they can steer you to an institutional arrangement that will allow the park to benefit from federal funding, such as partnering with an established federal funding recipient. Finally, your federal partners can help ensure that your project meets applicable federal requirements for obtaining federal transportation funding.

Acadia National Park

CASE STUDY

Successful Project Implementation With Local, State and Federal Partners

Acadia National Park's partnership with the League of Towns, the Friends of Acadia, and other local partners, allowed the "Island Explorer" regional transit system to move from a "paper dream" to its inauguration as a transit system in June, 1999. The Island Explorer links four adjacent gateway communities and circulates within the park, with stops at major park features and recreation areas. The partnership contributed to hiring a transportation consultant to develop and market the transit service in coordination with the partners. The partners were also active in raising funds from their constituents for the required local matches for federal funding and operating costs. The four Mount Desert Island towns approved project funding at their annual town meetings. Town contributions were distributed by the League. The Bar Harbor Chamber of Commerce obtained contributions from local businesses; local partners donated materiel resources for project implementation.

The islandwide transit system was originally conceived by the Mount Desert Island League of Towns which was established in 1995 and consists of the town managers from Bar Harbor, Southwest Harbor, Mount Desert and Tremont. The park and the surrounding communities of Trenton, Lamoine and Cranberry Isles each have a representative on the League. The League's purpose is to study issues common to Mount Desert Island communities and recommend coordinated, cost-effective solutions.

Tourism-related transportation was among the first and most prominent

Case Study continued on next page

issues tackled by the League. A subcommittee, led by Acadia's Deputy Superintendent Len Bobinchock and the town managers of Bar Harbor and Mount Desert, took up the issue. Using focus groups and meetings with area Chambers-of-Commerce, the League determined that a seasonal public transportation system that linked the park with the surrounding communities was the preferred solution for addressing tourism-related transportation issues. The subcommittee attracted additional local partners for the project, including Downeast Transportation, Inc., a nonprofit public transportation provider and Island Explorer operator, Friends of Acadia, and the local business community.

Under the leadership of the League of Towns, the partnership contributed funds for a transportation consultant to develop a service plan and a marketing program in coordination with the other partners. The partners raised funds toward the required local matches for federal funding and operating costs. Contributions from private sponsors, the business community, local municipalities, Friends of Acadia, and a NPS Challenge Cost Share grant assured that adequate funds were in place.

Now, the park and the community can look forward to continued growth in park visitation and tourism with fewer adverse community impacts from visitor-related auto travel. Residents benefit from reduced congestion on area roads and parking areas which improves summer-time air quality. The park and its visitors gain the convenience of the new transit system and reduced vehicular congestion at popular park sites. Businesses benefit from door-to-door transit service at many business locations from a system designed to use existing parking areas. The elimination of overflow parking along the shoulders of local and state roads increases the safety of motorists and non-motorists alike.

Downeast Transit, Inc. provides regional transportation on a scheduled basis under contract with the Maine Department of Transportation. It agreed to be the contract agent to receive Federal Congestion Mitigation and Air Quality Improvement program (CMAQ) funds through a Federal Transit Administration (FTA) grant and to procure the transit vehicles. FTA grantees must provide evidence of compliance with federal labor, safety and other regulations as a condition of receiving a FTA grant. Because Downeast Transit, Inc. operates a transit service using FTA funds, it can act as the agent for the new regional transit system.

Access to federal funding is based on the involvement of state and federal transportation officials and the local communities.

Case Study continued on next page

Access to federal funding is based on the involvement of state and federal transportation officials and the local communities. A state-administered grant program opened the door. Maine DOT's "T2000" grant program awarded up to $500,000 of federal CMAQ funds to projects using alternative transportation strategies to address local congestion in eight rural regions. Project partners submitted a grant application to fund the purchase of the transit system's eight original buses and won the entire $500,000 assigned to the region. Without local level involvement this grant would not have been awarded.

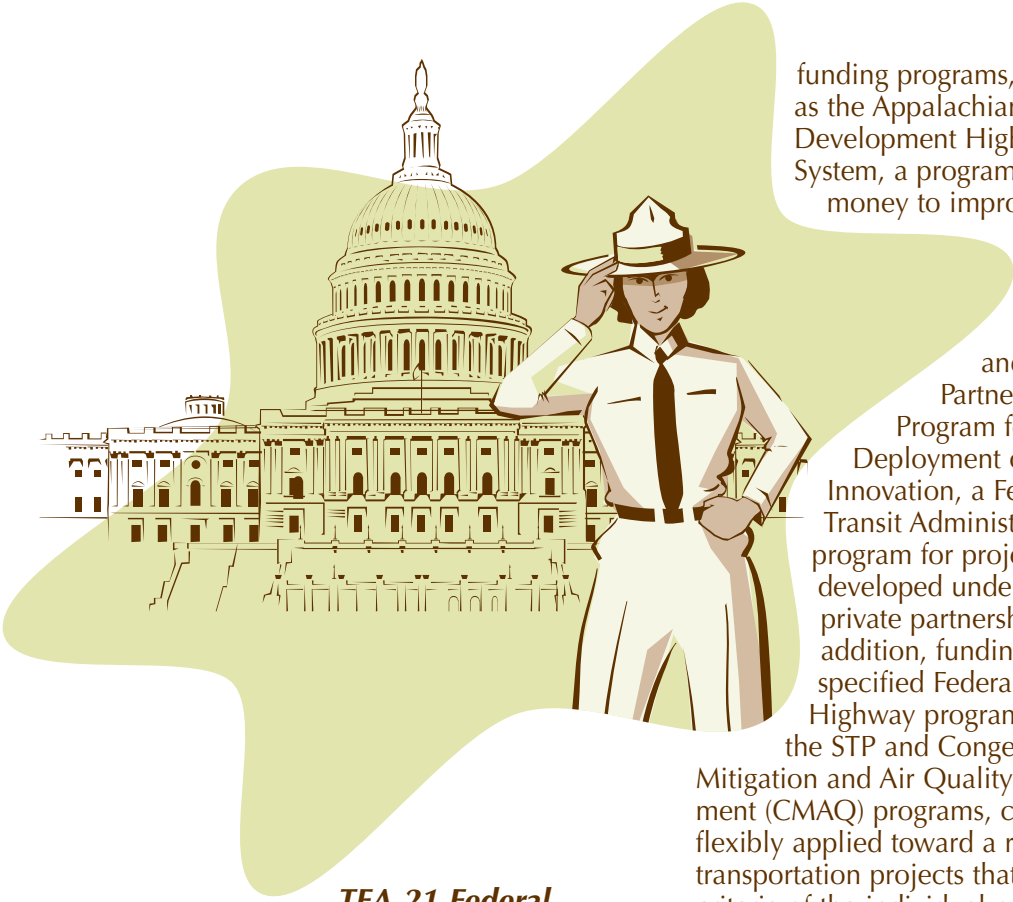
Confident of local support and a growing state commitment to the project, the partners went back to the Maine DOT and won an additional $128,000 of CMAQ funds to purchase a propane-fueled bus fleet rather than typical diesel-fueled vehicles. A NPS Challenge Cost Share grant provided the local match.

Another factor that brought federal and state involvement into the regional transit system planning process was the MOU signed between the Secretary of the Interior and the Secretary of Transportation. Recognizing the park's good fortune in being named a demonstration project under the MOU, Park Superintendent Paul Haertel noted that the MOU was the vehicle that brought the local communities and agencies together in an "inventing this as we go" planning process. He hopes this institutional arrangement between the National Park Service and state and federal transportation officials will be replicated at other parks as the MOU is implemented on a service-wide basis.

A key factor in securing implementation support from the Maine DOT for the regional transit system was their role in supporting other statewide initiatives. The regional transportation system complements a statewide, multimodal transportation initiative to attract "car-free" tourists by providing enjoyable ways to travel around the state to other tourist attractions. The plan contains air, ferry, bus, and rail components and visitor information and support services. State DOT involvement in the regional transportation system planning process for the transit system has led to other local level enhancement programs.

A future phase of the project involves local intermodal projects to improve visitor access to the park and other local tourist features, using ferry and cruise ship terminals, and the Trenton, Maine airport. It includes improved bicycle and pedestrian circulation on the island, again to encourage auto-free travel on the island. Plans are underway with the state to introduce additional projects that integrate the island-wide transportation system with the statewide tourism transportation system. For additional information, contact

- Paul Haertel
  Superintendent
  (207) 288-0374



TEA-21 Federal Funding Table

The following table summarizes the features of several federal transportation funding programs included in TEA-21 that show the greatest promise for NPS. The table provides information about total funds available per year, types of projects being funded, eligibility and local matching requirements.

TEA-21 contains many other transportation funding programs that can be applied toward NPS projects. These include mainstream "bread and butter" transportation programs such as the National Highway System and the Surface Transportation Program (STP). They also include specialized funding programs, such as the Appalachian Development Highway System, a program that targets money to improve highways in the Appalachian region, and the Joint Partnership Program for Deployment of Innovation, a Federal Transit Administration program for projects developed under public-private partnerships. In addition, funding in specified Federal Aid Highway programs, such as the STP and Congestion Mitigation and Air Quality Improvement (CMAQ) programs, can be flexibly applied toward a range of transportation projects that meet the criteria of the individual programs. For example, the CMAQ program can be used for transit, bicycle, pedestrian, and other eligible system "enhancement" projects that contribute to reducing air pollution from mobile source (vehicle) emissions.

For more information on federal transportation funding programs and their applicability to your project needs, contact your regional Federal Highway Administrator or Federal Transit Administration staff. Or, visit *websites at* ***www.fhwa.dot.gov*** or ***www.fta.dot.gov***, and the Surface Transportation Policy Project at *www.tea21.org*

TEA-21 Funding Summary Table[1]

Funding Program	Authorized Funding Levels[2]	Eligible Projects	Funding Recipients and Other Eligibility Issues	NPS Participation	Matching Requirements (federal/local)
Surface Transportation Program *Sponsoring Agency:* FEDERAL HIGHWAY ADMINISTRATION	1999 $5,540M 2000 $5,592M 2001 $5,703M 2002 $5,795M 2003 $5,905M	Federal-Aid Highways, bridge projects on public roads, transit capital projects, public bus terminals and facilities, rural minor collectors.	Funds are distributed to States based on a weighted formula that takes into account: (1) Total lane miles of Federal-Aid Highways (FAH) in the State as a percentage of total FAH lane miles in all States, (2) Total Vehicle Miles Traveled (VMT) on lanes of FAH in the State as a percentage of total VMT on lanes of FAH in all States, and (3) Estimated tax payments attributable to highway users in the States paid into the Highway Account of the Highway Trust Fund. • (Retains 10% set aside for safety construction and 10% set aside for transportation enhancements program. See description of enhancements program below.)	Funding distributed to projects by state departments of transportation in the statewide transportation planning process. TEA-21 authorizes the use of Federal Lands Highway Program for Park Roads and Parkways (PRP) money as contribution towards "local match."	80% Federal share with required 20% local/state match. When STP funds are used for Interstate projects, Federal share could reach 90%. For certain safety projects or projects which cross park lands, the Federal share can reach 100%.
Federal Lands Highway Program for Park Roads and Parkways (PRP) *Sponsoring Agency:* FEDERAL HIGHWAY ADMINISTRATION	1999 $165M 2000 $165M 2001 $165M 2002 $165M 2003 $165M	Funding can be used by the NPS and the FHWA for the planning, design, construction or reconstruction of designated public roads that provide access to or within National parks, recreation areas, historic areas and other units of the National Park System. Additional authorized uses include: • State/local share for Federal-Aid Highway projects, including Interstate Maintenance, National Highway System, STP, and Congestion Mitigation and Air Quality funding programs.	No legislative formula established for allotting funds—funds distributed based on relative need. Appropriated NPS funds, material or services can be used as 15% of project cost for recreational trails-funded projects.	Funds are distributed within the National Park Service according to rules provided in *Federal Lands Highways Program Park Roads and Parkways Revised Funding Allocation and Project Prioritization.*	The Federal share is 100%.

[1]Source: Transportation Equity Act for the 21st Century and TEA-21 Fact Sheets. See www.fhwa.dot.gov

[2] These dollar amounts represent authorized, not guaranteed funding levels.

TEA-21 Funding Summary Table *(continued)*

Funding Program	Authorized Funding Levels[2]	Eligible Projects	Funding Recipients and Other Eligibility Issues	NPS Participation	Matching Requirements (federal/local)
PRP Continued		• Non-Federal share for National Scenic Byways projects. • Any project providing access to or within a National Park or other Federal land. • Transit facilities in National Parks or other Federal lands. • Transportation planning for tourism and recreational travel (benefiting recreational development). • Pedestrian/bicycle transport facilities coordinated with National Park Service roads. • Other projects: Vehicular parking, signage, land acquisition for scenic/historic sites, provisions for bicycles and pedestrians, construction/reconstruction of public road facilities (i.e.: visitor centers).			
Transportation Enhancements *Sponsoring Agency:* FEDERAL HIGHWAY ADMINISTRATION	10% of each state's apportioned STP funds are suballocated to transportation enhancement.	Transportation-related activities that are designed to strengthen the cultural, aesthetic, and environmental aspects of the Nation's intermodal transportation system. Projects range from the restoration of historic transportation facilities, bike and pedestrian facilities, landscaping and scenic beautification, and the mitigation of water pollution from highway runoff. Eligibility requires that transportation enhancement activities must relate to surface transportation.	Funding for the Transportation Enhancement program comes from 10% of available funds from the Surface Transportation Program. (see Surface Transportation Program) States may also have eligibility and selection criteria.	Funds are typically allocated to projects through the metropolitan or statewide transportation planning process. TEA-21 authorizes the use of NPS-appropriated funds as contribution towards the local/state match.	80% Federal share with required 20% local/state match. States may apply funds from other Federal agencies to the non-Federal share of the project, up to 100%.

TEA-21 Funding Summary Table (continued)

Funding Program	Authorized Funding Levels[2]	Eligible Projects	Funding Recipients and Other Eligibility Issues	NPS Participation	Matching Requirements (federal/local)
Transportation Enhancements Continued		Activities must be one of those listed in the legislation. **NEWLY AUTHORIZED TRANSPORTATION ENHANCEMENTS** • Provisions for safety and educational activities for pedestrians and bicyclists. • Scenic or historic highway programs (including provisions of tourist and welcome center facilities). • Reduction of vehicle-caused wildlife mortality while maintaining habitat connectivity. • Establishing transportation museums.		Park Roads and Parkways (PRP) funding from the Federal Lands Highway Program CANNOT be used as non-Federal share for Transportation Enhancement projects.	Values of other contributions may also be considered for non-Federal share. "Soft match" (credit for donations of funds, materials, services or new right-of-way) is permitted from any project sponsor, whether a private organization or public agency.
National Scenic Byways *Sponsoring Agency:* FEDERAL HIGHWAY ADMINISTRATION	1999 $23.5M 2000 $24.5M 2001 $24.5M 2002 $25.5M 2003 $26.5M	Roads that have outstanding scenic, historic, cultural, natural, recreational and archaeological qualities are designated by the Secretary of Transportation as All-American Roads (AAR) or National Scenic Byways (NSB). The NSB program provides discretionary grants for scenic byway projects on an AAR, a NSB, or a State-designated scenic byway and for planning, designing and developing scenic byway programs.	Priorities for making grant decisions include • Projects on routes designated as either an AAR or a NSB. • Projects that would make routes eligible for designation as either an AAR or a NSB. • Projects associated with developing State scenic byway programs. • Activities to include the development and implementation of scenic byway marketing programs.	The National Park Service can contribute any required local/state match by using NPS appropriated funds and Park Roads and Parkways (PRP) funding from the Federal Lands Highway Program.	80% Federal share with required 20% local/state match. TEA-21 modifies the provisions to allow Federal land management agencies to provide the local/state match for projects on Federal or Indian lands.

TEA-21 Funding Summary Table *(continued)*

Funding Program	Authorized Funding Levels[2]	Eligible Projects	Funding Recipients and Other Eligibility Issues	NPS Participation	Matching Requirements (federal/local)
Recreational Trails Program *Sponsoring Agency:* Federal Highway Administration	1999 $40M 2000 $50M 2001 $50M 2002 $50M 2003 $50M	**Eligible Project Categories** • Maintenance/restoration/development of existing and new trails. • Development and rehabilitation of trailside and trailhead facilities and trail linkages. • Purchase and lease of recreational trail construction and maintenance equipment. • Acquisition of easements or property for recreational trails or recreational trail corridors. • State administrative costs relating to program administration (up to 7%). • Operation of educational programs to promote safety and environmental protection as those objectives related to the use of recreational trail (up to 5% of a State's funds).	Funds are apportioned to the State by formula—50% equally among all eligible States and 50% in proportion to the amount of off-road recreational fuel use.	Funds from other Federal programs may be used for the local/state match, including NPS-appropriated funds and Park Roads and Parkways (PRP) funding from the Federal Lands Highway Program.	80% Federal share with required 20% local/state match. Federal agency project sponsors may provide additional Federal share up to 95%. Values of other contributions may also be considered for non-Federal share. "Soft match" (credit for donations of funds, materials, services, or new right-of-way) is permitted from any project sponsor, whether a private organization or public agency.
Congestion Mitigation & Air Quality Improvement Program *Sponsoring Agency:* Federal Highway Administration	1999 $1,345M 2000 $1,385M 2001 $1,385M 2002 $1,407M 2003 $1,434M	Funds projects and programs in air quality non-attainment and maintenance areas for ozone, carbon monoxide, and small particulate matter (PM-10) which reduce transportation-related emissions. Project examples include public transit investments and non-motorized transportation projects such as the development of bicycle and pedestrian trails.	Funds distributed to the States according to a formula based on population and severity of pollution. (Includes new weighting factors for ozone and CO maintenance areas, CO non-attainment areas, and ozone submarginal areas.) Provides for public/private partnerships by allowing States to allocate CMAQ funds to private and non-profit entities for land, facilities,	Funds for this program are allocated by the States. Projects are identified through the statewide transportation planning process and/or other allocation processes by the States, such as a discretionery grant program.	80% Federal share with required 20% local/state match. For projects which cross park lands, the Federal share can reach 100%.

TEA-21 Funding Summary Table (continued)

Funding Program	Authorized Funding Levels[2]	Eligible Projects	Funding Recipients and Other Eligibility Issues	NPS Participation	Matching Requirements (federal/local)
Congestion Mitigation & Air Quality Improvement Program Continued			vehicles and project development activities. Limits eligibility of partnerships on alternative fuel projects to the incremental vehicle cost over a conventional-fueled vehicle.	NPS may contribute the local/state match using Federal Lands Highway Program for Park Roads and Parkways (PRP) or NPS-appropriated funds.	
Urbanized Area Formula Transit Grant *Sponsoring Agency:* FEDERAL TRANSIT ADMINISTRATION	1999 $2,698M 2000 $2,923M 2001 $3,147M 2002 $3,371M 2003 $3,596M	**CAPITAL TRANSIT INVESTMENTS:** • Land, capital, equipment, vehicles, technology, engineering, design, etc. for developing new or improving mass transit infrastructure and operations. **TRANSIT OPERATING ASSISTANCE:** • Costs incurred in operating a transit program, including maintenance. **TRANSIT ENHANCEMENTS:** • Projects that enhance mass transit use, such as bus shelters, landscaping, street furniture, historic preservation, etc.	Allocated to urbanized areas based on formulas. $18 billion set aside for vehicle replacements. Provides operating assistance only to urbanized areas with a population of less than 200,000. 1% set-aside for transit enhancement projects in urbanized areas of more than 200,000. Eligible grant recipients include transit provider or sponsoring agent thereof. Capital expenses definition expanded to include preventive maintenance for areas over 200,000 in population.	NPS may acquire these funds as a subrecipient (through another transit provider or public agency.)	90% Federal share with required 10% local/state match for incremental costs of complying with the Clean Air Act Amendments or Americans With Disabilities Act. An 80% Federal share with 20% local/state match for all other expenses. 95%/5% for transit enhancements projects providing bicycle access to mass transit.

TEA-21 Funding Summary Table *(continued)*

Funding Program	Authorized Funding Levels[2]	Eligible Projects	Funding Recipients and Other Eligibility Issues	NPS Participation	Matching Requirements (federal/local)
Transit Formula Program for Other than Urbanized Areas *Sponsoring Agency:* Federal Transit Administration	1999 $177.9M 2000 $193.6M 2001 $209.3M 2002 $224.9M 2003 $240.6M	Capital Transit Investments as described above.	Funding is allocated by states to nonurbanized areas of less than 50,000 in population. Funding allocated to states by a formula based on non-urbanized population. Eligible grant recipients include transit provider or sponsoring agent thereof.	NPS may acquire these funds as a subrecipient (through another transit provider or public agency.)	Same matching requirements as in Urbanized Area Formula Transit Grants, excluding transit enhancements.
Clean Fuels Formula Grant Program *Sponsoring Agency:* Federal Transit Administration	1999 $100M[3] 2000 $100M 2001 $100M 2002 $100M 2003 $100M	To be used towards the purchase of low-emissions buses and related equipment, construction of alternative-fuel fueling facilities, modification of garage facilities to accommodate clean-fuel vehicles and assist in the utilization of biodiesel fuel. Eligible technologies include compressed natural gas, liquefied natural gas, biodiesel fuel, battery, alcohol-based fuel, hybrid electric, fuel cell or other zero-emissions technology.	Allocated only to grantees that apply, using a formula based on population, fleet size, bus passenger miles, and severity of air quality non-attainment.[4] Establishes a cap on grants to any one recipient of $15 million for areas with less than 1 million population and $25 million for areas of 1 million or more. Requires certification by grant applicants that vehicles purchased with funds under this program will only be operated with clean fuels.	NPS may acquire these funds as a subrecipient (through another transit provider or public agency.)	80% Federal share with required 20% local/state match.

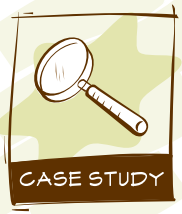
[3] Funding for the Clean Fuels formula program has been integrated into the Urbanized Area Formula Grant program for Fiscal Year 1999.
[4] As defined by the Environmental Protection Agency's National Ambient Air Quality Standards.

Transportation and Fees

The Department of Interior and Related Agencies Appropriations Act of 1999 authorizes the use of fees as a revenue source that parks may use to initiate and improve park transportation systems and services. This Act gives parks the authority to charge fees for transportation services, in addition to entrance fees. Transportation and admission fees may be collected at one time from park visitors. Parks may use transportation fee revenues only for the operation and maintenance of the transportation services at the park.

Congress created the Recreational Fee Demonstration Program in 1995 to encourage experiments with fee collection. The Act, which extends the program through September 30, 2001, with funds available for use until September 20, 2004, is designed to demonstrate the feasibility of using new and increased fees for the operation and maintenance of the parks. Demonstration sites retain 80% of the revenues generated. Program revenues have been used to fund such critical needs as improvements to scenic drives and overlooks, trails and transit projects.

Recreational Fee Demonstration Programs at Shenandoah and Grand Canyon



Shenandoah National Park is using a portion of its demonstration fee revenues (approximately $125,000 per year) to address needed improvements to their transportation facilities, including a project to clear vistas along the Skyline Drive, a 105-mile long roadway that runs the length of the Park along the ridgetop of the Blue Ridge Mountains, and to plant native trees and shrubs on overlook islands. This project, begun the first year that Recreational Fee Demonstration revenues became available, is nearly halfway complete. The park was established in 1926 and the scenic drive was built in the 1930s. Over the years funding for the park failed to keep pace with park needs. Maintenance projects accumulated and clearing the views from the approximately 70 overlooks and drive-bys was deferred. This project and others being implemented use both Recreational Fee Demonstration revenues and funds from the Federal Highway Administration and Virginia Department of Transportation. Other projects include the installation of road sensors, road striping, sidewalk repairs and rehabilitation work at the Dickey Ridge and Harry F. Byrd, Sr., visitor centers. For more information, contact

- Lyn Rothgeb
  (540) 999-3300.

Grand Canyon National Park is paving the way for a shift from automobiles to mass transit. Construction crews are preparing to break ground on a light rail project that will facilitate access to the Canyon View

Transportation and Fees
continued on next page

Information Plaza, the future transportation hub of Grand Canyon National Park. By 2003, visitors will use light rail to travel from the gateway community of Tusayan, to the Canyon View Information Plaza, six miles north. The road access improvement project is being funded through the Federal Lands Highway Program, and a portion of revenues from the Recreational Fee Demonstration Program. The project will construct and reconstruct three miles of access roads to the Plaza and the business district of Grand Canyon Village. The new roads will incorporate a shuttle bus transit loop, a new access road to the existing Business Center, the realignment of the road to Yavapai Lodge, and the reorientation of the business loop road that provides access to Mather Campground, Trailer Village and the Business Center. The roads are expected to be completed in winter, 2000. The park proposes to fund the multimodal transit system with a concessions contract for up to 20 years. The concessioner will finance, design, build, operate and maintain the system. For more information call

- Brad Traver
  Manager of Grand Canyon's GMP Implementation Team
  (520) 774-1239

Redistributing Use with Fees

Fee programs give park managers the ability to redistribute resources to address concerns of over-use and unintended use of park facilities. For example, at the **Thompson Boat House**, a NPS-operated facility on the banks of the Potomac River near Washington, D.C., metered parking was introduced to restrict commuter parking and free-up space for visitors. Generally, a fee strategy is implemented as part of a larger program for addressing a specific transportation challenge. Efforts to reduce parking and traffic must be carefully planned so that adequate alternatives are available for visitors. Coordination with the gateway community and owners of adjacent lands may be necessary to avoid actions that lead to parking violations and over-crowding in gateway community facilities. For more information, contact

- Steve LeBel
  Concessions Specialist at Rock Creek National Park
  (202) 254-2467

Bryce Canyon National Park stands ready to implement a shuttle bus service to provide visitors with access to the park's most popular attractions as a strategy for combating increased traffic congestion on park roads and parking lots. The park is in the process of accepting bids from contractors for the operation of a new shuttle bus service. Although the service will not be mandatory for visitors, all visitors will participate in supporting the shuttle. In order to encourage visitors to leave their cars at the staging area and take the shuttle system, the park plans to implement a seamless fee structure that will encourage people to use the new

Transportation and Fees
continued on next page

shuttle bus system. Those choosing to take the shuttle bus will pay a $10 park entrance fee plus a $5 transportation fee. Those choosing to park inside the park will pay a $10 entrance fee plus a $10 transportation fee. For more information, contact

- Fred Fagergren
  Park Superintendent
  (435) 834-5322

Fee Collection Options

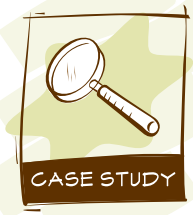
Using Staff to Collect Fees. Fee collection by uniformed National Park Service employees is standard practice. Personnel costs are high, but benefits are considered commensurate. In addition to collecting fees, properly trained staff provide directions, orientation and information, and offer suggestions and tips. An alternative is to rely on volunteers to collect fees.

Electronic Fee Collection. Costs for collecting fees can be markedly reduced with automated machines that collect fees and issue tickets, or other proof of payment. Automated machines can also electronically release toll gates and other locked entrances. The National Park Service is using dozens of fee collection machines in a number of locations. They cost about $20,000 each and pay for themselves rather quickly in reduced staffing costs. But the machines have been met with mixed success. Many parks lack trained staff to operate and maintain the machines, and visitors do not always understand how to use them. If machines are used, quality signage and backup staff should be available to assist visitors.

Outside Collectors and "Fee Bundling." Increasingly, parks use third parties to collect fees. Transportation concessioners may "bundle" park fees with the transportation charge. With respect to entrance fees, the total fee collected by concessioners may not exceed the maximum entrance fee allowed under the Land and Water Conservation Fund Act of 1965 (LWCFA).

Advanced Ticket Sales and Reservations Systems. Some National Park Service campground and tour fees are being collected in advance through a designated NPS 1-800 number, Internet web site, or by outside ticket vendors. Visitors using these methods choose in advance the date and sometimes the time of their arrival. In this way, visitors are guaranteed access at a selected time. They avoid long lines and the prospect of being denied entrance due to capacity limitations. For more information on procedures for initiating fees, consult Recreation Fee Guideline NPS-22.

Fee Collection Methods at the Washington Monument and the Grand Canyon



Washington Monument. For years, long lines of visitors snaked around the base of the stark obelisk waiting to view the Capitol from the observation deck. Now, entrance to the Monument is more efficient because advance reservations and ticketing is available

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continued on next page

through Ticketmaster, a national ticket vendor. Nearly half of all admissions are now reserved in advance, for a $1.50 convenience ticket charge and $0.50 handling fee per order. Free tickets are also available on a first-come-first-serve basis. For more information, contact

- National Capitol Parks Central Headquarters
  (202) 485-9880

Grand Canyon National Park uses off-site, advance-ticket vending machines to collect entrance fees from the gateway communities of Williams, Tusayan and Flagstaff. The remote entrance fee collection system is considered to be a success since fees are being collected as far as 80 miles from the park's entrance gates. The machines at Williams (52 miles from the park) and Flagstaff (80 miles from the park) are located at the local chamber of commerce visitor centers. Each of these machines has collected approximately $12,000 in revenues over the last two years. The machine in Tusayan, about one mile from the park, is located at a major tourism center that includes an IMAX theater and other visitor and information facilities. That machine generated about $20,000 in revenues during 1998. An "express lane" at the park entrance speeds ticket holders through the entrance, helping to relieve congestion particularly during the busy peak season. For more information, contact

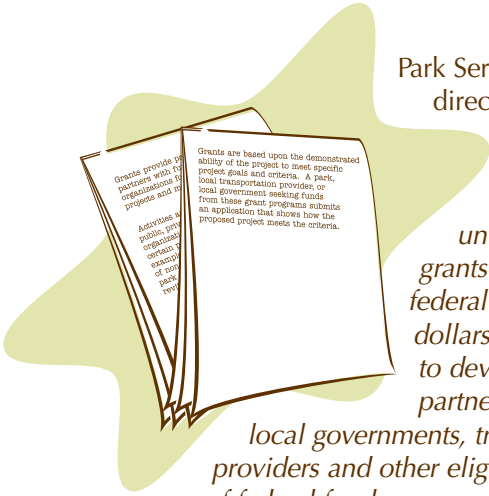
- Danny Yeager
  Fees Specialist
  (520) 638-7848

The Mechanics of Grant Writing

Grants provide parks and their partners with funding from outside organizations for transportation projects and many other activities. Grants are sponsored by public, private and non-profit organizations that direct funds to meet certain policy or project goals. For example, grants may promote the use of non-motorized transportation, park preservation or community revitalization.

Grants are based upon the demonstrated ability of the project to meet specific project goals and criteria. A park, local transportation provider, or local government seeking funds from these grant programs submits an application that shows how the proposed project meets the criteria.

Typically, state departments of transportation (DOTs) sponsor transportation-related grants. State DOTs make grants from specific federal funding programs, such as the Congestion Mitigation and Air Quality Improvement and the Transportation Enhancements programs, and from state funding programs for projects designed to meet specific objectives of the grant program. Grants using state and federal funds are subject to legally-mandated eligibility rules, such as provisions that prohibit federal agencies, such as the National



Park Service, from directly receiving federal transportation funds. *Park units seeking grants financed with federal transportation dollars are required to develop partnerships with local governments, transportation providers and other eligible recipients of federal funds.*

Grants come in many shapes and sizes. Some programs require a brief application form; others require a comprehensive proposal. Regardless of the specifics of the application process, park managers and their partners seeking grant funds should read the application form carefully and ensure that all required information is provided. Omitting a phone number or going over the required page limits may seem trivial, but it could lead to the rejection of an application.

Most grant applications require detailed information to assure that grant money will result in a project that can be implemented. For example, evidence of local support for the project may be required. Before applying for funds, be sure all the grant requirements can be met.

Standard elements that are a part of virtually all grant applications include:

- *Grant Title and Project Sponsor:* The name of the grant program and program sponsor.
- *Project Sponsor:* The agency responsible for the project. In a partnership situation, one agency will have a lead role. The grant application usually asks for the names of co-sponsors.
- *Project Coordinator:* The project manager. The completed application will include contact information, name and title, address, telephone, fax number and e-mail address.
- *Project Description:* The project description, written as concisely as possible, should explain how the money will be used. Describe the project so that a person who knows nothing about the project will understand it.

In some cases, grant applications will ask how the grant would support a larger program or project. For example, a $50,000 grant for way-finding signage for hikers on a trail network may be a component of a comprehensive trail improvement effort. The project description should detail the way-finding signage and include other aspects of the comprehensive trail project. Finally, the project description should highlight the project elements that show how the grant meets the grant-making agency's policy priorities.

The success of the grant won by the Mount Desert Island League of Towns, including **Acadia National Park** and its partners, lay in the ability to demonstrate how the proposed project met 15 specific evaluation criteria, as well

as the primary purpose for the grant program, which was to promote innovative alternative transportation projects to combat congestion in rural areas. These criteria included: evidence of public support for the project; the project's link with existing or planned transportation facilities; the ability to obtain the required 20% in local matching funds; and, the effectiveness of the project in reducing road congestion.

- *Work Plan.* Most applications ask for a detailed work plan, including all steps in the project development process and a schedule for project completion. The work plan demonstrates an understanding of the steps needed to complete the project, which may possibly include all required permits, an environmental analysis and legal clearances.
- *Budget.* All grant applications require line item budgets. For grants requiring a local match, such as those that use federal funding, the amounts and sources of funds must be listed. Following is a sample of a budget for the purchase and installation of way-finding signage on a trail improvement project.

National Greenway Trust Transportation Grant Program
BUDGET SUMMARY TABLE

Project Name and Sponsor	Total Cost	Grant Share (80%)	Total Local Match (20%)	Local Government Share (share of local match)	Private Contribution (share of local match)
Fields Trail Enhancements Project, Way-finding Signage Program, Strawberry National Heritage Area	$50,000	$40,000	$10,000	$7,500	$2,500
Signage Design	$8,000	$6,400	$1,600	$1,200	$400
Sign Construction	$30,000	$24,000	$6,000	$4,500	$1,500
Sign Installation	$12,000	$9,600	$2,400	$1,800	$600

- **Acadia National Park**
  Len Bobinchock
  Deputy Superintendent
  (207) 288-0374
- Jane Moore
  National Park Service Fee Program Manager
  (202) 208-4205
- **TEA-21 funding information: Federal Highway Administration or Federal Transit Administration at** *www.fhwa.dot.gov or www.fta.dot.gov.*
- **The Surface Transportation Policy Project publishes the *"TEA-21 User's Guide."*** For more information, see *www.tea21.org.*
- **Shenandoah National Park:** see *www.nps.gov/feedemo/shen1.htm* for their use of fee demonstration funds.
- **Isle Royale National Park:** see *www.nps.gov/htdocs4/isro/fee.htm* for their use of fee demonstration funds.
- **Thompson Boat House**
  Steve LeBel
  Concessions Specialist, Rock Creek Park
  (202) 254-2467
- **Washington Monument.** Contact the Park Headquarters Office
  (202) 485-9880
- **Zion National Park**
  Dave Karaszewski
  Special Projects Manager, Zion National Park
  (435) 772-0143
- **Grand Canyon National Park**
  Danny Yeager
  Fees Specialist, Grand Canyon National Park
  (520) 638-7848
- **Yosemite National Park**
  Chip Jenkins
  Management Assistant, Yosemite National Park
  (209) 372-0288

Glossary

Allocate: The process for releasing funding to sponsors of a previously-approved transportation project.

American Association of State Highway Transportation Officials (AASHTO): An association of state departments of transportation, the AASHTO advocates multimodal transportation by providing technical services, information and policy advice to member departments, the U.S. Department of Transportation and Congress. The AASHTO is influential in national transportation policy decision-making.

Appropriate: An act by the state legislature or Congress to provide budgeted funds to programs that have been previously authorized by other legislation. Appropriated funding may be less than the authorized amount.

Articulated Bus: An extra-long, high-capacity segmented bus that has rear portion flexibility but is permanently-connected to the forward portion. No interior barriers hamper movement between the two sections. Seated passenger capacity is 60 to 80 persons with space for many standees. Length is from 60 to 70 feet. The turning radius for an articulated bus is usually less than that of a standard urban bus.

Attainment Area: A geographic area in which levels of a criteria air pollutant meet the health-based primary standard for that pollutant. See NAAQS below and discussion in Chapter 2.

Authorize: An act by Congress creating a policy and structure for a program, including formulas and guidelines for awarding funds. Authorizing legislation (such as TEA-21) may set an upper limit on program spending or may be open-ended. Revenues spent under an authorization must be appropriated by separate legislation.

Average Daily Traffic (ADT): A means of expressing the volume of traffic on a roadway during a 24-hour period.

Average Vehicle Occupancy (AVO): A means of expressing the average number of people travelling in each vehicle on a given road or location.

Bridge Inspection Program (BIP): A FHWA program which inventories and inspects the condition of all bridges in the Federal-Aid Highway system. An evaluation of each bridge's load-carrying capacity is performed to determine if any deficiencies exist, and if necessary, appropriate action such as warning signs, bridge closing, rehabilitation or replacement, is taken.

BUSWAY: A roadway designed exclusively for buses, constructed either at, below, or above grade, and located in a separate right-of-way or within a freeway corridor.

CAPITAL FUNDS: Funding dedicated to new projects or projects to expand the capacity of the transportation system, including freeway widenings, rail extensions, transit station improvements, new bicycle and pedestrian lanes. (Also see "operating funds.")

CONFORMITY: A process by which transportation plans and spending programs are reviewed to ensure consistency with Federal clean air requirements; transportation projects collectively must not worsen air quality.

CONGESTION MITIGATION AND AIR QUALITY IMPROVEMENT PROGRAM (CMAQ): Federal money contained in TEA-21 for projects and activities that reduce congestion and improve air quality.

EMISSIONS: The release of pollutants into the air.

ENVIRONMENTAL ASSESSMENT (EA): A document prepared early in a planning process that evaluates the potential environmental consequences of a project or activity. An assessment includes the same topical areas as an EIS, but only assesses the effects of a preferred action, and in less detail than an EIS. An EA results in a decision, based on an assessment of the degree of impact of an action, that an EIS is necessary, or that an action will have no significant effect and a finding of no significant impact (FONSI) can be made.

ENVIRONMENTAL IMPACT STATEMENT (EIS): An EIS is a full disclosure, detailed report which, pursuant to Section 102(2)C of the National Environmental Policy Act (NEPA), establishes the need for the proposed action, identifies alternatives with the potential to meet the identified need, analyzes the anticipated environmental consequences of identified alternatives, and discusses how adverse effects may be mitigated. An EIS is prepared in two stages: a draft statement which is made available to the public for review and a final statement which is revised on the basis of comments made on the draft statement.

ENVIRONMENTAL PROTECTION AGENCY (EPA): The Federal agency charged with developing and enforcing national environmental policies. The EPA oversees Federal policy regarding air and water pollution, among other topics.

EXPENDITURE: In transportation terms, this is any allowable expense associated with a project or program.

FAREBOX: Revenues collected by transit operators from passenger fares.

Federal Highway Administration (FHWA): The FHWA deals with highway transportation in its broadest scope; administering all Federal highway transportation programs, including FLHP.

Federal Lands Highway Program (FLHP): The FLHP funds transportation system investment for transportation facilities providing access to and within National Forests, National Parks, National Refuges, Indian Lands and other public lands. The Surface Transportation Assistance Act (STAA) of 1982 created the Park Roads and Parkways (PRP) funding category financed by the Highway Trust Fund under FLHP. The PRP program is jointly administered in accordance with a May 19, 1983, Interagency Agreement. The NPS is responsible for developing the priority program of projects and conducting environmental activities. The FHWA provides planning assistance, engineering, and technical/contract administration assistance.

Federal Transit Administration (FTA): The FTA funds the development of mass transportation systems such as subway and bus systems.

Field Operations Technical Support Center (FOTSC): A field office of the Washington Park Facility Management Division of the NPS, FOTSC manages a motor vehicle count program and supports traffic data collection efforts.

Fiscal Year (FY): Annual schedule for keeping financial records and for budgeting transportation funds. For example, California's fiscal year runs from July 1 through June 30, while the Federal fiscal year runs from October 1 through September 30.

Flexible Funding: Unlike funding that flows only to highways or only to transit by a fixed formula, this money can be invested in a range of transportation projects. Examples of flexible funding categories include the STP, CMAQ and National Highway System and transit formula programs.

General Management Plan (GMP): A document that provides the broadest level of NPS planning, outlining the goals and visions of a park. The GMP defines expected future resource conditions and visitor experiences envisioned for the park.

Government Performance Results Act (GPRA): Implemented by Congress in 1993, the GPRA requires Federal departments and agencies to submit annual program performance reports to the President and Congress. The reports compare actual performance with goals set in annual performance plans. The GPRA focuses on measuring what each program has actually accomplished. This is a departure from traditional governmental budgeting, which typically focused on the amount of funding obtained, and the amount disbursed on new equipment, supplies, the number of grants, procurements, and transactions made.

HOV Lanes, Bus and Carpool Lanes, Preferential Lanes: A form of preferential treatment in which lanes on streets or highways are restricted for the exclusive use of high-occupancy vehicles during at least a portion of the day.

Intelligent Transportation Systems (ITS): Refers to the use of advanced technologies (such as traffic sensors and communications equipment) to improve transportation operations.

Intermodal: A mode is a particular form of transportation, such as automobile, transit, carpool, ship, bicycle. Intermodal refers to connections between modes.

ISTEA: Intermodal Surface Transportation Efficiency Act of 1991. Federal legislation that mandated the way transportation decisions were to be made and funded. This landmark $155 billion federal legislation signed into law in December 1991, called for broad changes in transportation decision-making, and included major revisions to metropolitan and statewide planning processes. ISTEA emphasized diversity and balance of modes, as well as the preservation of existing systems over construction of new facilities. The law expired in September 1997, and was followed by TEA-21.

Land, Water Conservation Fund Act (LWCFA): Implemented in 1965, this Act provides NPS and other Federal land management agencies with the authority to collect recreational use and entrance fees. It also regulates how funds can be collected and utilized.

Level-of-Service Analysis (LOS): An analysis that describes the amount of traffic congestion in an area.

Maintenance Area: An area previously designated in non-attainment for EPA clean air standards which has subsequently been redesignated in attainment.

Memoranda of Understanding (MOU): A contract between the NPS and participating parties that specifies each party's responsibilities regarding a mutual goal or project. MOUs themselves are not legally binding, although they are likely to reflect statuary obligations which are legally enforceable.

Metropolitan Planning Organization (MPO): Each urbanized area with a population of more than 50,000 is required to designate a MPO that will develop ***regional*** transportation plans and policies. The MPO is typically comprised of officials from ***local*** units of government and heads of transportation and environmental agencies from a metropolitan region, and serves as the forum for cooperative transportation decision-making.

Mode: A particular form of travel, such as walking, bicycling, carpooling, bus, train.

Mode Shift: The shift of people from one mode to another; for example, from single-occupancy vehicles to HOVs or vice versa.

Multimodal: Facilities serving more than one transportation mode or a transportation network comprised of a variety of modes.

National Ambient Air Quality Standards (NAAQS): Set by the U.S. Environmental Protection Agency (EPA), these standards measure the impacts of three criteria air pollutants: ozone, nitrogen oxides and volatile organic chemicals.

National Environmental Policy Act (NEPA): Established by Congress in 1969, NEPA requires that Federal Agencies consider environmental matters when considering to carry out federal actions. This could include the preparation of environmental assessments (EAs) or environmental impact statement (EIS) for projects with the potential to result in significant effects on the environment.

National Historic Preservation Act (NHPA): Established by Congress in 1966, the NHPA sets a national policy for the protection of historic and archeological sites and outlines responsibilities for Federal and state governments to preserve the nation's history. The NHPA requires any activity that uses Federal funds, seeks a Federal permit or license, or is otherwise assisted or approved by the U.S. government, to consider its effects on historic and archeological sites that are eligible for the National Register of Historic Places.

Non-attainment Area: A geographic area in which the level of a criteria air pollutant is higher than the level allowed by the NAAQS.

Non-Governmental Organization (NGO): A potential partner for parks, NGOs include a broad array of citizen volunteer and non-profit groups, usually organized around an issue or set of issues.

Obligate: The way project sponsors spend money, typically by putting their project under contract for construction. Funding programs often require project sponsors to obligate funds in a timely manner or lose the funds.

Operating and Maintenance Costs (O&M): Funds for day-to-day costs of running transportation systems. For transit, costs include fuel, salaries and replacement parts; for roads, operating costs involve maintaining pavement, filling potholes and paying workers' salaries.

PARK-AND-RIDE LOT: A parking facility where individuals access public transportation as a transfer of mode, usually from private automobiles. Public transportation usually involves express bus service from the lot to a centralbusiness district or major activity center. A park-and-ride lot can also serve the dual function of a carpool location.

PROGRAM: A system of funding to implement transportation projects or policies, such as through the State Transportation Improvement Program. (see STIP)

ROAD INVENTORY PROGRAM (RIP): The Federal Lands Highway Divisions perform road inventories and inspection services for park roads and parkways. Program reports contain information needed to perform road system planning, management, operations and maintenance.

STATE IMPLEMENTATION PLAN (SIP): This term refers to two different although related, documents. Metropolitan areas prepare regional SIPs showing steps they plan to take to meet Federal air quality standards (outlined in the Clean Air Act). Several SIPs make up the statewide plan for cleaning up the air, also known as a SIP.

STATE TRANSPORTATION IMPROVEMENT PROGRAM (STIP): A list of projects which includes all transportation initiatives proposed for Federal funding within a state for a three-year period. It includes regionally significant projects; metropolitan transportation improvement projects are incorporated into the STIP without modification.

SURFACE TRANSPORTATION PROGRAM (STP): A transportation funding program within TEA-21. STP funds may be used for roadway construction and improvements, operational improvement, transportation systems, bicycle and pedestrian facilities, transit, ridesharing programs and facilities and transportation planning and studies.

TRANSIT CENTER (OR TRANSIT STATION): A mode transfer facility serving transit buses and other modes, such as automobiles and pedestrians. In the context of this document, transit centers are either on-line or off-line facilities with respect to the HOV lane.

TRANSIT ENHANCEMENTS: One percent of the urbanized-area formula funds distributed to areas with populations of over 200,000 must be used for transit enhancement projects specified in the Act. Eligible projects include bus shelters, increased access for persons with disabilities, public art, rehabilitation and renovation of historic transit facilities and vehicles, landscaping, and bicycle and pedestrian access.

TRANSPORTATION ENHANCEMENT ACTIVITIES (TEs): A TEA-21 funding category. Ten percent of STP monies must be set aside for projects that enhance the seamless union of transportation facilities with their surroundings. Examples of TEA projects include bicycle and pedestrian paths, restoration of rail depots and other historic transportation facilities, acquisition of scenic or open space lands next to travel corridors, and murals and other public art projects.

TRANSPORTATION EQUITY ACT FOR THE 21ST CENTURY (TEA-21): Signed by President Clinton in June 1998, this Federal transportation legislation retains and expands many of the programs created in 1991 under ISTEA. The legislation reauthorizes Federal surface transportation programs for six years (1998-2003), and significantly increases overall funding for transportation.

TRANSPORTATION IMPROVEMENT PROGRAM (TIP): A three-year, prioritized program of transportation projects within a metropolitan planning area proposed for Federal funding. It includes all regionally significant projects, planning research activities and emergency relief projects.

TRAVEL DEMAND MANAGEMENT (TDM): A strategy for reducing congestion and pollution by reducing vehicle volume through such techniques as ridesharing and carpooling.

UNITED STATES DEPARTMENT OF TRANSPORTATION (DOT): The Federal cabinet-level agency responsible for highways, mass transit, aviation and ports; headed by the secretary of transportation. The DOT includes the Federal Highway Administration and the Federal Transit Administration, among others.

WASO: Washington Support Office of the National Park Service.

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