Traffic issues at the park are well-known. Peak season visitors often experience parking lots filled to capacity and road congestion. Safety is a key issue with the park seeing vehicular accidents related to the mountainous terrain, excess speed, and a mix of vehicle types. More accidents occur on Newfound Gap Road (NFG Road) than on any other road in GRSM. NFG Road is also relied upon by local communities for access between Tennessee and North Carolina. Yet this road can be closed in winter due to ice and snow, and effective communication of closures or adverse travel conditions is difficult.

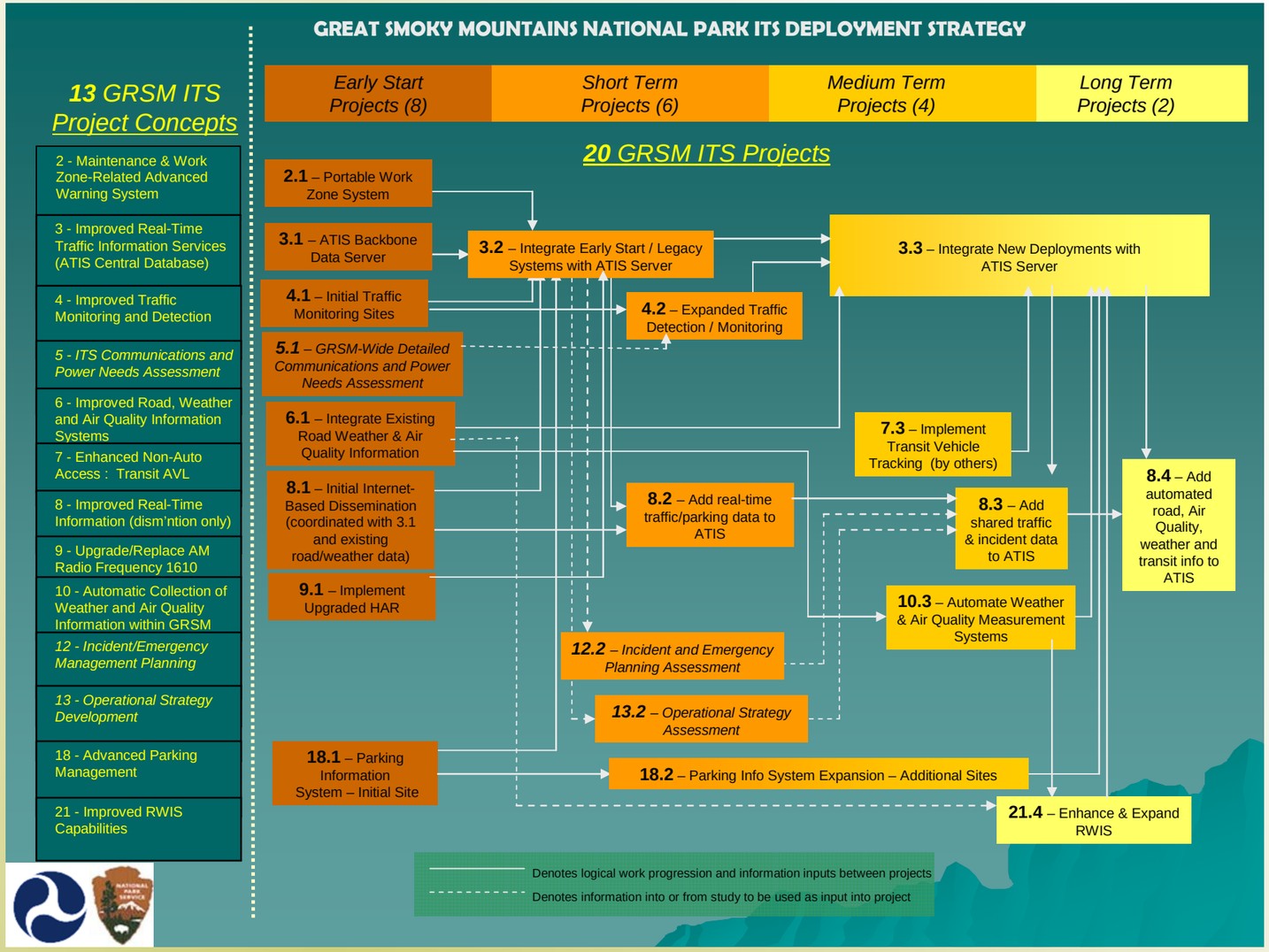
Among the ITS tools to address or mitigate these issues are traffic monitoring equipment, portable work zones and traveler information systems.

To address the issues, Project Stakeholders defined four broad ITS themes: Operations & Safety, Visitor Experience, Regional Partnership and Park Preservation. From these, objectives and strategies were identified, leading to 26 ITS Project Concepts, subsequently refined to 14. These 14 next led to 20 ITS Projects placed in four broad time periods (see figure) for implementation. Eight Early Start Projects were further developed through the conceptual design level and costs estimated (Table 1).

Table 1 Early Start ITS Projects

Project	Cost (000s)**
2.1 Portable Work Zone System	$ 266
3.1 ATIS Backbone Data Server *	$ 225
4.1 Initial Traffic Monitoring Sites *	$ 520
5.1 GRSM-Wide Detailed Communications and Power Needs Assessment	$ 300
6.1 Integrate Existing Road Weather & Air Quality Information	$ 121
8.1 Initial Internet-Based Dissemination (coordinated with 3.1 & 6.1) *	$ 133
9.1 Implement Upgraded HAR	$ 495
18.1 Parking Information System – 1st Site	$ 276
Total	**$ 2.34 Mil**

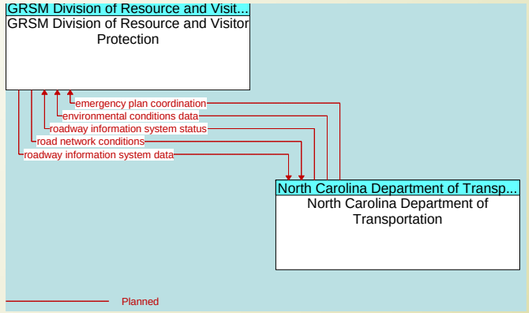
* Selected by the park for more detailed development.
** 2007 cost estimates



The 20 identified Projects constitute an initial ITS plan for GRSM. As projects are implemented and technology evolves, the plan should be updated and refined. The first step is to build upon existing park ITS efforts, which include two dynamic message signs, two portable message signs, and a highway advisory radio system (being upgraded in 2008). The plan projects are laid out in a "building block" approach to clarify implementation priorities.

The Final Report for this project is contained in two volumes. Volume I traces the project in detail from the development of themes to development of the ITS plan for the park. It discusses potential funding sources for ITS implementation. The primary likely source is the Federal Lands Highway Park Roads and Parkway Program, but other potential sources include FHWA sources such at the Surface Transportation Program and the National Highway System; Federal Transit Authority funding, and; Tennessee or North Carolina state funding.

Sample GRSM ITS Architecture Interconnect Diagram



The study also entailed the development of an ITS Architecture. This serves as the framework for defining system functions, interconnections, and information exchanges within the park and, where the opportunity exists, with the gateway and the greater regional systems. Volume II of the Report presents most of these details. The figure on the back illustrates a sample architecture interconnect diagram. This ITS Architecture is a local implementation of the National ITS Architecture specific to the park's service area. Continued collaboration with the regional stakeholders will help ensure the compatibility of the park's ITS Architecture with the regional ITS architectures of Tennessee and North Carolina.

This Study addressed the importance of traveler information and transportation management in the park context. Its process facilitated a mechanism for deliberate collaboration of stakeholders, whose individual roles and responsibilities can contribute toward the park's mission to provide for the enjoyment of its resources, in such manner and by such means as will leave them unimpaired for the enjoyment of future generations.

The products of this Study will better support the park's position in pursuing limited and competitive funding for ITS projects. The Study also serves as a basis for continued collaboration and partnerships in transportation planning for improved operations in the park and region.

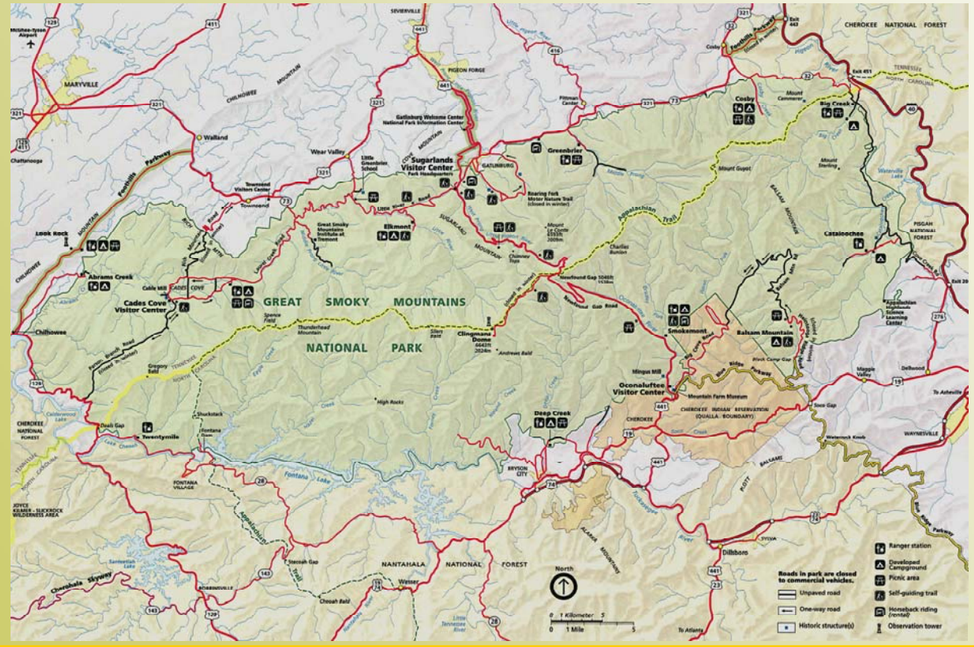
This report was produced by Wilbur Smith Associates in conjunction with the U.S. Department of Interior – National Park Service, and the U.S. Department of Transportation – Federal Highway Administration, Eastern Federal Lands Highway Division. For more information, supporting electronic files or to obtain copies of the Final Report, contact: efl.fhwa@dot.gov

Executive Summary
Great Smoky Mountains National Park Strategic ITS Plan

Great Smoky Mountains National Park (GRSM) was established in the 1920s for the “benefit and enjoyment of the people.” Created from private lands acquired by the states of North Carolina and Tennessee, the park contains incredibly diverse natural resources, irreplaceable remnants of human history, and some of the most spectacular scenery in the Eastern United States. Straddling the Tennessee-North Carolina state line, it is the most visited national park in the country. One price of popularity, however, is traffic congestion, which has been evident since the park’s development.

One means of addressing traffic congestion is the use of Intelligent Transportation System, or ITS, technologies. ITS technologies encompass the use of advanced electronic and communications capabilities to monitor and manage traffic, and to inform travelers of travel conditions on a “real-time” basis. The clear challenge in the GRSM context is accomplishing this without detracting from the park’s natural setting and environment.

The National Park Service, in association with the Federal Highway Administration (FHWA), Eastern Federal Lands Highway Division, directed a Strategic ITS Plan for GRSM. An overall aim was to link in-park ITS activities with the surrounding communities, plus regional/ statewide ITS activities. Plan development relied on extensive Stakeholder involvement of a diverse group, including GRSM staff, Tennessee and North Carolina State Transportation Departments , FHWA, Gateway communities/counties, planning organizations, and transit operators. This collaborative effort helped ensure a representative team to address the difficult issue of balancing resource preservation with wide public use.



Executive Summary—December 2007