# Paul S. Sarbanes Transit in Parks

# Fiscal Year 2010 Application Example

**Disclaimer:**

This application is an example of a successful Transit in Parks application; however, it is **NOT** necessarily the best response to any given question, since the responses needs to be based on individual site conditions.

**U.S. Department of Transportation**
**Federal Transit Administration**

# Paul S. Sarbanes Transit in Parks Program (Transit in the Parks Program)

**Project Proposal for Fiscal Year 2010 Funds – Implementation Project**

| **BASIC PROJECT INFORMATION** | |
|---|---|
| Project Name (Please provide a 1-2 sentence description of the project): **Lease Shuttle Buses for the Giant Forest Shuttle System in Sequoia National Park**<br>The shuttle connects overnight lodging, campgrounds, parking lots, and visitor services with the main attractions in the Giant Forest Sequoia Grove. | |
| Proposed Funding Recipient: **Sequoia and Kings Canyon National Parks** | |
| Public land unit(s) involved:<br>**Sequoia and Kings Canyon National Parks** | Location of Project<br>City:Three Rivers<br>County:Tulare<br>State: CA<br>Congressional District: CA21 |
| Federal Land Management Agency managing the above unit(s):<br>☐ Bureau of Land Management<br>☐ Bureau of Reclamation<br>☐ Fish and Wildlife Service<br>☐ Forest Service<br>☒ National Park Service<br>☐ Other (e.g. Federal Trust)<br>Describe: | Type of Implementation Project:<br>(Planning projects, please use the alternate form)<br>☒ Bus LEASE<br>☐ Vehicle replacement<br>☐ Tram/Trolley<br>☐ Boat/Ferry/Dock<br>☐ Rail<br>☐ Non-motorized (e.g., bicycling/pedestrian trail)<br>☐ Other (e.g., Intermodal facility, ITS)<br>Describe: |
| ☐ Proposal is for a new alternative transportation system where none currently exists.<br>☒ Proposal is for an expansion or enhancement of an existing alternative transportation system.<br>☐ Proposal is for rehabilitation of or replacement of vehicles or facilities for an existing alternative transportation system. | |
| Transit in Parks Program Funding Requested during FY 2010<br>$240,000 | **Total** Project Capital Cost at Completion (All sources)<br>$ |
| Were you awarded Transit in Parks Program funds for this project in the past? ☒ Yes Possibly ☐ No<br>If answer "Yes," please provide amount awarded: $165,000 in 2006; $225,000 in 2007; $230,000 in 2008; (funded by NPS in 2009) | |
| Do you plan to request additional Transit in Parks Program funds in future years? ☒ Yes ☐ No<br>**(Note: If you wish to compete for future Transit in Parks Program fiscal year funding you must reapply).**<br>If answer "Yes," please specify Transit in Parks Program proposed funding levels for out years below: | |

| | | |
|---|---|---|
| FY 2010 $240,000 | FY 2011 $240,000 | FY 2012 $240,000 |

| **FY 2010** Funding Amounts from sources other than Transit in Parks Program funds? ☒ Yes ☐ No<br>If answer "Yes," please specify funding levels per source below: | | | |
|---|---|---|---|
| State $ | Local $ | Federal (other than Transit in Parks Program)<br>**$846,903** | Private sources $ |

| **CONTACT PERSON** | |
|---|---|
| Name: **Colleen Bathe** | Phone: **559-565-3130** |
| Position: Chief of Interpretation, Education and Partnerships | E-mail: colleen_bathe@nps.gov |
| Address: Sequoia and Kings Canyon National Parks, 47050 Generals Highway, Three Rivers, CA 93271 | |

**OTHER PROJECT SPONSORS (in addition to funding recipient)**

**City of Visalia, Transit Department (Partnership)**

**REQUIREMENTS**

☐ If a State, Tribal, or local government entity is proposing the project, the applicant has contacted the manager of the federal land unit(s) and has the consent of the Federal land management agency or agencies affected.
☐ The project is consistent with the metropolitan and statewide planning process.
☒ The project is consistent with agency plans.
☒ If this is an implementation project, all reasonable alternatives, including a non-construction option, were analyzed before proposing this project.

| **BASIC PROJECT DATA** | |
|---|---|
| Number of Visitors (Annual): 970,043 | Daily Number of Visitors (Peak season): 4460 |
| Average Number of Vehicles per Day at Peak Visitation: 1487 | |
| Current Road Level of Service at Peak Visitation<br><br>(Please consult guidance where available on determining this variable. You may also use observational accounts or pictures to provide an assessment of this datum for FY 2010 proposals). | |
| What time of the year does your land unit experience Peak Visitation?<br>☐ Spring ☒ Summer ☐ Fall ☐ Winter | |
| Current Carrying Capacity of Existing Roads: (vehicles/day) | |
| Current parking shortages during peak visitation: see attachment 1. Prior to implementation of the shuttle, during weekends in peak season, parking lots at Moro Rock, Crescent Meadow, and the General Sherman Tree are filled to capacity. Visitors are forced to either park illegally, damaging park vegetation resources, or miss visiting key features of the park. | |
| Current Average Number of Persons who use the alternative transportation system (if one already exists) at Peak Visitation: | |

1317 (average number of visitors/daily at peak)

Current Annual Number of Persons who use the alternative transportation system (if one already exists): 197,562 (2009 ridership) (anticipated number of riders or users/annually)

Estimated Annual Number of Persons who will use the alternative transportation system at project completion: : 71,700 – 95,600 (based on demand estimates in Volpe Transit Systems Report, 2008) (anticipated ridership/usage)

Is there an anticipated reduction in auto collisions with large animals with this project?
☒ Yes ☐ No
If "Yes," please provide anticipated reduction: An annual average of seven bears are struck by vehicles in Sequoia and Kings Canyon National Parks. One of the prime locations for vehicle-wildlife collisions is along the roads in Giant Forest where the shuttle operates. It is estimated that the shuttle removed 9100 vehicle miles traveled from park roads in 2007 in the Giant Forest alone.

**BASIC PROJECT DATA (CONTINUED)**

Is there an anticipated increase in porous surface with this project? ☐ Yes ☒ No

If "Yes," please provide anticipated area of increase: square feet

Is there an anticipated increase in wildlife habitat connectivity? ☐ Yes ☒ No

If "Yes," how many acres would be connected by the project? acres

Is there an anticipated increase in air clarity measures (e.g., visitors' visual experience) for the land unit as a result of this project? ☒ Yes ☐ No

If "Yes," please explain: Volpe Transportation Systems Center (Volpe) calculated that during the 2007 operating season the Sequoia Shuttle reduced vehicle miles traveled in the park by 60,000 miles and this lead to reduced emissions and fuel consumption as follows: (1) hydrocarbons: 168 kilograms; (2) carbon monoxide: 1,254 kilograms; (3) oxides of nitrogen: 83.4 kilograms; (4) carbon dioxide: 54,960 pounds; (5) gasoline consumption: 2790 gallons. (Volpe Report, 2008)

Is there an anticipated reduction of visual impact of parking and roads on visitor experience?
☒ Yes ☐ No

If "Yes," please explain: Prior to the shuttle, during peak periods the parking lots at Crescent Meadow and Moro Rock or filled beyond capacity causing visitors to park illegally impacting visitor experience. (See Attachment 1). Based on data collected during the 2007 operating season, Volpe calculated that traffic on the Crescent Meadow/Moro Rock road was reduced by 21.5% compared to pre-shuttle use. (Volpe Report, 2008)

Is there an anticipated reduction of visual or noise impacts of transportation facilities on visitor experience?
☒ Yes ☐ No

If yes, please explain: Based on data collected during the 2007 operating season, Volpe calculated that traffic on the Crescent Meadow/Moro Rock road was reduced by 21.5% compared to pre-shuttle use. "it is clear from the reduction in traffic flow on park roads that road-traffic related noise, on average, is qualitatively no more than and probably substantially less with the shuttle system in operation." (Volpe Report, 2008).

# Executive Summary

This proposal would fund the leasing of shuttle buses that carry visitors to the majestic features of Sequoia National Park's Giant Forest Sequoia Grove, made famous by John Muir. Located in California's southern Sierra Nevada, Sequoia National Park protects the largest trees on the planet. At the heart of this magnificent landscape lies the Giant Forest. The shuttle moves visitors from busy overnight lodging, campgrounds, parking lots, and visitor services to the most popular locations in the sequoia grove.

The shuttle implements the final phase of the Giant Forest Restoration Plan, a ground-breaking effort to remove damaging infrastructure from the park's most significant resource and create a high-quality, day-use experience for visitors. Since the effort began in 1971 with the park's Master Plan, there have been two paramount goals for the Giant Forest: to enhance resource protection and to improve visitor experiences. The shuttle, which accomplishes both, has been recommended throughout the Restoration Plan processes, including in the no-build alternative that preferred shuttles – environmentally, practically, and financially – to a 1,700-space parking garage.

The shuttle operates through a cooperative agreement with the City of Visalia. According to an estimate by an independent consultant, operation of the shuttle by the City saved the park $200,000 in the first year alone.

The City is in a unique position to manage this program due to its 25-year history of successfully operating transit systems and its multi-modal transit center that links communities throughout Tulare County as well as Greyhound and Amtrak stations. In 2004, the City responded to an invitation by the NPS and the local congressman to participate with the park. Investing almost $300,000 in city funds, Visalia secured $1.1 million in Congestion Management Air Quality funding and implemented a second shuttle system connecting Visalia to the Giant Forest.

City and local NPS officials believe both shuttles are viable and necessary to the visitor experience. The system ensures accessibility for the disabled, elderly and those without transportation capable of climbing the steep, winding mountain roads; improves safety by reducing the number of oversized vehicles on the road; reduces air-quality problems that plague Giant Forest and the non-attainment area on the Valley floor; meets the needs of people who choose alternative transport; and provides transportation for park employees. The shuttle is particularly important at the General Sherman Tree, Moro Rock, and Crescent Meadow, where access is limited and/or difficult. In addition, as gasoline costs rise, more people look for alternative-transportation options.

The shuttle is currently funded by a portion of a $10 entrance-fee increase that has already been implemented. The increase must also fund critical deferred-maintenance issues within the park. This Paul S. Sarbanes Grant application requests $240,000 to lease the shuttle vehicles needed for the system. The grant will allow the entrance fees now used for the shuttle system to be applied to critical deferred-maintenance projects within the park.

The fleet consists of a combination of gas-powered and clean-diesel buses with particulate-matter traps; the latter use low- sulfur diesel fuel. In 2010, two hybrid-electric vehicles joined the fleet.

## Project Description

The Giant Forest Shuttle serves overnight and day visitors to Sequoia National Park. It operates daily from May 27 to September 20, 2010, from 9:00 a.m. to 6:30 p.m. The system operates three routes (see attachment 2) that link overnight accommodations, visitor services, and the main attractions within the world-famous Giant Forest Sequoia Grove.

Visitors use the shuttles for sightseeing, access to areas with limited parking, traveling between facilities, and to get to and from nature programs that park rangers lead at the various locations served by the shuttles (the rangers also use the shuttle to "commute" to their programs). The opportunity for rangers to provide information to visitors at the stops and onboard the buses increases both the ability of the staff to contact visitors and the enjoyment of the shuttle system by its riders.

**Route 1** links Lodgepole Visitor Center, market, and campground with the Sherman Tree and the Giant Forest Museum. Five 35-foot clean-diesel, ADA-compliant buses with wheelchair lifts/ramps operate along this route with 20-minute headways. Buses have a capacity of 55 people. They also have bicycle racks, increasing the opportunities for alternative transportation. This year, two hybrid electric buses have been added to the fleet (see Attachment 2 for photos.)

**Route 2** runs from the Giant Forest Museum to Moro Rock and to Crescent Meadow. Five "cut-away" buses (22 – 26 feet long) with a capacity of 28 people operate along Route 2, with 15-minute headways. These buses have wheelchair lifts/ramps and are ADA compliant. They also have bicycle racks (see Attachment 2 for photos). During major holiday weekends (Memorial Day, July 4$^{th}$, and Labor Day), only the shuttle buses serve this popular road; it is closed to passenger vehicles as addressed in the park's General Management Plan.

**Route 3** operates from the Lodgepole Visitor Center to Lodgepole Campground, Wuksachi Lodge, and Dorst Campground, using both types of buses.

Funding from the Paul S. Sarbanes Transit In Parks Program would cover the leasing costs of these shuttle buses. The short length of the shuttle season suggests that the operator lease rather than purchase the buses (Implementation Plan for Shuttle Service Development at Sequoia and Kings Canyon National Parks - 2005). The fleet must have brake-retarding systems to make travel on mountainous roads safe, and must meet strict air-quality rules recently imposed in the Transit Fleet Rule by the California Air Resources Board. The shuttle-system operator was unable to find buses that met both of these requirements on a short-term lease, and annual lease costs were so expensive (over $350,000) that, after careful analysis, the City of Visalia decided to purchase the vehicles and lease them to the park for the shuttle operation. The $240,000 requested represents the 1-year depreciation of the shuttle fleet, based on the purchase price of the buses and the expected resale value of the vehicles at the end of the five-year pilot period, constituting the lease cost to the park.

# Transit in Parks Program Implementation Evaluation Criteria

## Implementation Evaluation Factors:

### 1. Demonstration of Need

**a. Visitor mobility and experience:**
Sequoia National Park saw an average of 1,654 vehicles during the 101-day operating schedule in 2007 (NPS Statistics, 2007). Currently the park experiences level of service D (LOS D) at several locations along the proposed Giant Forest shuttle route - the Generals Highway at Moro Rock Road, on the Moro Rock Road and the Generals Highway at Lodgepole (south leg and east leg). The second most popular feature of Sequoia National Park is Moro Rock. During the peak season, the parking lots at this feature and at nearby Crescent Meadow are often at capacity (see Attachment 1 for photos), yet the trails in this area are underutilized because there is not adequate parking for access to the trail heads during the peak season. The result is that many visitors are frustrated by their inability to find parking and are either forced to park illegally or miss visiting these popular park attractions.

In 2007, during the first year of operation under the pilot project, the Sequoia Shuttle reduced visitor vehicle miles traveled on park roads by 60,000 miles. At one key intersection in the Giant Forest traffic was reduced by 21.5%. (Volpe Report, 2008) Over the 101-day operating period in 2007, 137,575 trips were made on the Sequoia Shuttle.

Thirty-two years of National Park Service planning has consistently shown that an internal shuttle is the best way to provide access to the world-famous Giant Forest Sequoia Grove within Sequoia National Park, to protect park resources, and to improve the visitor experience.

**Master Plan for Sequoia and Kings Canyon National Parks (1971)** identified to paramount goals:
- Enhance resource protection in Giant Forest.
- Improve visitor experiences in Giant Forest.

In 1974, a preliminary plan was proposed to the public to achieve these goals. It included:
- Removing major development from the Giant Forest Sequoia Grove.
- Establishing a public transportation system to “minimize private vehicular traffic.”

**The Giant Forest/Lodgepole Development Concept Plan (DCP) (1980)**
After public meetings and considerable discussion, this plan proposed:
- Converting the Giant Forest to a day-use only area by relocating lodging and food service facilities to Wuksachi Village.
- Consolidating day-use public parking.
- Initiating a peak-season shuttle bus system to connect day-use parking with Giant Forest destinations including Moro Rock and Crescent Meadow.
- Establishing a “collector shuttle” to connect lodging, camping, and food service with the Giant Forest shuttle.

**Visitor Transportation System Analysis (1995)**
- Considered the implications of three proposed alternatives. Common to all three alternatives, a “Lodging Shuttle” would connect the Wuksachi Lodge and Lodgepole campgrounds with Giant Forest.

**Interim Management Plan for the Giant Forest (1996)** which concluded:
- Day-use parking would be retained at the Giant Forest Museum.
- New and improved parking would be provided for the Sherman Tree, but at a new site outside of the Sequoia grove and farther from the tree.

- The two-line shuttle system would be implemented during the peak season:
- The day-use shuttle would connect the Sherman Tree, Moro Rock, and Crescent Meadow with the Giant Forest Museum.
- The Lodging shuttle would connect Wuksachi and Lodgepole overnight accommodations and food service with the Giant Forest Museum.

**Transportation Study and Shuttle Implementation Plan (2002)**
OTAK, Inc. completed a major, four-part planning effort to implement the Giant Forest shuttle system:

- Collected information on existing visitor volume, demand, and congestion.
- Confirmed the validity of the transportations findings in the 1996 IMP.
- Recommended a final shuttle implementation plan that addressed service levels, operating and capital costs, phasing, support revenue required, vehicle and fuel types, maintenance, and route alternatives.

**Gateway Community Transit Connection Concept Plan (2003)**,

- The fourth part of the report addressed the parks' larger needs for inter-modal connections with San Joaquin Valley transportation hubs.
- Public meetings concluded that a regional gateway shuttle link would include economic benefits to local communities, air quality improvement, park resource protection, and enhanced visitor experiences.

**Implementation Plan for Shuttle Service Development at Sequoia and Kings Canyon National Parks (2005)**
McDonald Associates, Inc. developed an Implementation Plan for Giant Forest shuttle:

- Encourages the NPS to consider partnering with the City of Visalia to operate the internal shuttle. (The City's proposal to operate the Giant Forest Shuttle for NPS was evaluated by the study to be 20% less than private operator estimates.) Partnership would also reduce the need for on-site maintenance facilities and housing for Giant Forest Shuttle employees.

**Sequoia and Kings Canyon National Parks General Management Plan (ROD 2007)**
The preferred alternative recommends:

- Private vehicular access to the grove is retained but is limited by parking capacities; during peak-use periods, some roads and/or parking areas are closed and replaced by shuttle-system access.

**Out Of The Car And Into The Park: An evaluation of the Sequoia Shuttle (2008) Sondra Rosenberg, Ford Transportation Scholar:**

- Provides history of shuttle operation and recommendations for future operations and provides next steps for gathering additional information.
- Operational observations were conducted; including on time-performance, parking, boarding and alighting, and qualitative observations of overall operations.

Approximately $70 million has been spent since 1984 on the Giant Forest Restoration Project, all of which assumed the eventual implementation of a shuttle system. As part of the restoration process, shuttle stops and parking lots have been constructed along the proposed route to handle visitor staging. The final step in the restoration process of this world-famous sequoia grove is the implementation and operation of the shuttle system.

**b. Environmental condition as a result of the existing transportation system:**

**Sequoia and Kings Canyon National Parks (SEKI) regularly experience some of the worst air quality in the National Park Service.** During the shuttle-operating period, ozone levels in Giant Forest exceeds the national health standard on 29 days. In the foothills of the park, an area that will be served by the City of Visalia Gateway shuttle, ozone exceeds the national health standard on 50

days/year. The Clean Air Act and the National Park Service Organic Act mandate that SEKI protect air-quality-related values and resources within the parks from adverse impacts of air pollution.

**Volpe Transportation Systems Center (Volpe) calculated that, during the 2007 operating season, the Sequoia Shuttle reduced vehicle miles traveled in the park by 60,000 miles and this lead to reduced emissions and fuel consumption as follows: (1) hydrocarbons: 168 kilograms; (2) carbon monoxide: 1,254 kilograms; (3) oxides of nitrogen: 83.4 kilograms; (4) carbon dioxide: 54,960 pounds; (5) gasoline consumption: 2790 gallons. (Volpe Report, 2008)**

Lack of adequate parking at the major attractions in the Giant Forest leads visitors to park illegally, which destroys vegetation, increases erosion, and impacts the shallow root system of the giant sequoias (see Attachment 1). The shuttle will reduce the incidence of illegal parking by allowing visitors to access these attractions via the shuttle from larger parking areas that have been designed and built to accommodate the larger visitor demand.

The impact of the previous lodging and food service use of the Giant Forest (with associated parking and utilities) was devastating to the forest root structure and prevented the use of fire to sustain this fire-dependent ecosystem. These concerns have been addressed through the Giant Forest Restoration Plan, but as a result of the accumulation of years of impacts, the visitor experience has been severely affected, especially because the shuttle has not yet been implemented.

Shuttles to and within the Sequoia National Park are the last missing piece of the Giant Forest restoration plan. Over $70 million has been invested in implementing the plan, all of which was based on the fact that shuttles would enable visitors to continue to enjoy the trails and features of the Giant Forest. All commercial activity has been removed from Giant Forest. Overnight accommodations and food service have been relocated outside the grove to Wuksachi Village. Demolition of 282 buildings, removal of over 1 million square feet of asphalt covered parking areas, and conversion of Giant Forest to a day-use area has restored the health of the Giant Forest. The grove now has the carrying capacity for many more day-use visitors since the shuttle system has been implemented

## 2. Visitor Mobility and Experience Benefits

### a. Reduced traffic congestion:

This criterion includes: reduced average number of daily motorized-vehicle trips during peak visitation, time lost to traffic delays, visitor frustration, and the area's current capacity of the existing transportation system.

During the 2007 operating season, the Sequoia Shuttle reduced vehicle miles travelled on park roads by 60,000 miles (Volpe, 2008). At one key intersection in the Giant Forest, traffic was reduced by 21.5% when compared to a study conducted prior to the implementation of the shuttle system (Volpe, 2008). Sequoia National Park uses a vehicle-occupancy factor of 3.0 to determine visitations statistics. If the 137,575 individual trips on the Sequoia Shuttle in 2007 are divided by the 3.0 vehicle-occupancy factor, it would indicate that 45,858 vehicle trips were eliminated from park roadways over the course of the shuttle operating season.

During peak periods (summer weekends and holidays) parking lots at the main attractions in Giant Forest are at or over capacity. Without the shuttle, visitors were forced to endure long waits for parking spots, park illegally (damaging park resources as they did), or to miss the attraction entirely. With the shuttle operation, visitors are now able to use large parking lots that were underutilized and use the shuttle to reach the attractions in Giant Forest. An analysis of parking lot usage during the 2007 operating season indicates that the shuttle has indeed altered visitor use in Sequoia National Park. Comparing data gathered before the shuttle operated to data gathered during the 2007 season parking lot, turnover decreased and average occupancy durations increased at the Giant Forest Museum parking lot (Volpe, 2008).

**b. Enhanced visitor mobility, accessibility, and safety:**

During the 2009 operating season, 197,562 visitors benefited from the operation of the Sequoia Shuttle (NPS statistics). Overnight visitors are able to leave their cars at their lodge or campsite and ride the shuttle to the major attractions in Giant Forest. Day visitors have access to several large parking lots that have been built to accommodate today's visitor demand and then ride shuttle buses to the major attractions. This has greatly increased visitor ability to enjoy the major features of Giant Forest and decreased the inconvenience, frustration, and stress of finding overflowing parking areas at the main attractions. It has also extended mobility into the grove by allowing visitors to hike from one trailhead through the Giant Forest one way to a different trailhead and to return by way of the shuttle. According to an analysis of data collected during the 2007 season, over 1/3 of all visitors using the Crescent Meadow trailhead used the shuttle system (Volpe, 2008).

All shuttle buses used in the operation of the Giant Forest Shuttle are ADA compliant and equipped with a wheelchair ramp or lift. Bicycle racks are included on the shuttle buses, increasing visitor recreational options. Trails at Giant Forest Museum, the Sherman Tree, and Crescent Meadow, all served by the shuttle, are accessible. With the operation of the Gateway Shuttle, people without cars for the first time have an opportunity to visit the park. Prior to the implementation of the Sequoia Shuttle, there was no public transportation to the park. Persons with mobility and visual impairments have used the gateway and internal shuttles and had the opportunity to experience the park on their own. Conversations with several of these individuals indicated that it was the first time in years that they were able to enjoy the park.
In 2007, the operation of the shuttle reduced vehicle miles traveled on park roadways by 60,000 miles and reduced traffic at one key intersection in the Giant Forest by 21.5%. (Volpe 2008) It is the opinion of the park's wildlife biologist that this reduction has lead to a decrease in the number of traffic accidents and wildlife/vehicle collisions. In addition to a likely reduction in wildlife vehicle collisions, the shuttle has had the added benefit of reducing "bear jams," traffic jams associated with wildlife along roadways. The shuttle has also reduced the crowding along the narrow and winding Crescent Meadow / Moro Rock Road, which should facilitate the evacuation of that route in the case of an emergency. During the holiday weekends in 2010, the Moro Rock/Crescent Meadow Road is closed to vehicle traffic. Through anecdotal evidence, the visitor experience on this road is improved due to the lack of traffic jams.

**c. Visitor education, recreation and health benefits**

During the 2009 operating season, 197,586 visitors benefited from the operation of the Sequoia Shuttle (NPS statistics). The shuttle system provides better opportunities to hike on over forty miles of trails through the Giant Forest that are connected by the various shuttle stops. Hikes that in the past would be too long because of the necessity of a round trip can now be completed as one-way hikes, using the shuttle to return to the vehicle. Additionally, parking at certain trailheads during peak visitation was impossible due to overcrowded conditions. The new shuttle system allows visitors to access trailheads at peak times.

In 2007 & 2008, the park applied for and received grants from the National Park Foundation and the Ford Motor Company to have two Transportation Interpretive Interns during the peak visitor season. These interns developed and presented talks on alternative transportation and how it contributed to the restoration of Giant Forest at various locations in the Giant Forest served by the shuttle. On average, over 50 people attended these programs at the Sherman Tree, which were given four times a day.

Although the Ford Transportation Intern program has been greatly reduced, park staff continues to provide programs about alternative transportation. Park interpreters regularly "rove" on the shuttle buses to provide visitor information, and they are stationed at many of the shuttle stops on busy weekends to provide additional information regarding alternative transportation. As part of the First Lady's *Let's Move* campaign, the park has implemented organized interpretive fitness walks originating at some shuttle stops.

## 3. Environmental Benefits

### a. Protection of sensitive natural, cultural, and historical resources:

Under the restoration plan, accommodations were removed from the Giant Forest and relocated approximately six miles away at Wuksachi Village. Day-use parking was consolidated at the Giant Forest Museum and the General Sherman Tree. These actions have limited public access to the many popular natural cultural/historic and scenic features and trails in this signature sequoia grove at Sequoia National Park. Features and trails like the General Sherman Tree and the historic Moro Rock Trail possess natural, scenic and historic/cultural elements and are the most popular attractions in the park.

Implementation of the shuttle completes the final phase of the Giant Forest restoration project; it provides visitors a chance to experience most of the park's main attractions without having to worry about driving to each of them, and it gives visitors the option of being shuttled back to their vehicle after hiking one of many trails through the Giant Forest sequoia grove. Ultimately the shuttle is critical to the protection of the premiere resource of Sequoia National Park – the giant sequoia trees.

### b. Reduced pollution:

Volpe Transportation Systems Center (Volpe) calculated that during the 2007 operating season the Sequoia Shuttle reduced vehicle miles traveled in the park by 60,000 miles and this lead to reduced emissions and fuel consumption as follows: (1) hydrocarbons: 168 kilograms; (2) carbon monoxide: 1,254 kilograms; (3) oxides of nitrogen: 83.4 kilograms; (4) carbon dioxide: 54,960 pounds; (5) gasoline consumption: 2790 gallons. (Volpe Report, 2008) The park also benefits from additional air pollution reductions from the operation of the Gateway Shuttle from the City of Visalia as the inter-modal link allows visitors to rely entirely on public transportation to reach the park.

The 21.5% decrease in private vehicle traffic along the Crescent Meadow and Moro Rock Road likely decreased both noise and visual pollution at nearby attractions and trails (Volpe, 2008). On the holiday weekends, when the Moro Rock / Crescent Meadow Road is closed, both the noise and visual pollution at nearby attractions decreased even more.

## 4. Operational Efficiency and Financial Sustainability

### a. Operational Efficiency:

The determination that an internal shuttle system is the most resource-protecting method for visitors to access the trails and features of the Giant Forest was decided more than 30 years ago when the NPS embarked on a $70 million project to remove parking and other infrastructure to protect and preserve this world-famous resource. In 1996, a shuttle was confirmed over other alternatives as the most cost-efficient method of visitor access. Today, that decision is still sound. The question has been asked repeatedly as to whether SEKI has fully considered “no-build alternatives” to the proposed Giant Forest shuttle system. The answer for over 30 years (see particularly 1980 and 1996 plans) clearly is yes.

Removing parking from the grove, and relocating it to benign areas on the edge of the grove, was essential to the restoration program. This necessitated the development of a system that would connect places where visitors could park with key resources within the grove – still the primary justification for the Giant Forest shuttle proposal.

**b. Feasibility of Proposed Budget:**

| | FY 2010 | FY 2011 | FY 2012 | FY 2013 |
|---|---|---|---|---|
| **Revenue** | | | | |
| Transit in Parks Program funding (requested) | $240,000 | $240,000 | $240,000 | $240,000 |
| Funds from public land budget | 0 | 0 | 0 | 0 |
| Other federal funds | $846,903 | $870,955 | $895,650 | $921,050 |
| State funding | 0 | 0 | 0 | 0 |
| Local funding | 0 | 0 | 0 | 0 |
| Passenger Fares and/or transportation fees | 0 | 0 | 0 | 0 |
| All other dedicated sources of funding | 0 | 0 | 0 | 0 |
| *Total Revenue* | $1,086,903 | $1,110,955 | $1,135,650 | $1,161,050 |
| **Capital Costs** | | | | |
| Purchase of rolling stock (vehicles) | 0 | 0 | 0 | 0 |
| Lease of rolling stock (vehicles) * | $240,000 | $240,000 | $240,000 | $240,000 |
| Construction (e.g., bus shelters, sidewalks, trails, etc.) | 0 | 0 | 0 | 0 |
| Rehabilitation | 0 | 0 | 0 | 0 |
| Other: _____ | 0 | 0 | 0 | 0 |
| *Total Capital Costs* | $240,000 | $240,000 | $240,000 | $240,000 |
| **Operating Costs** | | | | |
| Salaries | 0 | 0 | 0 | 0 |
| Routine Maintenance | $24,000 | $24,750 | $25,500 | $26,250 |
| Insurance | 0 | 0 | 0 | 0 |
| Fuel | $50,000 | $50,000 | $50,000 | $50,000 |
| Contracted services | $693,403 | $714,205 | $735,650 | $757,800 |
| Other: NPS Administration Costs_____ | $79,500 | $82,000 | $84,500 | $87,000 |
| *Total Operating Costs* | $846,903 | $870,955 | $895,650 | $921,050 |

*May decrease in 2012 & 2013 if the City of Visalia acquires grant funding for vehicles.

**Proposed budget narrative**

Revenue and costs projections were developed by park staff and can be lowered by reducing services. The Volpe report indicates that the shuttle is financially sustainable. An analysis of first-year operations by Volpe Transportation Systems Center also concluded that the shuttle is financially sustainable. Assumptions made by the consultant when developing the projections were:

- Recommendations provided by the Transportation Scholar are being implemented in 2010, increasing the costs by adding a shuttle stop at Dorst Campground, resuming the shuttle 2007 levels of operation, and adding service through September 20. Shuttle hours were reduced due to increased costs.
- The operator would supply all personnel, materials, and supplies to operate the service.

- The operator would maintain minor equipment needed to operate and maintain the service. Cost of non-revenue vehicles, communication, and other equipment is included in estimates.
- New buses would be purchased in the fifth year of operation because it is assumed that the shuttle is successful and the commitment has been made for long-term operation. Debt-service expense to amortize the cost of new buses over seventeen years is included as an operating expense. Seventeen years is longer than the expected normal life of a new bus. However, annual mileage at the park will be low due to the seasonal nature of the service which should allow for an extended vehicle life. The 35-foot buses are valued at $350,000 in 2010 dollars. Thirty-foot buses are valued at $300,000 in 2010 dollars. An effective interest rate of 7% was used for amortizing the cost of these vehicles over the remaining 17 years of the 20-year sustainability analysis. These costs could be eliminated if the park is able to acquire grant funding for future vehicle purchases.
- If additional buses are purchased by the City of Visalia utilizing grant funding, leasing costs would go down in the future.
- The operator would comply with the Contract Service Act provisions regarding wage rates. An annual wage and fringe-benefit inflation rate of 3% per year is assumed.
- The operator would have access to park facilities at Red Fir and Lodgepole for maintenance, dispatch, and vehicle storage.
- The park would administer the contract. An annual cost of $79,500 with a 3% per annum inflation factor is included for this expense.
- The park would perform infrastructure maintenance to include pothole repair, sign construction and maintenance, and bus-stop maintenance. An expense of $24,000 per annum with a 3% annual inflation factor is included for this expense.

Additional projections made by park staff:

- An inflation factor of 3% has been assumed.
- The park provides fueling facilities and all fuel for the shuttle system. Fuel costs for the shuttle were $55,100 in FY 07. Original projections included a 10% fuel cost increase, but actual fuel costs have remained steady since FY 07.

**c. Cost Effectiveness:** Fill in all information for items 1-4 below in order to calculate the cost per person using the alternative transportation system. FTA will calculate annualized cost per passenger trip and annual fare box recovery – common transit cost effectiveness measures – based on the information that you provide. ***You must provide all information in order to fulfill these required criteria.***

1. Annual cost for vehicle operations and maintenance (including salaries, fuel, maintenance, administrative expenses related to system, and all other operating costs): $846,903

2. Average annual number of riders: 137,575 individual trips/year (or 68,788 passengers/year based on Volpe assumption that most passengers used the shuttle for a round-trip journey)

3. Transportation fee or fares recovered (average): $889,355/year

4. Useful life of transportation assets: 17 years

Annual cost per passenger trip: This will be automatically calculated by FTA.

Annual fare box recovery This will be automatically calculated by FTA. %

**d. Partnering, funding from other sources:**

The Sequoia Giant Forest Shuttle and the Gateway Shuttle Link (operated by the City of Visalia from San Joaquin Valley inter-modal transportation hubs to the Giant Forest and connecting with the Giant Forest Shuttle) are designed to be a complimentary effort between Sequoia National Park and the City of Visalia. Without the Giant Forest Shuttle, riders of the Gateway Shuttle would have no way to see the main attractions once they arrived in the park other than by lengthy hiking trails. These two entities have had a memorandum of understanding for more than 48 months and have been working to improve marketing efforts as well as establish the shuttle routes.

As a gateway to the parks, Visalia anticipates additional income to local businesses as a result of the Gateway Shuttle Link. Access will also be improved for the disabled (12.3% in Tulare County over the age of 5 are disabled), the elderly (9% in Tulare County are over the age of 65), the financially challenged (23.9% of the people in Tulare County are below the poverty level) and many do not have adequate transportation to travel to the park or the driving ability to traverse the steep, winding road that leads into the park. The numbers provided are based on the local population only. It is recognized that many visitors come from outside the county. However, it is estimated by the NPS that less than half of the local population has ever visited the park, even though it is virtually in their backyard. Tulare County, California is a very diverse county: 51% are Hispanic and 31% are races other than white non-Hispanic. Increasing the number and diversity of park visitors from nearby communities is one of the goals of the Gateway Shuttle Link. In addition, it has been endorsed by the Tulare County Association of Governments, which approved the $1.1 million CMAQ grant. The City of Visalia has contributed almost $300,000 in matching funds to the CMAQ grant. Upon request, letters of support and cooperation can be provided from the Visalia Chamber of Commerce, Visalia Visitors and Convention Bureau, Sequoia Regional Council, Downtown Visalians, Visalia Hotel Association, and Visalia Restaurant Association. Most of these groups have pledged to assist in marketing both the Giant Forest and Gateway shuttle programs, including cooperative ventures on marketing materials and direct marketing support.

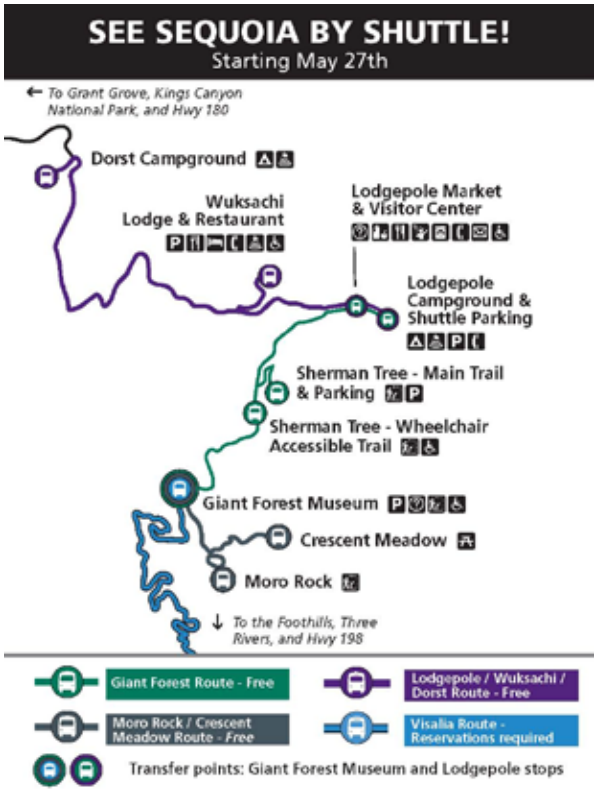
**ATTACHMENT 1 – PARKING CONGESTION**

Moro Rock parking area. Notice cars parked off pavement along each side of the access road.

Crescent Meadow parking area. Vehicles parked illegally cause erosion and compact soil over roots.

Access to Moro Rock parking area looking east.

**SHUTTLE ROUTE MAP**



**ATTACHMENT 2 – SHUTTLE BUSES**

ADA compliant buses increase visitor access to the world-famous Giant Forest of Sequoia National Park for people with different abilities.


Diesel-Powered Bus

Gasoline-Powered Bus

Buses at the Giant Forest Museum