



U.S. Department of Transportation
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Eastern Federal Lands Highway

Delaware Water Gap National Recreation Area Alternative Transportation Feasibility Study

FINAL REPORT



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With Support from:

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1 Executive Summary

The Delaware Water Gap National Recreation Area (DEWA) has identified alternative transportation systems (ATS) as a means to enhance mobility options for visitors while conserving the natural, cultural, and scenic resources of the park. ATS options include transit, pedestrian, bicycle, or water-based transportation options to give visitors an alternative means of travel to and within national parks. By providing alternative forms of transportation, ATS can reduce the impacts of personal vehicle use on park resources, while improving the visitor experience. Typical benefits of ATS include:

- Relieving traffic congestion and parking shortages;
- Enhancing visitor mobility, accessibility, and recreational experiences;
- Providing improved interpretation, education, and visitor information services;
- Improving economic development opportunities for surrounding communities.
- Preserving sensitive natural, cultural, and historic resources; and
- Reducing emissions.

An alternative transportation feasibility study was conducted at DEWA to evaluate the effectiveness of various ATS options. This study was conducted under the auspices of DEWA management and technical staff, NPS's Northeast Region staff, and staff from the Federal Highway Administration's Eastern Federal Lands. A comprehensive planning process was followed that included numerous opportunities for stakeholders and the general public to provide input through three public open houses and over 20 interviews with stakeholders. This process resulted in the development of five transportation options focused on expanded bus services and supported by improvements to the trail network in and around DEWA and transportation demand management measures that encourage visitors to make fewer trips in a private vehicle. The options are organized into three categories (Option A, Option B, and Option C) based on the extent to which partner organizations would operate the transit services, and are discussed below.

Summary of Options

Option A envisions expanded transit service in DEWA through partnerships with local or regional transit agencies that are either existing (Monroe County Transportation Authority) or emerging (Pike County). These options are focused on partnerships with Pennsylvania agencies, since there did not appear to be transit partnership opportunities in New Jersey in the immediate future. Option A consists of three variations, described below.

In Option A1, DEWA would partner with MCTA to extend the existing Yellow Route to Dingmans Falls Visitor Center (via US 209). A second route would provide transit service along River Road in the southern portion of the park. The bus route along River

Road would operate in a one-way loop traveling along River Road and US 209. Both routes would be operated by MCTA.

In Option A2, DEWA would partner with a new Pike County transit authority to provide service between the rail station at Port Jervis and Dingmans Falls Visitor Center. The “Milford Route” would be operated by the new transit authority.

Option A3 is a combination of Option A1 and Option A2.

In Option B, the Pennsylvania and New Jersey sides of DEWA would be integrated with a transit system operated by DEWA or a concessioner. Transit service would be provided from Milford to Kittatinny Point, with service on both sides of the Delaware River with various levels of staging.

In Option C, DEWA would partner with MCTA and a new Pike County transit authority to provide transit service between Port Jervis and Kittatinny Point on both sides of the Delaware River. The transit authorities would operate a spine system on the Pennsylvania side of the Delaware River, along US 209 between Port Jervis and Kittatinny Point. DEWA would operate transit service mostly on DEWA roads including service on River Road in Pennsylvania, and Old Mine Road on the New Jersey side of the park.

Evaluation of Options

While Option C best meets the goals of DEWA based on an evaluation of the goals and evaluation criteria, it has a substantially higher cost than the other options. DEWA may start with a phased approach that would implement the short-term phases of Option A1, evolving over time to Option A3 or Option C. Since MCTA is the only transportation agency currently providing transit service in the area and much of the activity in Delaware Water Gap NRA is currently focused on the Pennsylvania side, this approach would enable DEWA to implement the short-term option that is the most feasible and is likely to generate the highest ridership at a much lower cost. It leaves open the possibility of a substantial expansion in transit service if warranted by ridership demand and if funds become available.

Recommendations

In the short term, the existing MCTA Yellow Route would be extended to the north to the Pocono Environmental Education Center. The River Road Route would operate one-way, traveling in a counterclockwise loop from Kittatinny Point Visitor Center to Bushkill Meeting Center via River Road, then to Marshalls Creek via US 209, before returning to Kittatinny Point Visitor Center. Passengers would be picked-up and dropped-off both at formal bus stops and upon demand at locations without bus stops by flagging down the bus. Major bus stops would be located at visitor centers, transit centers, resorts, and other key locations. Basic bus stops would be located at trailheads,

several commercial areas, and other locations. Critical to the success of this system and to achieving one of DEWA's primary goals is to create demand for recreational activities in areas beyond the Delaware River and then linking these areas to the transit system. To this end, additional short term actions include completing the McDade Trail, upgrading the Bushkill Meeting Center to a visitor center, constructing several trailheads along the bus route, and providing trail extensions to link with the trailheads. An additional task is to initiate detailed planning and design of the Country Road Trail.

In subsequent phases, if DEWA chooses to pursue the long-term vision for Option A3, the Yellow Route would be extended north to Port Jervis, with service to Dingmans Falls, and Dingmans Ferry. This route would be operated by MCTA and Pike County. If DEWA chooses to pursue the long-term vision for Option C, the Yellow Route would be extended north to Port Jervis, with service to Dingmans Falls, and Dingmans Ferry. This route would be operated by MCTA and Pike County. In addition, NPS-operated transit service on River Road would be extended to the New Jersey side of the park, with service connecting to Milford.

Additional long term actions include improving trails with trailheads along the extended portion of the transit system, providing trail extensions to link with the trailheads in DEWA and with external trail networks (such as the recently dedicated Pinchot Greenway, which connects the McDade Trail with the Grey Towers National Historic Site via downtown Milford), and completing the Country Road Trail.

The figure below illustrates these short-term and long-term recommendations.

Table 1 shows the total capital costs for the recommended short-term and long-term options described above to operate 120-minute, 60-minute, and 30-minute headways. For example, the short-term transit service would require capital costs of \$8.7 million to maintain 120-minute headways but would rise to \$11.5 million to maintain 30-minute headways.

Table 1: Capital Costs (2007 \$)

Option	Headway		
	120-Minutes	60-Minutes	30-Minutes
Short Term (Option A1)	\$8,679,000	\$9,616,000	\$11,491,000
Long Term (Option A3)	\$17,130,000	\$19,005,000	\$22,130,000
Long Term (Option C)	\$18,348,000	\$19,910,000	\$23,035,000

Table 2 shows the annual operating costs for the recommended short-term and long-term options described above for 120-minute, 60-minute, and 30-minute headways. For example, the short-term transit service would cost \$1.5 million per year to operate 120-minute headways but would rise to \$4.0 million to operate 30-minute headways.

Table 2: Annual Operating Costs (2007 \$)

Option	Headway		
	120-Minutes	60-Minutes	30-Minutes
Short Term (Option A1)	\$1,473,000	\$2,402,000	\$3,936,000
Long Term (Option A3)	\$2,834,000	\$4,383,000	\$7,156,000
Long Term (Option C)	\$3,876,000	\$6,200,000	\$10,846,000

The next step in the planning process is to select a transportation option to pursue and to develop a detailed implementation plan that carefully evaluates the specific routes, bus stop locations, trailheads, and crossing locations proposed in this study, and to enter into discussion with potential partnering agencies and businesses. In addition to MCTA and Pike County, it may be possible to partner with the Water Gap Trolley to operate transit service in DEWA.

Please note, while this study considered specific routings in each of the options, this should not preclude future planning studies from exploring modifications to the transit routes (and other characteristics) described in this report.

DELAWARE WATER GAP NATIONAL RECREATION AREA

Alternative Transportation Study



Summary

Transit service at DEWA could include a phased approach that would implement the short term phase of Option A1, which extends the **Yellow Route** and provides service on River Road. This would evolve over time into either the long term phase of Option A3 or Option C, which expand transit service to Port Jervis. Since Monroe County Transit Authority (MCTA) is currently the only transportation agency providing transit service in the area, this phased approach would enable DEWA managers to partner with an existing transit provider that operates in the vicinity. This would provide a focus on addressing active day use areas, while leaving open the possibility of future transit service expansion if warranted by ridership demand.

Short Term Recommendation

The short term recommendation envisions implementing Option A1, which extends the MCTA **Yellow Route** to the Pocono Environmental Education Center (PEEC) and initiates a **River Road Route**. The **River Road Route** would operate one-way, traveling in a counterclockwise loop from Kittatinny Point Visitor Center to Bushkill Meeting Center via River Road, then to Marshalls Creek via US 209, before returning to Kittatinny Point Visitor Center. Other short term actions would include completing the McDade Trail, upgrading the Bushkill Meeting Center to a Visitor Center, providing supporting infrastructure for the transit system, and initiating design of the Country Road Trail.

Long Term Recommendation

The long term recommendation envisions evolving implementing the long term phases of Option A3 or Option C. Option A3 and Option C both envision a **Milford Route** that extends from Port Jervis to the northern terminus of the **Yellow Route**. Option C introduces an optional transit extension along the New Jersey side of DEWA.

2 Introduction

The Delaware Water Gap National Recreation Area (DEWA) was designated by Congress in 1965. It is a linear park comprising 67,210 acres, or 105 square miles, in northwestern New Jersey and northeastern Pennsylvania and includes 40 miles of the Delaware River and the neighboring valley and mountains. In 1978 Congress designated the section of the Delaware River within DEWA as part of the National Wild and Scenic River System. The 1987 General Management Plan states that its mission is to:

Provide outdoor recreation opportunities while conserving the natural, cultural, and scenic resources of the recreation area. In so doing, the park works cooperatively with surrounding communities and the public to achieve the conservation goals of the Delaware River region.

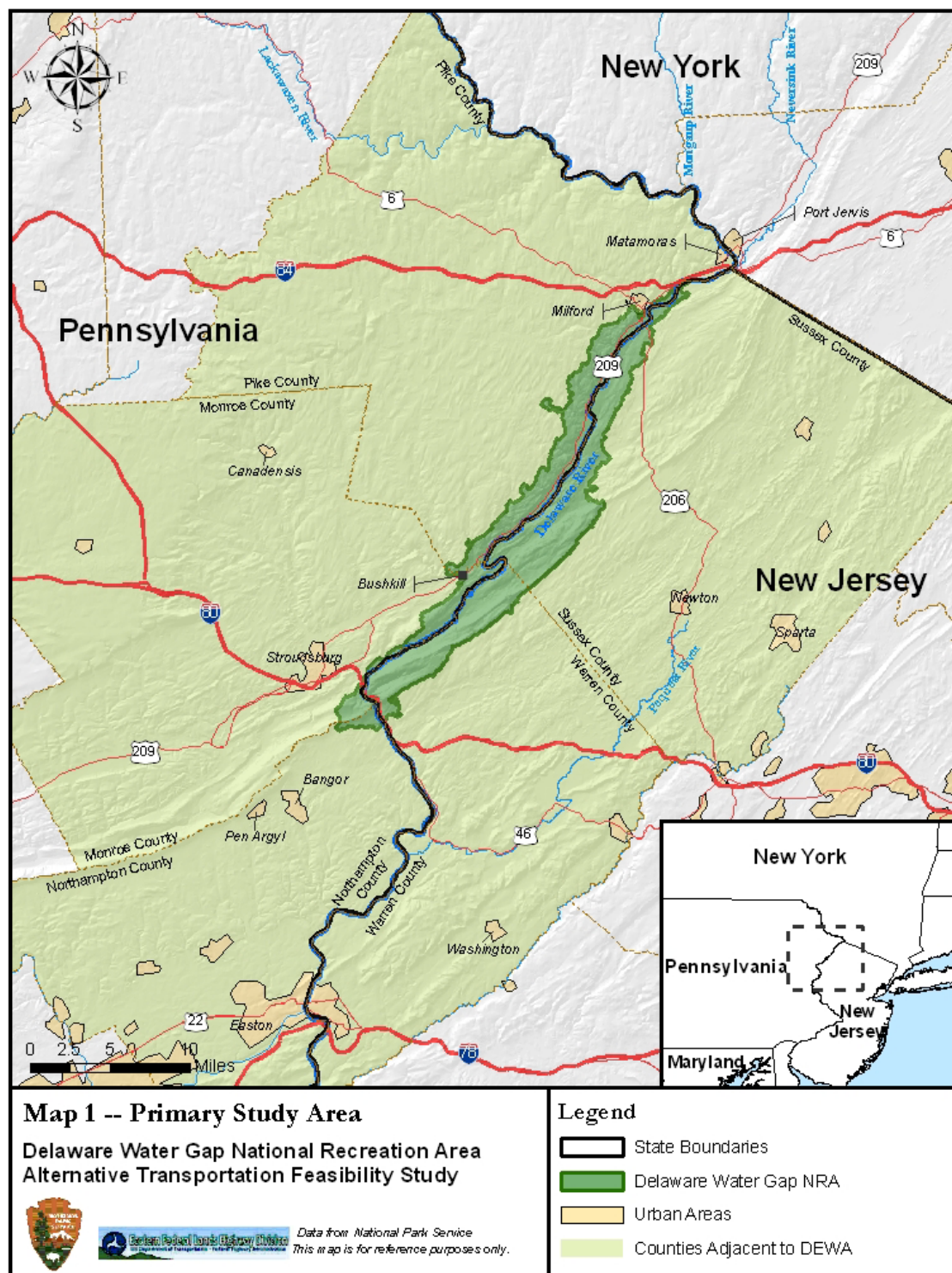
DEWA is defined by two characteristics that affect the provision of transportation: a porous border and the physical separation of the New Jersey and Pennsylvania sides of the park by the Delaware River. While many parks have only a few entrances, which enables them to control access, DEWA has over 50 entrances, with a large portion of travel through the park made by commuters and local residents. This limits the ability of the park to reduce congestion and will require a substantial investment to encourage visitors to use alternative transportation. In addition, connectivity between the New Jersey and Pennsylvania sides of the park is limited, with only three crossings of the Delaware River over a 30 mile span. While Interstate 80 at the southern end of the park provides a vital high-speed and high-capacity east-west link, and US 206 at the northern end of the park provides a crucial crossing for commuters, the ability of the Dingmans Ferry crossing to serve visitor transportation needs is limited by weight and capacity restrictions. As a result, visitor use of the New Jersey and Pennsylvania sides of the park is often segregated. Figure 1 provides an illustration of DEWA and surrounding jurisdictions and Figure 2 shows the adjacent municipal boundaries, federal lands, and state parks. In addition to those shown on Figure 2, there are a number of municipal/township governments in and around DEWA.

An alternative transportation feasibility study was conducted at DEWA to evaluate the effectiveness of various ATS options. A comprehensive planning process was followed that included numerous opportunities for stakeholders and the general public to provide input through three public open houses and over 20 interviews with stakeholders. This process resulted in the development of five transportation options, focused on expanded bus services and improvements to the trail network in and around DEWA.

This report provides an overview of the planning process that was used to develop and evaluate five transportation options. It is organized in seven sections with supporting appendices.

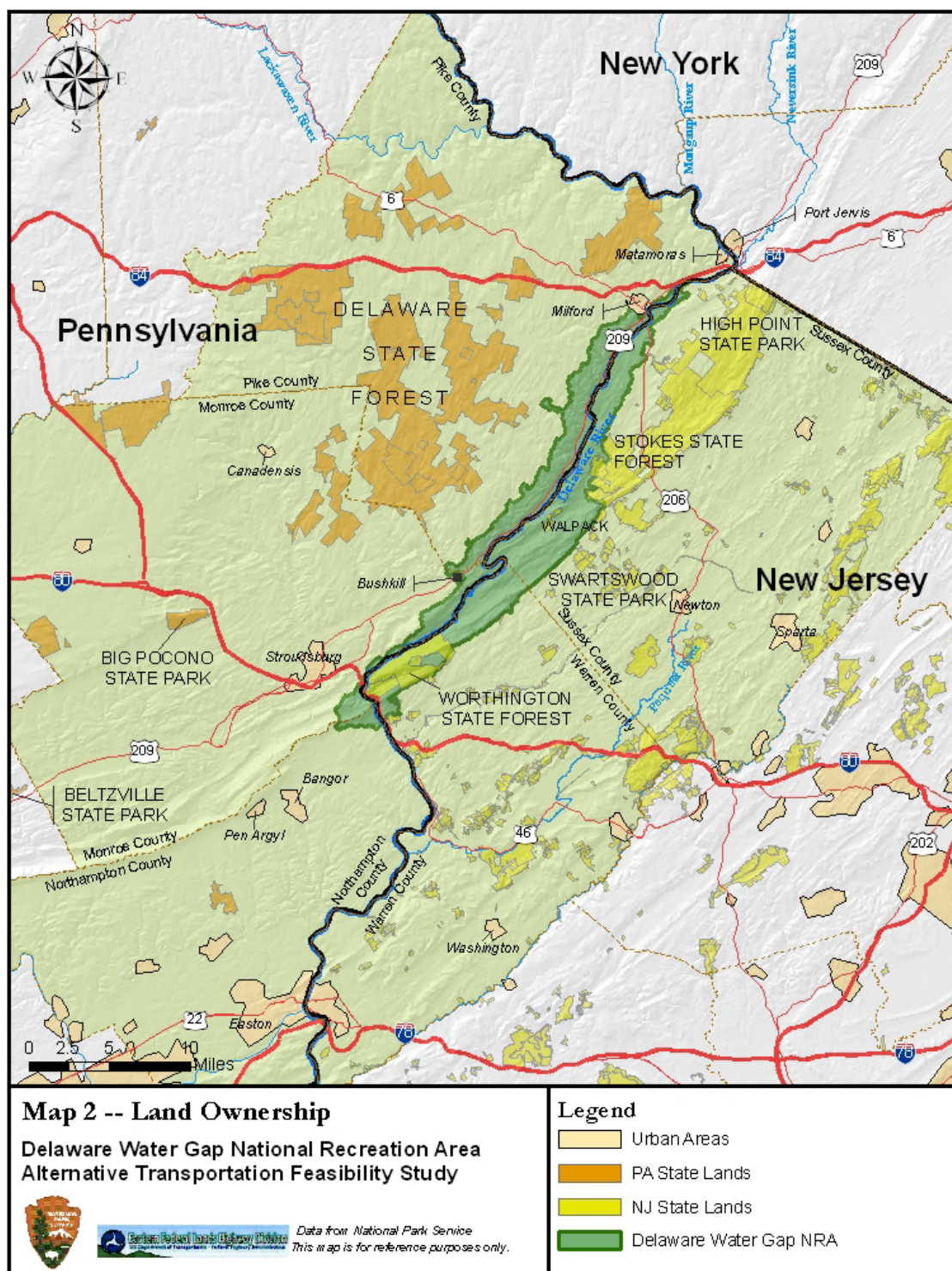
Section 3 describes existing conditions in DEWA, which were identified through a site visit and discussions with DEWA staff, a review of recent reports, interviews with stakeholders, and the first two public open houses.

Figure 1: Map of Delaware Water Gap National Recreation Area



Source: Jacobs Engineering Group, Inc.

Figure 2: Map of Jurisdictions



Source: Jacobs Engineering Group, Inc.

Section 4 provides an overview of the goals and evaluation criteria of the study, which were used to guide the planning process and to evaluate the transportation options.

Section 5 identifies initial feasible alternative transportation options that were developed based on the results of a stakeholder meeting and interviews, as well as discussions with staff at the Delaware Water Gap National Recreation Area (DEWA) and Federal Highway Administration (FHWA) Eastern Federal Lands Highway Division. Eight alternative transportation options were further divided into 19 initial feasible options. An initial screening process reduced the set of options to eleven feasible options. These included the no action, three options focused on enhancing the trail network, one transportation demand management (TDM) option, and six options to implement a bus system.

Section 6 organizes the remaining feasible options into six transportation themes. The core team, composed of five members of DEWA, Eastern Federal Lands Highway Division, and the consultant team, evaluated these themes and determined that the candidate options should focus on trails, transit, and TDM. Based on these themes, a stakeholder meeting was held to develop more detailed transportation option ideas. The results were then presented at a public open house to garner additional ideas and feedback.

Based on the results from the stakeholder meeting and public open house, Section 7 developed five transportation options that were focused on expanded bus service and an enhanced trail network. These options were evaluated using the goals and evaluation criteria developed for the transportation study.

In Section 8, a recommended course of action is presented with follow-up tasks.

Section 9 describes how the alternative transportation recommendations in this report will help DEWA to achieve its Climate Friendly Parks Program action plan.

Stakeholder participation was an integral part of the planning process and is documented in Section 10. Interviews were conducted with over 20 stakeholders and two public open houses were conducted.

3 Existing Conditions

This section discusses existing conditions in DEWA and surrounding jurisdictions. Additional information and data are provided in Appendix A.

3.1 History

Congress established Delaware Water Gap National Recreation Area in 1965 to provide for “public outdoor recreation use and enjoyment of the proposed Tocks Island Reservoir and lands adjacent thereto and for the preservation of the scenic, scientific, and historic features contributing to public enjoyment of such lands and waters” (Pub. L. 89-158). Delaware Water Gap National Recreation Area is a distinctive combination of natural resources, cultural resources, and recreational features that collectively offer outstanding opportunities for public use and enjoyment in an increasingly urbanized region (Figure 1). The following resources and features contribute to the national recreation area’s significance:

- The Delaware River is one of the longest free-flowing rivers on the Eastern Seaboard, has exceptional water quality, and provides outstanding recreational and scenic opportunities. The approximately 40 miles of river within the national recreation area boundaries have been designated the Middle Delaware Scenic and Recreational River.
- As one of the largest public open spaces remaining in the Northeastern Metropolitan Corridor, the national recreation area provides a broad diversity of exceptional, unique, and nearby resource-based recreational opportunities for the more than 60 million people who live within a 6-hour drive of the park unit.
- Outstanding geologic and natural features form some of the best-known scenic landscapes in the Northeastern United States and illustrate the characteristic landforms and biotic areas of the Appalachian Ridge and Valley Province and the Southern Appalachian Plateau Province.
- Open spaces, combined with other regional protection and preservation initiatives, create a multi-state greenway corridor, which preserves essential habitat for the sustained health of plant and animal communities, including potentially threatened species, in the region.
- A significant concentration and diversity of known archeological resources, from prehistoric to historic, as well as outstanding examples of Native American Indian and European settlement are manifested by the diverse cultural landscapes used for agriculture in the 19th and 20th centuries.

3.2 Description

The 67,210-acre park includes the Delaware River, mountain trails, and several historical sites. Most activity is concentrated at developed recreation sites which include swimming, picnicking, and boating areas. There are four contact locations for the public

to obtain information on recreation opportunities in DEWA. They are the Bushkill Meeting Center (open weekends during the summer), DEWA Headquarters at Bushkill (open weekdays), and Dingmans Falls Visitor Center (open seasonally) in Pennsylvania, and the Kittatinny Point Visitor Center in New Jersey.

The DEWA boundary is relatively porous and it is estimated that there are at least 50 minor and major entry points. The towns of Stroudsburg, Delaware Water Gap, and Milford are considered DEWA's gateway communities. Entry to DEWA is free, though several recreation sites charge a user fee. Shawnee-on-Delaware, Marshalls Creek, and Bushkill are smaller communities found on the periphery of DEWA. Millbrook Village, located within DEWA in New Jersey, hosts regular blacksmithing and woodworking demonstrations.

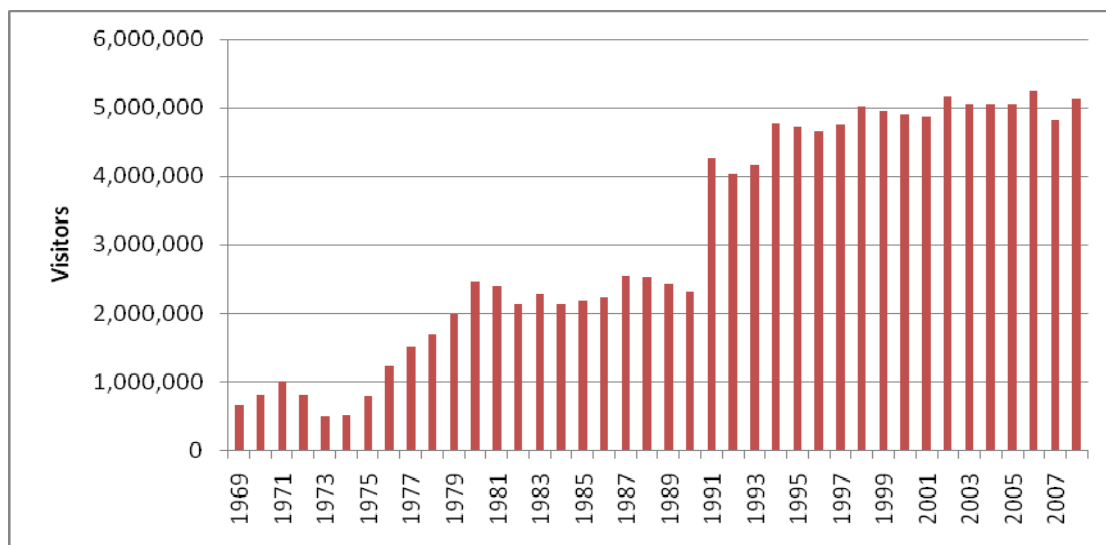
Most land located within DEWA boundaries is managed by the National Park Service and falls under its jurisdiction, although there are still several private/public inholdings in both states. The privately owned toll bridge at Dingmans Ferry places some restrictions on planning initiatives for this study. The road system located within Worthington State Forest is owned by the State of New Jersey and will require collaboration if any decisions are made pertaining to it.

DEWA has approximately 110 permanent employees and 60 seasonal employees. In 2008, 823 volunteers donated 113,678 hours of service to DEWA.

3.3 Visitation Levels and Visitor Profiles

DEWA is the eighth most visited site in the NPS system. It is estimated that there are approximately 5 million visitors per year. Visitation levels have grown over four-fold since 1976 (Figure 3).

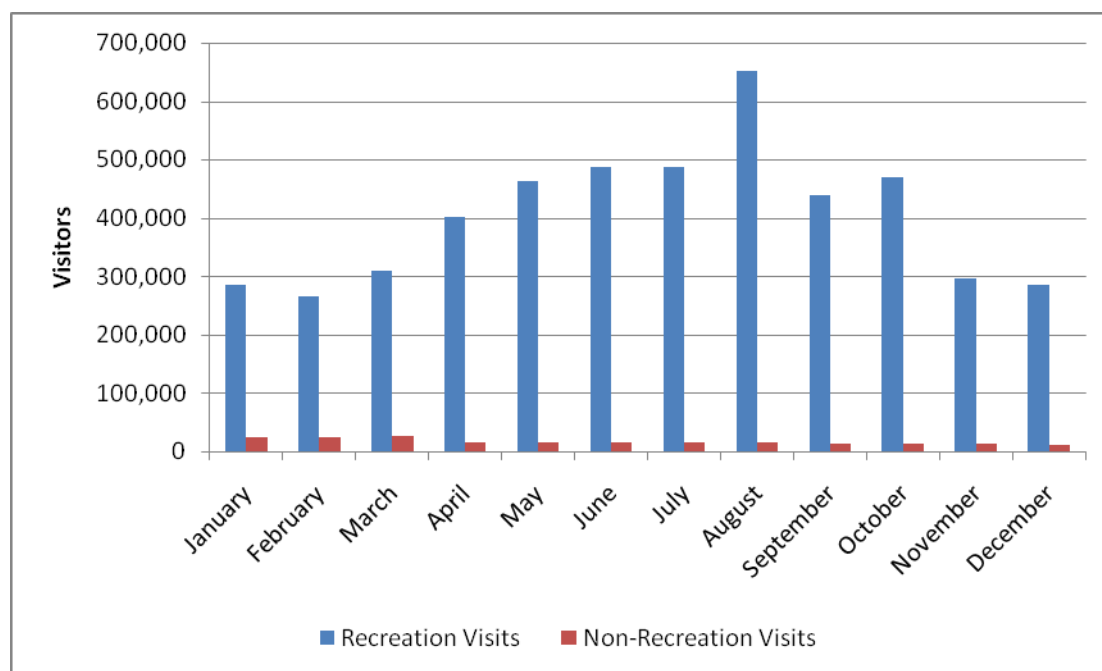
Figure 3: Annual Visitors to Delaware Water Gap NRA



Source: NPS Public Use Statistics Office

In 2003, it was estimated that visitation had increased by a compound annual growth of 2.5 percent over the previous ten years. Most visitors are day-use visitors since there are few overnight activities and facilities. Most visits occur during the summer months (36 percent) of June, July, and August (Figure 4), but visitation levels are higher for the non-peak months as compared to other more seasonal visitation patterns within the NPS.

Figure 4: 2007 Monthly Visitors to DEWA

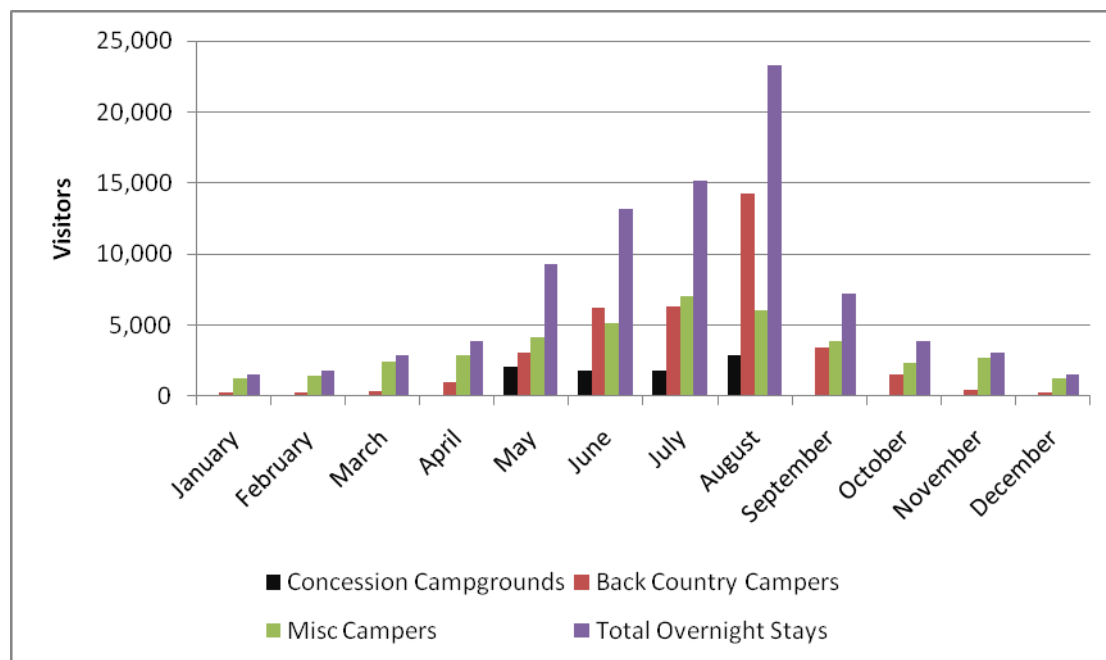


Source: National Park Service Public Use Statistics Office

Weekends have the highest visitation numbers and it is not uncommon for some of the swim beaches to experience over 1,000 visitors per day.

Camping is a popular activity in DEWA. Camping occurs predominantly during the warmer months (May through August). Most overnight visitors tend to be regulated back country campers using the Appalachian Trail or river campsites, or campers who stay in DEWA's concession campground at Dingmans Ferry (Figure 5).

Figure 5: Overnight Visitors at Delaware Water Gap NRA



Source: National Park Service Public Use Statistics Office

3.4 Existing DEWA Fleet

A Fleet Report conducted in January 2005 by the Center for Park Management found that in FY 2004 DEWA operated a fleet of 136 vehicles, of which 108 were owned by the Department of the Interior and 28 were owned by the General Services Administration. This review also found that the annual cost of the fleet was approximately \$350,000 per year, that the average vehicle age was 11 years, and that each vehicle logged approximately 6,400 miles per year.

3.5 Road Network and Parking

There are 86 miles of paved roadways and 83 miles of unpaved roadways in DEWA. US 209 forms the main backbone of the road transportation network on the Pennsylvania side of DEWA. To the north, US 206 serves as a major transportation artery for DEWA. Interstate 80 transects the southern end of DEWA and serves as a major entry point to DEWA. I-84 and State Road (SR) 6 provide access to DEWA from the north (Figure 6).

The western boundary of DEWA is accessed by numerous roads that descend from the high ridges where many planned communities are located. These roads are a major source of congestion in DEWA and include the following: SR 402, Bushkill Falls Road, Silver Lake Road, SR 739, and SR 2001. The Northeastern Pennsylvania Alliance Rural Planning Organization voted at its October 21, 2008 meeting to adopt a funding plan for the Marshall's Creek Traffic Relief Project. Funding up to \$27.7 million, was approved to

fund an alternative road option that should alleviate traffic congestion at the southern end of DEWA.

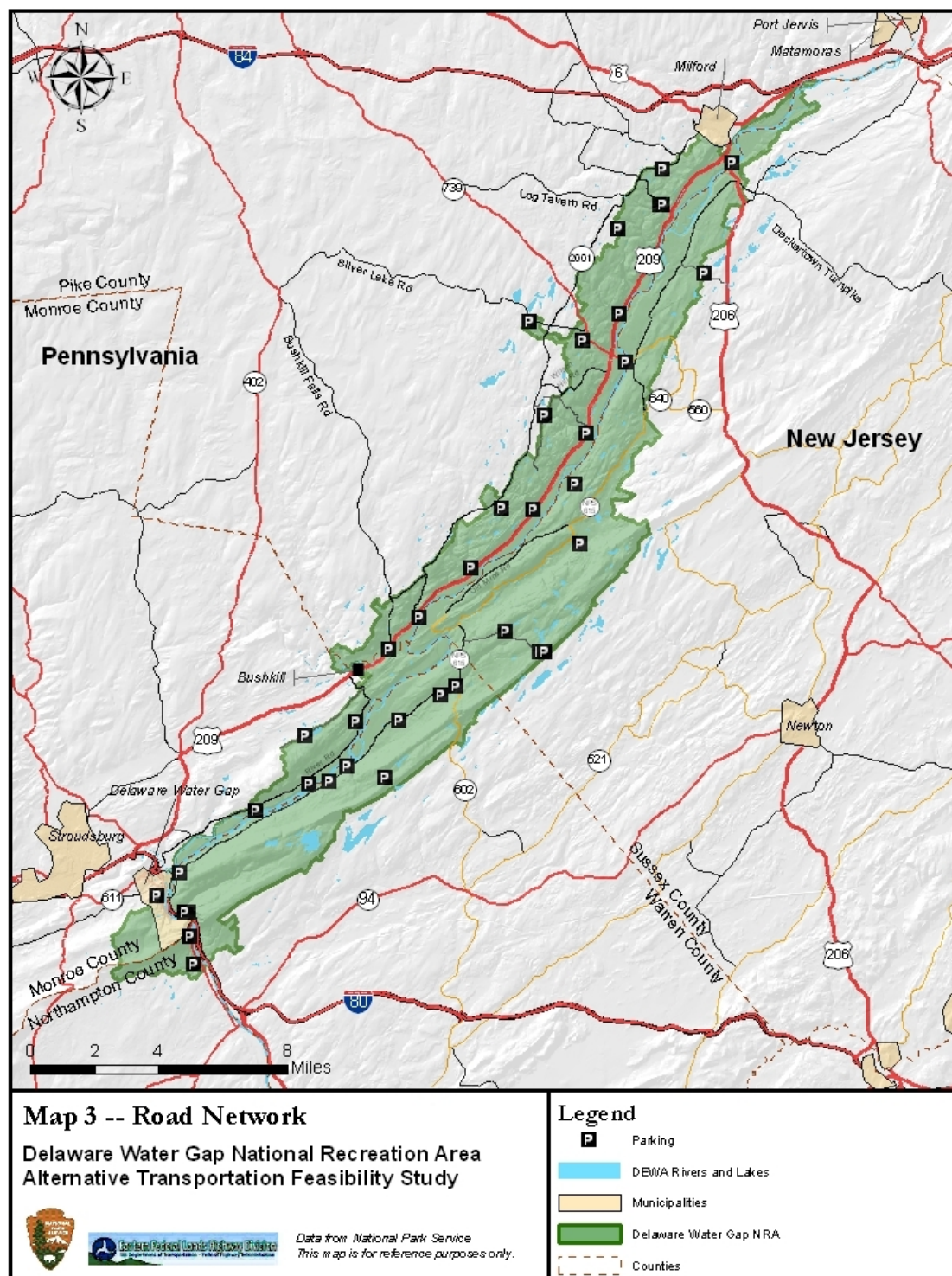
On the New Jersey side of DEWA access is more limited due to the Kittatinny Mountain Range which forms a natural boundary. Limited access is provided by SR 602, SR 627, SR 615, SR 560, and SR 645. Low traffic volumes are characteristic of roadways on the New Jersey side of DEWA.

Sections of the roadways located within DEWA are designated NPS roads and these include River Road, US 209, SR 615, and Old Mine Road. Heavy commercial traffic is restricted on the DEWA section of US 209. The southern section of Old Mine Road located within the boundary of Worthington State Forest is the property of the New Jersey Department of Environmental Protection, Division of Parks and Forestry.

East-west traffic movement is severely restricted due to the presence of the Delaware River. Three toll bridges provide limited crossing points for visitors to DEWA. These crossings are found at Delaware Water Gap, Dingmans Ferry, and at Milford, although weight limitations restrict large vehicles from crossing at Dingmans Ferry.

Major visitor use areas throughout the park have parking lots. The majority of parking spaces are located at Kittatinny Point Visitors Center, Smithfield Beach, Milford and Dingmans launch. Parking areas currently do not provide adequate parking for visitors during weekends in the summer months. The parking lot at Smithfield Beach operates as a fee area and allows DEWA some control over parking congestion and over use. There are also many other locations throughout DEWA where parking is permitted. These include roadside pull-offs, trail heads, and abandoned home sites. Unfortunately, many unplanned pull-offs have been created along roads in DEWA. These are considered unsafe and undesirable for natural conditions and are being removed.

Figure 6: Map of Road Network



Source: Jacobs Engineering Group, Inc.

3.6 Existing Transportation Operations

Most visitors to DEWA use private vehicles as there are few existing public transportation operations within DEWA boundaries. The Monroe County Transportation Authority (MCTA) extended the Yellow Route from Stroudsburg to the South Contact Station in Bushkill turnaround in November 2008, providing access to the southern part of DEWA.

The existing private and public transportation options that operate in areas adjacent to DEWA include:

- Two private shuttle services that provide services within the Fernwood Resort and Shawnee Resort;
- The Water Gap Trolley provides package tours with service from starting at the Delaware Water Gap Borough and traveling to a variety of areas including: the National Recreation Area, Shawnee-on-Delaware, Kittatinny House, Resort Point Overlook, Point of the Gap, Cold Air Cave, Arrow Head Island, Appalachian Trail, Dutot Museum, the Old Stone House, Castle Inn, Historic Shawnee Church, and Indian Head.;
- The Metropolitan Transportation Authority (MTA) Metro-North Railroad from Port Jervis to New York City provides access to the northern end of the Study Area;
- Greyhound bus services;
- Local taxi services (limited service in rural areas);
- A paratransit operator providing service for handicapped/senior citizens in Pike County;
- School buses;
- Numerous transportation vehicles supporting various recreational activities including canoe liveries and education groups; and
- The Martz bus system runs buses to a location just below the southern end of DEWA from Scranton, PA, Wilkes-Barre, PA, Effort, PA, Mt. Pocono, PA and New York City.

Currently, New Jersey Transit and several New Jersey and Pennsylvania counties are undertaking an assessment of restoring passenger rail service from Scranton, Pennsylvania to Hoboken, New Jersey, through the southern end of DEWA. The yet to be reinstated Lackawanna Cutoff-Monroe County Rail Authority commuter railway line would have a station adjacent to I-80 just outside of DEWA boundaries. Shuttle buses and/or trail connections could potentially link visitors to DEWA's facilities.

3.7 Park Trails and Hiking

Trails have always been an important part of DEWA (Figure 7). Native American trails in the study area were used by European settlers who widened existing footpaths into roads for horseback travel. An example of such a trail was the Minsi Path which

extended from Stroudsburg through to Milford and followed the approximate route followed by US 209 today. Many of the existing trails were developed before the area was designated a national recreation area. Continued use of trails by residents of the area who were relocated in the 1960s has led to the development of many formal and informal trails in DEWA.

Three types of trails can be identified in DEWA. These include existing park trails, informal trails (remnants of former trails that are not designated or maintained by DEWA), and proposed trails (new trails recommended for inclusion in the designated system). Trails are defined by use in DEWA. These include hiking trails, equestrian trails, cross-country skiing trails, and multi-use trails. Trails provide opportunities for DEWA to be explored by visitors. The designated trail network consists of 53 trails totaling 223 miles in length. A program to upgrade trails is currently underway and it is estimated that approximately 34 miles of trails will require new construction. Hiking is permitted on all trails in DEWA. However, upgrades to multi-use trails will result an increase in mileage for bicycles to 95 miles, equestrian to 19 miles, and cross country skiing to 93 miles.

The most recent trails plan designates a trail system organized into four networks. They are the Appalachian, Country Road, Gap View, and River Valley networks. Each of these networks contains a series of trails that enhance a particular visitor experience and provides for specific uses.

- **Appalachian Trail Network** – These hiking trails provide an isolated, remote, wooded experience for the majority of the network. Existing DEWA trails include:

- ❑ Appalachian National Scenic;
- ❑ Blue Blaze;
- ❑ Buttermilk Falls;
- ❑ Coppermine;
- ❑ Kaiser;
- ❑ Rattlesnake Swamp; and
- ❑ Red Dot.

Proposed trails include:

- ❑ Crater Lake Loop; and
- ❑ Long Pine Pond Loop.

- **Country Road Network** – These trails provide a country road experience passing through agricultural landscapes, historic districts, and cultural sites such as historic towns, bridges, and cemeteries. Opportunities for multiple uses along a spine, with spurs for individual uses are promoted. Use is directed and connected to Stokes State Forest and High Point State Park. Existing trails include:

- ❑ Blue Mountain Lake;
- ❑ Buttermilk Falls;
- ❑ Military Road;
- ❑ Orchard;
- ❑ Pioneer;
- ❑ Upper Ridge Road; and
- ❑ Van Campens Glen.

Proposed trails include:

- ❑ Country Road;
- ❑ Coventry Road;
- ❑ Farmers Road;
- ❑ Hamilton Ridge;
- ❑ Mountain Road;
- ❑ Peters Valley;
- ❑ Pool Colony;
- ❑ Rivers Bend;
- ❑ Silver Spray Falls;
- ❑ Walpack Environmental Education Center;
- ❑ Walpack Ridge; and
- ❑ Woods Road.

- **Gap View Network** – This network focuses on the unique scenic view of the water gap, the Delaware River, and cultural sites associated with the former resort and railroad industries. This network focuses on DEWA trails and facilities for intensive day-use hiking on the majority of its trails. Existing DEWA trails include:

- ❑ Appalachian National Scenic;
- ❑ Arrow Island;
- ❑ Blue Blaze;
- ❑ Karamac;
- ❑ Slateford Loop; and
- ❑ Red Dot.

Proposed Trails include:

- ❑ Gap to Slateford;
- ❑ Karamac Railroad; and
- ❑ Kittatinny House Historic.

- **River Valley Network** – Many opportunities to explore waterfalls, the Delaware River, creeks, ravines, ridges and wooded areas are provided by these trails. An

extensive multiple use system is the foundation for this network that links most of the major facilities together and provides connections to other existing and planned trails outside DEWA boundary. Existing DEWA Trails include:

- ❑ Childs Park;
- ❑ Conashaugh View;
- ❑ Dingmans Creek;
- ❑ Hidden Lake Loop;
- ❑ Hornbecks Creek;
- ❑ PEEC;
- ❑ Railway Avenue;
- ❑ Raymondskill Creek; and
- ❑ Toms Creek.

Proposed trails include:

- ❑ Adams Creek;
- ❑ Adams Creek to Conashaugh Link;
- ❑ Bride and Groom;
- ❑ Cliff Park;
- ❑ Dingmans to Hornbecks;
- ❑ Eshback;
- ❑ Hornbecks – PEEC;
- ❑ McDade Recreational;
- ❑ McDade to Stucki Pond;
- ❑ Mill Creek;
- ❑ Sproul Road; and
- ❑ Theune.

Currently, DEWA trails that are associated with major visitor centers, picnic areas, or attractions such as waterfalls, experience the highest concentrated use. Majority of use occurs on summer weekends in places such as the Appalachian National Scenic Trail, Dingmans Falls, Childs Park, and Buttermilk Falls, located within the park.

There are 63 trailheads in DEWA (Figure 7). Trailhead facilities vary but can include restrooms, parking spaces, benches, trash cans, and information kiosks. Detailed descriptions of all the trails listed above can be found in the Delaware Water Gap National Recreation Area Trails Plan and General Management Plan Amendment of 2001.

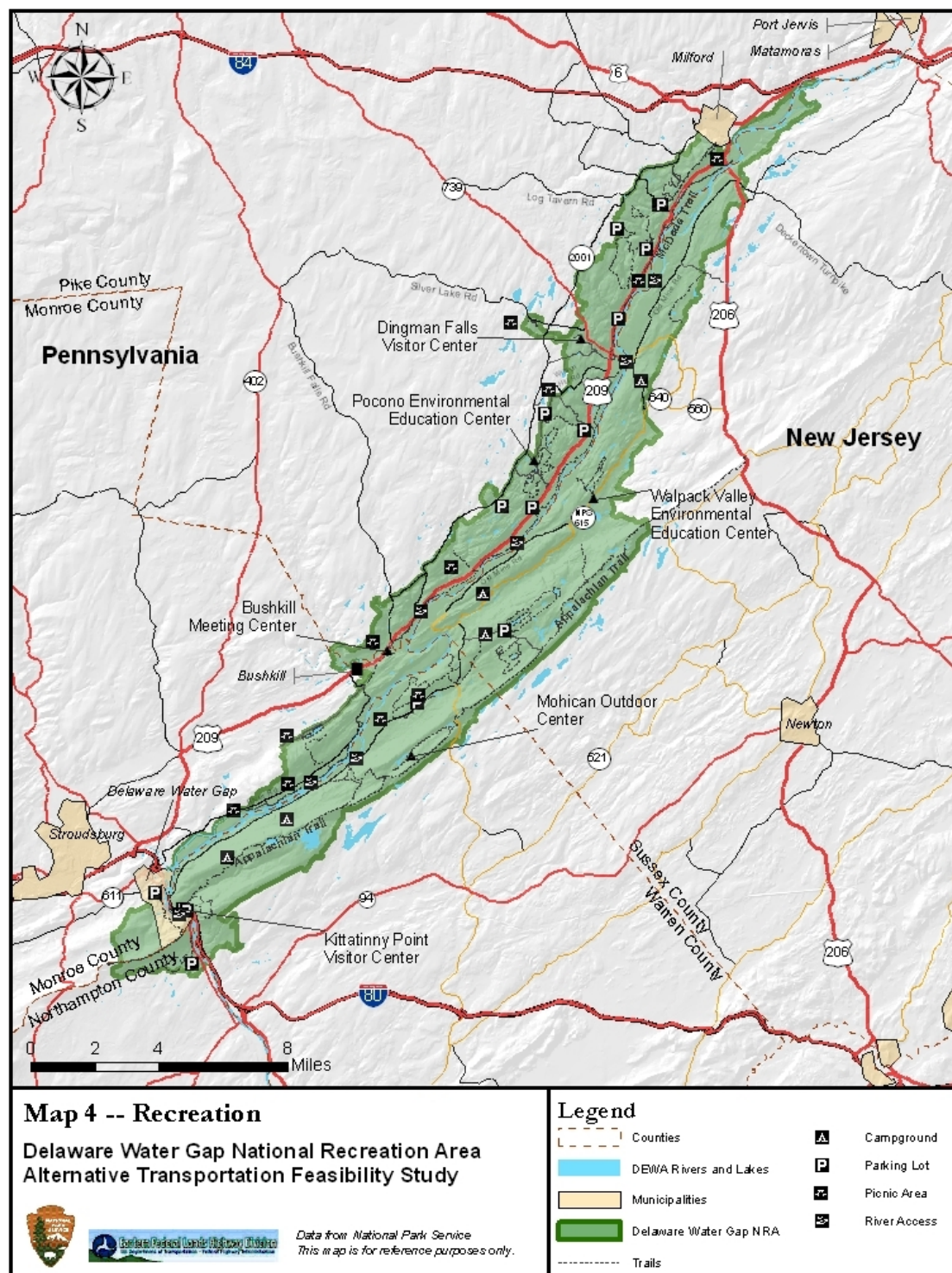
In the past few years DEWA has taken steps to address trail-related resource impacts. One of the major goals is to disperse visitors and uses by expanding the trail network. The McDade Recreational Trail and the Country Road Trail will help achieve the goal of dispersed recreation in DEWA. Planning for the McDade trail began in 1996 to link existing visitor facilities at DEWA, such as boat accesses, beaches, picnic areas, and

campgrounds. The McDade Trail would stretch essentially the full length of DEWA in Pennsylvania, ultimately providing trail access from two bordering communities: Shawnee-on-the-Delaware to the south and the Borough of Milford to the north. The trail would offer a variety of difficulty levels and would include some sections that would accommodate persons in wheelchairs. Approximately seven miles of the trail has been opened to the public. An additional 12 miles has been completed to date with the exception of trail bridges which are expected to be installed in the near future. When the bridge work is completed additional sections of the trail will be opened to the public. It is expected that the trail will be substantially completed by fall 2009 with the exception of some sections that are dependent upon planned roadway and bridge work by the Federal Highway Administration.

Existing and new partnerships with trail support organizations are being encouraged to sponsor the development and maintenance of existing and proposed trails. Partners are considered a resource for resource education, patrolling, and compliance. Trail partners include:

- Appalachian Trail Park Office;
- Appalachian Trail Conference;
- Appalachian Mountain Club;
- Delaware Water Gap Equestrian Advisory Committee;
- Kittatinny Mountain Bike Association;
- New Jersey State Parks;
- NY-NJ Trail Conference; and
- Wilmington Trail Club.

Figure 7: Map of Recreation Area



Source: Jacobs Engineering Group, Inc.

3.7.1 Other Recreation Activities

The Delaware River, which winds its way through the park, is DEWA's focal point. Its exceptional water quality provide some of the best canoeing, rafting, tubing, and fishing to be found in the eastern United States.

There is no entry fee to DEWA; however fees are charged at some recreation sites in the summer. Canoes and rafts can be rented from livery services in the area. Non-profit and for-profit organizations operate services from DEWA.

In addition to trail use, other recreation opportunities that are found in DEWA include:

- Technical climbing on the surrounding escarpments;
- Hunting and fishing;
- Swimming in the Delaware River;
- Camping on the river's shores and islands;
- Winter activities, including cross-country skiing;
- Bicycling on trails and roads;
- Bird watching;
- Wildlife photography;
- Nature study; and
- Environmental education.

More detail is provided in the following sections on the different recreation opportunities found within DEWA.

- **Winter Sports** - Winter sports, including cross-country skiing, snow shoeing, ice fishing, ice skating, and ice climbing, are also popular activities. Slateford Farmhouse is the location of three short trails that offer cross-country skiing on the Pennsylvania side of DEWA. This trail is supplemented by skiing trail segments that are currently under construction. On the New Jersey side of DEWA, 10 miles of cross country skiing trails are found at Blue Mountain Lakes. Trails serve as hiking trails in the summer months.
- **Bicycling** - Bicycling is becoming a popular recreation activity in DEWA. The recently opened Blue Mountain Lake Mountain Bike trail as well as sections of the McDade Trail, are popular with bicyclists. It is estimated that approximately 3,500 cyclists use the trails annually. Many road bikers also use the road network within DEWA for long distance bicycling. Currently, biking trails and the road network system are inadequate from a safety perspective, especially in areas with high automobile traffic. Old Mine Road (20 miles) in New Jersey and the stretch of road from the Douglas Parking area through to Peters Valley (18 miles) offer safer routes for road bicyclists. Mountain bicyclists are encouraged to use former unpaved sections of the Old Mine Road and the McDade Trail. Bicycling is not

recommended on US 209, 739, or River Road because of high traffic volumes, high speeds, narrow roads, and sight distance limitations.

- **Equestrian Activities** - The horseback riding trail in Pennsylvania is relatively new. Approximately 500 equestrians are estimated to visit DEWA with their horses annually.
- **Sightseeing and Touring** – More than 200 miles of roads wind through DEWA’s scenic valleys, ridges and historic buildings.
- **Camping** – Tent and RV sites are available at private campgrounds. Two campgrounds and 62 river camp sites are located within the boundaries of DEWA. Primitive campsites are available for through-hikers on the Appalachian Trail and for canoeists on extended river trips.
- **Picnicking** – Picnicking is a popular activity. Many picnic tables are scattered throughout DEWA for the convenience of day visitors.
- **Swimming** – The Delaware River is one of the cleanest and most scenic in the East. Three swim beaches are located in DEWA. Bathhouses, picnic areas, parking, and life guarded areas are available at Smithfield and Milford Beaches, and will soon be available at Turtle Beach.
- **Boating** – The Delaware River areas within the recreation area attract people who enjoy canoeing, tubing, and rafting. Nine boat and canoe launch areas are located within DEWA. River access points are located every eight to ten miles for easy day trips. Liveries are licensed to rent equipment and provide transportation between access points on the river.
- **Fishing** – The many lakes and ponds found within the recreation area provide excellent fishing for panfish, bass, and pickerel. Rainbow trout, brook trout, or brown trout are found in most streams. The river has American shad, smallmouth bass, walleye, eel, catfish, and muskellunge. Licenses are required for fishing if over the age of 16.
- **Hunting** – Hunting is permitted throughout DEWA in accordance with the game regulations of Pennsylvania or New Jersey.
- **Wildlife and Bird watching** – The wide diversity of wildlife makes DEWA one of the best places in the East to watch for raptors and migratory birds.

Places of interest that are popular with visitors to DEWA include the following:

- **Peters Valley Craft Education Center** – Skilled artisans that live in the education center teach beginning and advanced courses, show techniques, and sell their wares.
- **Millbrook Village** – The village was founded in 1832 when Abram Garris, a local farmer, built a grain mill along the newly built Columbia-Walpack Turnpike where the turnpike crossed a stream known as Van Campens Mill Brooke. Soon Abram and his neighbors organized a Methodist congregation and built a small church with a school in the basement. The village flourished in the 1800s but by 1900 the village was in decline. The mill closed just after 1900 and by 1950 only the blacksmith was doing business in the town. Today the village serves as a re-creation of a later 19th century rural community. Twenty four structures and an old cemetery can be visited in Millbrook Village
- **Pocono Environmental Education Center (PEEC)** – The center offers study programs in a residential environment. The center has 12 miles of hiking trails through DEWA and has access to 20,000 acres of public land nearby.
- **Mohican Outdoor Center** – This facility which is run by the Appalachian Mountain club offers recreation programs and workshops for members and non-members. The center also serves as a base of operations for work projects within DEWA.

3.7.2 Cultural Resources

DEWA has a remarkable variety of cultural resources, both pre-historic and historic. Archeological excavations have uncovered a large number of Native American villages, camps and other significant sites. Native American artifacts discovered in the area indicate the area has been inhabited from about 8,500 BC to the present.

There are vestiges of the French and Indian War and the frontier life of early America. Over 458 archeological sites have been identified and 1.2 million cultural artifacts have been recovered in DEWA. The archeological sites that have been identified have provided opportunities for studying the natural evolution and sequences of the Delaware, Lenape, and Munsee Indians. There is also a wide variety of distinctive historic architecture examples found in the valley covering early European settlement from the early Dutch through to the Victorian era. Of interest to visitors is the variety of construction material that was used to construct structures associated with these different periods of settlement.

Millbrook Village hosts regular demonstrations of the cultural past representative of the study area. To aid in the preservation of cultural landscapes, DEWA leases 3,000 acres of land to local farmers. This practice also allows DEWA to maintain open spaces and enhance the diversity of scenic, cultural, and wildlife habitats.

Nineteen individual properties and four historic districts containing 58 major structures are listed on the National Register of Historic Places. Eighty historic properties are located within DEWA and 73 cultural landscapes have been identified. Structures date back to 1726. In addition, there are many other buildings that are eligible for listing on the Register. The Walpack Center and Peters Valley are two unique historical villages within DEWA boundaries; partial villages can be found at Bushkill, Egypt Mills, Flatbrookville, and Dingmans Ferry.

4 Goals and Evaluation Criteria

After extensive discussion and careful refinement, five “high-priority” goals were developed to describe a vision for the study based on a poll of participants at the project kick-off meeting. These goals are:

- Enhance and diversify recreational opportunities for more people by creating a sustainable transportation system
- Address parking, safety, and congestion issues
- Improve integration of the park with surrounding resources and gateway communities
- Promote healthy parks and healthy living
- Identify opportunities for public-private partnerships

Evaluation criteria were developed as quantifiable measures of each goal and are used to evaluate how well transportation options respond to the goals of the park. They were chosen based on availability of data. The criteria are shown below.

Goal 1: Enhance and diversify recreational opportunities for more people by creating a sustainable transportation system:

- Criterion 1.1: Ability to increase and disperse visitation to different park sites/resources without increasing number of vehicles on public roads
- Criterion 1.2: Ability to increase use of the park’s trail system
- Criterion 1.3: Scalability to ridership expectations

Goal 2: Address parking, safety, and congestion issues:

- Criterion 2.1: Facilitates safer crossings at major roadways
- Criterion 2.2: Ability to improve access to park resources without dramatically increasing parking areas
- Criterion 2.3: Ability to reduce vehicle miles traveled per visitor throughout the park

Goal 3: Improve integration of park with surrounding resources and gateway communities by:

- Criterion 3.1: Ability to integrate park and gateway communities and businesses
- Criterion 3.2: Ability to connect with surrounding resources

Goal 4: Promote healthy parks and healthy living by:

- Protection of park resources
 - Criterion 4.1: Impact to sensitive cultural and historical resources
 - Criterion 4.2: Impact to sensitive ecological areas

- ❑ Criterion 4.3: Footprint of the transportation system on park lands
- Encourage use of parks in a healthy way
 - ❑ Criterion 4.4: Encourages diverse populations to use the park
 - ❑ Criterion 4.5: Ability to reduce vehicular emissions in the park and the surrounding communities
 - ❑ Criterion 4.6: Ability to encourage visitors to be physically active

Goal 5: Identify opportunities for public-private partnerships by:

- Criterion 5.1: Ability to promote public-private partnership opportunities
- Criterion 5.2: Supports economic development of surrounding communities

5 Initial Feasible Options

Using the results of stakeholder meetings and interviews (Section 10), as well as internal conversations with staff at DEWA and FHWA Eastern Federal Lands, this section identifies a wide array of potential transportation options to address the goals of this study. These options were then screened to remove those options that were inconsistent with DEWA's goals.

5.1 Initial Feasible Options

The consultant team developed eight candidate transportation options, including no action, trails, transportation demand management, commercial vehicle transportation, buses, water taxi service, trolley service, and an additional bridge spanning the Delaware River. These candidate options were divided into sub-options, where appropriate. For example, the trails option was subdivided into a hiking sub-option, a biking sub-option, and a multi-use sub-option. For each option, the team developed actions for the short, medium, and long-term. Overall, 19 transportation sub-options were developed and characteristics of each sub-option were defined and are listed below.

- **No Action**
- **Option 1: Trails Focus**
 - Option 1A: Trails Focus – Hiking
 - Option 1B: Trails Focus – Biking
 - Option 1C: Trails Focus – Multi-Use
- **Option 2: Transportation Systems Management (TSM)/Transportation Demand Management (TDM)**
 - Option 2A: TSM/TDM – Traffic Control
 - Option 2B: TSM/TDM – Road Modifications
 - Option 2C: TDM – Permitted Use
 - Option 2D: TDM – Combined
- **Option 3: Commercial Vehicles**
 - Option 3A: Commercial Vehicles – Taxi Service
 - Option 3B: Commercial Vehicles – Livery Services
- **Option 4: Bus System**
 - Option 4A: Bus System – Southern Loop
 - Option 4B: Bus System – Northern Loop
 - Option 4C: Bus System – Northern & Southern Loops
 - Option 4D: Bus System – PA/NY Loops
 - Option 4E: Bus System – Northern & Southern Loops & PA/NY Loops
 - Option 4F: Bus System – Central Distribution
- **Option 5: East-West Water Taxi**
- **Option 6: Rail Trolley**
 - Option 6A: Rail Trolley – North-South (PA Side)
 - Option 6B: Rail Trolley – North-South (NJ Side)

- **Option 7: East-West Integration**

- Option 7A: East-West Integration – Non-Motor Bridge
- Option 7B: East-West Integration – Road Bridge

These initial feasible options were presented to the park managers at a meeting on October 16, 2008 and are described in greater detail below. Additional components and characteristics of the initial feasible options are provided in Appendix C.

5.1.1 No Action

The No Action option maintains the existing transportation system and incorporates previously identified planned improvements and maintenance. Key components of this option included: 1) continued bus service to DEWA entrance, provided by the MCTA Yellow Route, 2) completion of the McDade Trail in the short term, and 2) an incremental completion of DEWA's trails plan.

5.1.2 Option 1: Trails Focus

This option expands the trail network in DEWA to broaden the visitor experience from its traditional focus on river activities to an experience that includes activities in the park's interior. A trail-focused transportation system would be developed and operated through partnerships with federal, state, and local governments; Friends of DEWA; hiking associations; bicycling associations; and MCTA. Three avenues for pursuing a trails focus are considered below:

Option 1A: Trails Focus – Hiking

Option 1A features an expansion of the hiking trail network. In order to encourage hiking, DEWA would expand the hiking trail network, improve trailhead signs, install interpretive kiosks at trailheads, and construct additional trailhead parking.

Option 1B: Trails Focus – Biking

Option 1B features an expansion of the bicycle trail network. In order to encourage bicycling, DEWA would expand the bicycle trail network, improve bicycle accessibility on existing roadways, improve trailhead signs, install interpretation kiosks at trailheads, and construct additional trailhead parking.

Option 1C: Trails Focus – Multi-Use

Option 1C features an expansion of the multi-use trail network. This option is a combination of Option 1A and 1B. In order to encourage hiking and biking, DEWA would expand the bicycle trail network, improve bicycle accessibility on existing roadways, improve trailhead signs, install interpretation kiosks at trailheads, and construct additional trailhead parking.

5.1.3 **Option 2: Transportation Systems Management / Transportation Demand Management**

This option uses transportation systems management (TSM) to reduce the impacts of personal vehicle traffic and transportation demand management (TDM) measures to reduce personal vehicle travel to and within DEWA. These measures would be implemented through partnerships with federal, state, and local governments and MCTA.

Option 2A: TSM/TDM – Traffic Control

Option 2A employs TDM measures to control personal vehicular traffic to and within DEWA.

Option 2B: TSM/TDM – Road Modifications

Option 2B employs TSM/TDM measures to encourage visitors traveling by personal vehicle to visit underutilized park resources. An effort to disperse visitation, DEWA would connect its trails to adjacent Pennsylvania and New Jersey parks and surrounding towns as well as improve trailhead connections and signs.

Option 2C: TSM/TDM – Permitted Use

Option 2C employs user fees to reduce personal vehicle traffic to and within DEWA.

Option 2D: TSM/TDM – Combined

Option 2D a combination of Option 2A, Option 2B, and Option 2C to reduce personal vehicle traffic to and within DEWA and to encourage visitors to drive to less-visited resources.

5.1.4 **Option 3: Commercial Vehicles**

This option envisions commercial vehicle service in DEWA through a partnership with private concessioners to provide on-demand transportation service. Option 3 consists of two sub-options.

Option 3A: Commercial Vehicles – Taxi Service

Option 3A employs commercial vehicles to provide on-demand taxi services to visitors, such as one-way day hikers who could hire a taxi to return them to their vehicles. DEWA would develop a partnership with a taxi service provider and coordinate on-demand visitor services for visitors. The taxi services would include interpretation, and DEWA would construct designated livery waiting areas.

Option 3B: Commercial Vehicles – Livery Services

Option 3B employs commercial vehicles to provide livery services to visitors. DEWA would develop a partnership with a livery service provider and coordinate on-demand visitor services for visitors. The livery services would include interpretation, and DEWA would construct designated taxi waiting areas.

5.1.5 Option 4: Bus System

This option envisions transit service in DEWA through partnerships with local or regional transit agencies. In an effort to disperse visitation, DEWA would complete the McDade Trail and the Country Road Trails, connect trails to Pennsylvania and New Jersey parks and surrounding towns, and improve trailhead connections and signs.

Option 4 consists of six sub-options. Many of these options focus on the Pennsylvania side of DEWA because there are opportunities to partner with the Monroe County Transportation Authority (MCTA) and an emerging transit authority in Pike County, but there do not appear to be immediate opportunities to partner with a transit agency in New Jersey.

Option 4A: Bus System – Southern Loop

Option 4A features a transit system that extends the MCTA Yellow Route.

Option 4B: Bus System – Northern Loop

Option 4B features a new transit system in the northern portion of DEWA, potentially in partnership with a new Pike County transportation authority. A northern transit route would provide service between the rail station at Port Jervis and DEWA.

Option 4C: Bus System – Northern & Southern Loops

Option 4C features a transit system with full coverage of DEWA and partnerships with MCTA and a new Pike County transportation authority. This option is a combination of Option 4A and Option 4B. The full transit system would extend from Port Jervis to the Delaware Water Gap route.

Option 4D: Bus System – PA/NJ Loops

Option 4D features a transit system operated through partnerships with Pike County and Sussex County. It would provide transit service that travels between Port Jervis, Milford, and Dingmans Ferry Access, crosses the Delaware River and connects to Peters Valley and Branchville, loops back up to Milford, and then ends in Port Jervis.

Option 4E: Bus System – Northern & Southern Routes & PA/NJ Loops

Option 4E features a transit system operated through partnerships with MCTA, a new Pike County transportation authority, and Sussex County. This option is a combination of Option 4A, Option 4B, and Option 4D.

Option 4F: Bus System – Central Distribution

Option 4F features a transit system with a central hub at Dingmans Ferry. It would be operated through partnerships with MCTA and a Pike County transportation authority. Three transit routes starting at Dingmans Ferry would connect to Kittatinny Point, Port Jervis, and Peters Valley.

5.1.6 Option 5: East-West Water Taxi

This option envisions a water taxi service from Smithfield Beach to Turtle Beach through a partnership with a private concessioner. DEWA would own the ferries, and a private concessioner would operate and maintain the water taxi service.

5.1.7 Option 6: Rail Trolley

This option envisions a rail trolley system operated through partnerships with regional transit authorities. This option has two sub-options.

Option 6A: Rail Trolley – North-South (Pennsylvania Side)

Option 6A features a rail trolley system on the Pennsylvania side of DEWA. The trolley would connect the planned Lackawanna Cutoff Route with the existing Port Jervis rail connection to New York City. The trolley system would be planned full integration with the existing transportation network.

Option 6B: Rail Trolley – North-South (New Jersey Side)

Option 6B features a rail trolley system on the New Jersey side of DEWA. The trolley would connect the planned Lackawanna Cutoff Route with the existing Port Jervis rail connection to New York City. The trolley system would be planned for full integration with the existing transportation network.

5.1.8 Option 7: East-West Integration

This option envisions connecting the east and west portions of DEWA that are separated by the Delaware River. Option 7 has two sub-options.

Option 7A: East-West Integration – Non-Motor Bridge

Option 7A features a multi-use, non-motorized bridge connecting hiking and bicycling facilities in Smithfield Beach with those at Turtle Beach.

Option 7B: East-West Integration – Road Bridge

Option 7A features a multi-modal bridge in the Bushkill vicinity to improve connectivity of existing roadways and trails.

5.2 Initial Screening

The consultant screened the initial feasible options for flaws to eliminate options that did not warrant further consideration. This step was accomplished by asking five questions regarding potential flaws for each initial feasible option:

1. Is the option operable?
2. Is the option cost-effective?
3. Does the option align with the goals of DEWA?
4. Does the option minimize environmental impacts?

Options receiving a “yes” for all evaluation criteria were retained for further consideration. Options receiving a “no” for any of the criteria were deemed inappropriate; these options were not carried forward as candidates. The initial screening results are displayed in Table 3. Options that had one or more flaws are discussed below.

Option 2b (which is TSM/TDM Road Modifications) would make modifications to the road network. It was removed from further consideration because: 1) it would widen roads and construct additional parking, 2) it does not address the park’s goal of reducing reliance on personal vehicles, and 3) it does not reduce greenhouse gas emissions.

Option 2d is a combination of Option 2A, Option 2B, and Option 2C. It was removed from further consideration for the same reasons as Option 2A and Option 2B.

Option 5 (which is an east-west water taxi) would connect the New Jersey and Pennsylvania sides of the park. It was removed from further consideration because the river is too shallow during portions of the year for the service to be operable.

Option 6a would create a rail trolley system on the Pennsylvania side of the park. It was removed from further consideration because it is not cost effective and would cause substantial environmental impact.

Option 6b would create a rail trolley system on the New Jersey side of the park. It was removed from further consideration because it is not cost effective and would cause substantial environmental impact.

Option 7a would create a non-motor bridge crossing the Delaware River to supplement the Dingmans Ferry crossing. This option was removed from further consideration because: 1) it is not cost effective, 2) the extensive impacts would likely make it unacceptable to stakeholders, and 3) it would cause significant impacts to the landscape surrounding the designated National Wild and Scenic River.

Option 7b would create an additional river crossing for all modes of transportation. This option was removed from further consideration for the same reasons as Option 7a.

Table 3: Initial Screening

Option	Is the option operable?	Is the option cost-effective?	Does the option align with the park's goals?	Does the option minimize environmental impacts?
No Action	n/a	Yes	No	Yes
Option 1A: Trails Focus – Hiking	Yes	Yes	Yes	Yes
Option 1B: Trails Focus – Biking	Yes	Yes	Yes	Yes
Option 1C: Trails Focus – Multi-Use	Yes	Yes	Yes	Yes
Option 2A: TSM/TDM – Traffic Control	Yes	Yes	Yes	Yes
Option 2B: TSM/TDM – Road Modifications	Yes	Yes	No	No
Option 2C: TSM/TDM – Permitted Use	Yes	Yes	Yes	Yes
Option 2D: TSM/TDM – Combined	Yes	Yes	No	No
Option 3A: Commercial Vehicles – Taxi Service	Yes	Yes	Yes	Yes
Option 3B: Commercial Vehicles – Livery Services	Yes	Yes	Yes	Yes
Option 4A: Bus System – Southern Loop	Yes	Yes	Yes	Yes
Option 4B: Bus System – Northern Loop	Yes	Yes	Yes	Yes
Option 4C: Bus System – Northern & Southern Loops	Yes	Yes	Yes	Yes
Option 4D: Bus System – PA/NJ Loops	Yes	Yes	Yes	Yes
Option 4E: Bus System – 4C & 4D	Yes	Yes	Yes	Yes
Option 4F: Bus System – Central Distribution	Yes	Yes	Yes	Yes
Option 5: East-West Water Taxi	No	Yes	Yes	Yes
Option 6A: Trolley – North-South (PA Side)	Yes	No	Yes	No
Option 6B: Trolley – North-South (NJ Side)	Yes	No	Yes	No
Option 7A: East-West Integration – Non-Motor Bridge	Yes	No	Yes	No
Option 7B: East-West Integration – Road Bridge	Yes	No	No	No

5.3 Remaining Feasible Options

Eleven feasible options remained after screening the initial feasible options for flaws. These included the no action, three options focused on enhancing the trail network, one TDM option, and six options to implement a bus system.

- No Action
- Option 1: Trails Focus
 - Option 1A: Trails Focus – Hiking
 - Option 1B: Trails Focus – Biking
 - Option 1C: Trails Focus – Multi-Use
- Option 2: Transportation System Management (TSM) / Transportation Demand Management (TDM)
 - Option 2A: TSM/TDM – Traffic Control
 - Option 2C: TSM/TDM – Permitted Use
- Option 4: Bus System
 - Option 4A: Bus System – Southern Loop
 - Option 4B: Bus System – Northern Loop
 - Option 4C: Bus System – Full Circulation
 - Option 4D: Bus System – PA/NY Loops
 - Option 4E: Bus System – Full Circulation and PA/NY Loops
 - Option 4F: Bus System – Central Distribution

6 Candidate Options

This section provides an overview of the framework that was developed for considering the remaining options. These options were organized into several transportation themes as a way to appropriately convey their intent.

6.1 Transportation Themes

As a framework for determining the feasibility of the initial feasible options, the consultant team organized the remaining feasible options in Section 5.3 into six transportation themes. These themes included:

- **No Action:** Represents no changes to the existing system other than planned improvements, scheduled maintenance, and changes made by other jurisdictions and organizations.
- **Wayfinding/Integrated Signage:** A combination of context-sensitive signs in and around DEWA to improve visitor orientation and interpretation, and to link visitors with available transportation opportunities within DEWA and gateway communities. It would inform visitors about less-visited resources.
- **Transportation Demand Management:** This theme is intended to reduce personal vehicle travel and encourage alternative transportation by creating incentives to use alternative transportation modes and managing parking demand.
- **Trails Planning Focus:** Upgrade, expand, and improve existing hiking, bicycling, equestrian, and multi-use trails. This theme would provide better connections to the Appalachian Trail, Pennsylvania, and New Jersey state forests and trails, adjacent county's recreational trails, transit services, and roadway network.
- **Bus System Linked:** As part of this theme, transit service would be introduced within DEWA to reduce personal vehicle use and to disperse visitors to various resource areas. The service would either be operated by DEWA, or a private operator.

Components and characteristics of the themes are provided in Appendix E.

6.2 Evaluation of Themes by Core Team

During discussions with DEWA in December 2008, the core team decided that the candidate alternative transportation options should be primarily focused on the trails, transit, and transportation demand management (TDM) themes, since they provide the most feasible methods for achieving DEWA's goals as identified in the screening process. The trails theme was considered as an important candidate, as planned trails will form the backbone of the recreational experience in the park. Improving the recreation area's trails would encourage greater visitation to DEWA by making it a more attractive

destination and dispersing visitation throughout DEWA's resources. By doing so, it would provide the foundation for a successful transit system. The transit theme was also identified as a way to create an enhanced visitor experience with diverse opportunities for a wide range of visitors and activities. It could be used to encourage visitation to underutilized resources in the park, would reduce the number of trips made by personal vehicle throughout DEWA, and would provide valuable connections to supporting businesses and gateway communities. A combined transportation demand management/wayfinding theme would make transit a more attractive mode of access to and within the park relative to the personal vehicle.

6.3 Discussion of Themes at Public Meeting No. 2

A stakeholders' meeting was conducted on December 9, 2008 to discuss the trails, transportation demand management, and transit themes. The stakeholders were organized into three groups to discuss each theme in greater detail. Each group developed distinct ideas that could be incorporated into transportation options. For example, the transit group identified specific attractions and transit routes. During a public open house that evening, the results of the stakeholder meeting were shared with the public, and further discussions generated additional transportation ideas. The main comments from each of the three groups are summarized below.

Trails Discussion:

- Reconfigure roads for bicycle use (US 209 and Old Mine Road).
- Develop up to three excursion centers that serve as trail centers and transportation hubs for traveling to trailheads to disperse visitation from overburdened areas. Potential locations for excursion centers included the Pennsylvania Welcome Center in the borough of Delaware Water Gap, Dingmans Ferry park and ride, and Milford Beach.
- Include wayfinding and shuttle service to facilitate access to attractions. This included wayfinding to alternative trailhead/parking areas that serve heavily-used areas.
- Provide access to fishing, canoeing, and camping from trail centers.
- Provide informational program such as "featured hikes" to bring visitors to additional locations within the recreation area.
- Complete shared-use paths (McDade Trail and Country Road Trail)
- Provide trail links across park boundaries and across major roadways within the park, such as: Cliff Park Inn/Golf Course, Worthington State Park, and the Pocono Environmental Education Center (PEEC), Delaware Water Gap Borough, Fernwood Resort, Shawnee Resort/Store, and downtown Milford.
- Provide safe crossing across US 209 between hiking trails and the McDade Trail.

Transit Discussion:

- Initiate on-demand jitney service to support one-way hiking. Jitney service is privately operated transit service that runs a largely fixed route for a fee, usually in small buses or vans.
- Consider a southern transit loop (either integrated into MCTA Yellow Route or new service).
- Extend MCTA Yellow Route northward by developing a turn-around area.
- Investigate implementation of a Port Jervis-Matamoras-Milford transit service.
- Investigate implementation of a Water Gap to Milford loop. Vans would travel in both directions with timed transfers at Milford and time transfers with MCTA Yellow Route at Bushkill. Instead of formal bus stops, a flagging system could be considered.

Transportation Demand Management/Transportation Systems Management

- Marketing – raise awareness of attractions.
- Develop park and ride lots at key areas.
- Construct informational kiosks and wayfinding.
- Expand bicycle facilities (on-road and off-road).
- Traffic calming (especially at trail crossings).
- Variable message boards to distribute parking.
- Parking lot management.
- Construct a transportation hub at US 209 and Route 739.

7 Refined Options

Five candidate transportation options were further developed that would expand bus service and enhance the trail network in and around DEWA. Detailed costs, operating characteristics, and infrastructure requirements were identified for each option. The five options were then evaluated using the goals and evaluation criteria developed for the transportation study.

7.1 Candidate Options

After the stakeholder meeting and public open house on December 9, 2008, the consultant team developed a refined list of transportation options, with actions for the short (0-2 years), medium (0-5 years), and long term (0-20 years). These transportation options are focused on transit service, but contain elements of both the trail theme and the transportation demand management/wayfinding theme discussed in Section 6.

- Option A1: Southern Bus Loop Operated in Partnership with MCTA
- Option A2: Northern Bus Loop Operated in Partnership with a new transit authority
- Option A3: Full Circulation Operated in Partnership with MCTA and a new transit authority
- Option B: Park-Operated or Concessioner-Operated System
- Option C: Partnership Transit System with DEWA-Operated Supplemental Routes

Each of these candidate options is discussed in detail below. At the end of each discussion, a map depicts the transit recommendations in the short, medium, and long terms. This is followed by a summary of each option's operating characteristics, such as the daily service span, headway, and number of bus runs per day during the peak, shoulder, and off-peak seasons. For each transit route, the route length and travel time are noted, as well as the number of buses that are required during the short, medium, and long terms. The number of buses required to operate each option are identified for 30, 60, and 120 minute headways. Supporting trail and transit infrastructure requirements are also provided. This includes the number of major and basic bus stops, the length of hiking trails and hike-bike trails, and construction of visitor centers and transit centers during the short, medium, and long terms. Detailed costs are then estimated for each transit route, supporting infrastructure, and planning and design. The final table summarizes costs at 30, 60, and 120 minute headways.

Two types of capital costs were estimated: supporting infrastructure and transit vehicles. Capital cost estimates for the supporting infrastructure were based on costs for constructing bus stops, completing and improving trails and trailheads, building or upgrading transit centers and visitor centers, and installing wayfinding. They include a 25% contingency. The methodology used to estimate infrastructure costs is discussed in Appendix G. The cost of purchasing transit vehicles for each option was estimated

based on the number of vehicles required to operate at 120, 60, and 30 minute headways. The methodology used to estimate these costs is provided in Appendix I. Both supporting infrastructure and transit vehicle costs are presented in 2008 dollars and do not include inflation. For the medium-term and the long-term phases, capital costs are cumulative; they include the costs in earlier phases.

The methodology used to estimate operating and maintenance costs of the transit system is provided in Appendix J. All operating and maintenance costs are in 2008 dollars, and do not reflect inflation. Maintenance costs for the supporting infrastructure were assumed to be 10 percent of the corresponding capital costs per year. Costs were also estimated for the associated planning and design of the potential improvements.

7.1.1 Option A: Full Partnerships with Existing or Emerging Transit Authorities

This option envisions expanded transit service in DEWA through partnerships with local or regional transit agencies that are either existing (Monroe County Transportation Authority) or emerging (Pike County transportation authority). These options do not include a partnership with New Jersey, since there did not appear to be immediate partnership opportunities in New Jersey. Option A consists of three variations.

Option A1: Southern Loop

In Option A1, DEWA would partner with MCTA to extend the existing Yellow Route to Dingmans Falls Visitor Center (via US 209). A second route would provide transit service along River Road in the southern portion of the park. This “River Road” route would operate in a one-way loop traveling along River Road and US 209. Both routes would be operated by MCTA. For cost estimating purposes, it is assumed that DEWA would be responsible for securing the additional funding required to operate these services and that no additional costs would be borne by MCTA.

This potential option would be developed in three phases, which are summarized below. Detailed characteristics of Option A1 are provided at the end of the phasing discussion.

- **Short Term:** The existing MCTA Yellow Route would be extended to the north to the Pocono Environmental Education Center. The River Road Route would operate one-way, traveling in a counterclockwise loop from Kittatinny Point Visitor Center to Bushkill Meeting Center via River Road, then to Marshalls Creek via US 209, before returning to Kittatinny Point Visitor Center. One or both of these routes may be implemented. For the purposes of this analysis, it was assumed that both routes would be implemented in the short term.

The two routes would be served by medium-size buses. In the short term, the system would require between five and 14 buses, including a 20% spare ratio. Five buses are required to operate at a 120 minute headway and 14 buses are required to operate at a 30 minute headway. Since MCTA currently dedicates one

bus to operate the existing Yellow Route service, and another as a spare, between three and 12 new buses would need to be purchased.

Passengers would be picked-up and dropped-off both at formal bus stops and upon demand at locations without bus stops by flagging down the bus. Major bus stops would be located at visitor centers, transit centers, resorts, and other key locations. Basic bus stops would be located at trailheads, several commercial areas, and other locations.

Critical to the success of this system and to achieving one of DEWA's primary goals is to create demand for recreational activities in areas beyond the Delaware River and then linking these areas to the transit system. To this end, additional short term actions include completing the McDade Trail, upgrading the Bushkill Meeting Center to a visitor center, constructing several trailheads along the bus route, and providing trail extensions to link with the trailheads. An additional task is to initiate detailed planning and design of the Country Road Trail.

In the short term, the capital costs required to purchase buses, build bus stops, and construct the additional infrastructure discussed above ranges from \$8,679,000 for a system with a 120 minute headway to \$11,491,000 for a system with a 30 minute headway. Annual operating and maintenance costs of the transit system and supporting infrastructure ranges from \$1,473,000 for a system with a 120 minute headway to \$3,936,000 for a system with a 30 minute headway. Planning costs are approximately \$150,000. Short-term costs are summarized in Table 4.

Medium Term: Assuming full implementation of service in the short term, the only actions in the medium term are to finalize design of the Country Road Trail, and to improve headways, if warranted by visitor demand.

- Long Term: The MCTA Yellow Route would be extended north to Dingmans Ferry and would connect south to the Lackawanna Cutoff rail line, when rail service is initiated. Transit service on the River Road route would remain unchanged, although headway improvements are possible.

The Yellow Route would continue to operate with medium-size buses. The system would require one new bus to operate a 120 minute headway and three new buses to operate a 30 minute headway.

Additional long term actions include adding bus stops and trailheads along the extended portion of the MCTA Yellow Route bus route, constructing a Dingmans transit center, and constructing the Country Road Trail.

In the long term, cumulative (short, medium, and long term) capital costs required to purchase buses, building bus stops, and construct supporting

infrastructure discussed above range from \$16,189,000 for a system with a 120 minute headway to \$19,626,000 for a system with a 30 minute headway. Annual operating and maintenance costs of the transit system and supporting infrastructure ranges from \$2,233,000 for a system with a 120 minute headway to \$5,485,000 for a system with a 30 minute headway. Planning costs are \$150,000. Long-term costs are summarized in Table 6.

Option A1: Southern Loop

Full Partnership with MCTA

CONCEPT

In Option A1, the NRA would partner with MCTA to extend the existing Yellow Route to Dingmans Falls Visitor Center (via US 209). A second route would provide transit service along River Road in the southern portion of the park. This “River Road” route would operate in a one-way loop traveling along River Road and US 209. Both routes would be operated by MCTA. For cost estimating purposes, it is assumed that the NRA would be responsible for securing the additional funding required to operate these services and that no additional costs would be borne by MCTA. This option would be developed in three phases, as described below:

Short Term (0 to 2 Years)

The existing MCTA Yellow Route would be extended to the north to the Pocono Environmental Education Center. The River Road Route would operate one-way, traveling in a counterclockwise loop from Kittatinny Point Visitor Center to Bushkill Meeting Center via River Road, then to Marshalls Creek via US 209, before returning to Kittatinny Point Visitor Center. Proposed short-term actions would be to:

- Complete the McDade Trail
- Upgrade the Bushkill Meeting Center to a visitor center
- Provide supportive infrastructure (such as bus stops, trailheads, kiosks, wayfinding, etc.)
- Initiate design of the Country Road Trail

Medium Term (0 to 5 Years)

There would be no enhancements to Option A1 during the medium term, except to finalize the design of the Country Road Trail and potentially improve headways.

Long Term (0 to 20 Years)

The MCTA Yellow Route would be extended to Dingmans Ferry and would connect to the Lackawanna Cutoff rail line, when rail service is initiated. Transit service on the River Road route would remain unchanged. Proposed long-term actions would be to:

- Construct Dingmans transit center
- Construct Country Road Trail
- Connect to Lackawanna Cutoff rail station
- Provide supportive infrastructure (such as bus stops, trailheads, kiosks, wayfinding, etc.)



Option A1: Southern Loop

Full Partnership with MCTA

TRANSIT CHARACTERISTICS

SUPPORTING INFRASTRUCTURE

SEASONAL OPERATING CHARACTERISTICS

Season	Service Span (hr)	Potential Headway (min)	Runs per Day
Peak	6 am – 8 pm	120	8
		60	15
		30	29
Shoulder	8 am – 6 pm	120	6
		60	11
		30	21
Off-Peak	8 am – 4 pm	120	5
		60	9
		30	17

ROUTE LENGTH AND TRAVEL TIME

		Short Term	Medium Term	Long Term
Yellow Route	Route Length (mi)	48	48	65
	Travel Time (hrs)	3.5	3.5	5.0
River Road Route	Route Length (mi)	28	28	28
	Travel Time (hrs)	2	2	2

NUMBER OF BUSES REQUIRED* (including spares)

	Potential Headway (min)	Short Term	Medium Term	Long Term
Yellow Route	120	1	1	2
	60	3	3	4
	30	7	7	10
River Road Route	120	2	2	2
	60	3	3	3
	30	5	5	5

*Excludes two vehicles currently operated by MCTA

	Short Term	Medium Term	Long Term
Complete McDade Trail	1		
Complete Country Road Trail			1
Major Bus Stops			
-- Marshalls Creek	1		
-- Fernwood Resort / Petrizzo's	1		
-- PEEC	1		
-- Shawnee Resort / Store	1		
-- Smithfield Beach	1		
-- Park Headquarters	1		
-- Kittatinny Point	1		
-- Dingman Campground			1
-- Dingmans Falls VC			1
-- Dingmans Ferry Access			1
Basic Bus Stops			
-- Exxon/Flea Market	1		
-- CVS/McDonalds	1		
-- Super Foodtown	1		
-- Bushkill Launch	1		
-- Hialeah Picnic Area	1		
Visitor Centers			
-- Upgrade Bushkill Mtg Center	0.5		
Trailheads (w/ basic bus stop)			
-- Toms Creek	1		
-- Eshback	1		
-- Hornbeck			1
-- Additional Trailheads	3		
Hiking Trails (miles)			
-- Additional	2		
-- Hornbeck			2
Hike/Bike Trails (miles)			
-- Shawnee Resort / Store	1		
-- Fernwood Resort / Petrizzo's	1		
Dingmans Transit Center			1

Table 4: Option A1 Estimated Cumulative Costs in the Short Term (2008 \$)

Cost	120 minutes	60 minutes	30 minutes
Planning & Design	\$150,000	\$150,000	\$150,000
Capital			
-- Transit	\$750,000	\$1,500,000	\$3,000,000
-- Infrastructure	\$6,193,000	\$6,193,000	\$6,193,000
-- 25% Contingency	\$1,736,000	\$1,923,000	\$2,298,000
-- Total Capital	\$8,679,000	\$9,616,000	\$11,491,000
Annual O&M			
-- Transit	\$854,000	\$1,783,000	\$3,317,000
-- Infrastructure	\$619,000	\$619,000	\$619,000
-- Total O&M	\$1,473,000	\$2,402,000	\$3,936,000

Table 5: Option A1 Estimated Cumulative Costs in the Medium Term (2008 \$)

Cost	120 minutes	60 minutes	30 minutes
Planning & Design	\$150,000	\$150,000	\$150,000
Capital			
-- Transit	\$750,000	\$1,500,000	\$3,000,000
-- Infrastructure	\$6,193,000	\$6,193,000	\$6,193,000
-- 25% Contingency	\$1,736,000	\$1,923,000	\$2,298,000
-- Total Capital	\$8,679,000	\$9,616,000	\$11,491,000
Annual O&M			
-- Transit	\$854,000	\$1,783,000	\$3,317,000
-- Infrastructure	\$619,000	\$619,000	\$619,000
-- Total O&M	\$1,473,000	\$2,402,000	\$3,936,000

Table 6: Option A1 Estimated Cumulative Costs in the Long Term (2008 \$)

Cost	120 minutes	60 minutes	30 minutes
Planning & Design	\$150,000	\$150,000	\$150,000
Capital			
-- Transit	\$1,000,000	\$1,750,000	\$3,750,000
-- Infrastructure	\$11,951,000	\$11,951,000	\$11,951,000
-- 25% Contingency	\$3,238,000	\$3,425,000	\$3,925,000
-- Total Capital	\$16,189,000	\$17,126,000	\$19,626,000
Annual O&M			
-- Transit	\$1,038,000	\$2,122,000	\$4,290,000
-- Infrastructure	\$1,195,000	\$1,195,000	\$1,195,000
-- Total O&M	\$2,233,000	\$3,317,000	\$5,485,000

Option A2: Northern Loop

In Option A2, DEWA would partner with a new Pike County transit authority to provide service between the rail station at Port Jervis and Dingmans Falls Visitor Center. The “Milford Route” would be operated by the new transit authority. It is assumed that DEWA would be responsible for securing the additional funding required to operate these services.

This potential option would be developed in three phases, which are summarized below. Detailed characteristics of Option A2 are provided at the end of the phasing discussion.

- Short Term: DEWA would work with Pike County to initiate a bus route from Port Jervis to Milford, with major bus stops at the Port Jervis Rail Station, Matamoras, Milford Beach, Grey Towers, and the Cliff Park Inn.

The routes would be served by medium-size buses. In the short term, the system would require between two and five buses, including a 20% spare ratio. Two buses are required to operate at a 120 minute headway and five buses are required to operate at a 30 minute headway.

Passengers would be picked-up and dropped-off both at formal bus stops and upon demand at locations without bus stops by flagging down the bus. Major bus stops would be located at visitor centers and other key locations.

Critical to the success of this system and to achieving the goal of DEWA is to create demand for recreational activities in areas beyond the Delaware River and then linking these areas to the transit system. To this end, additional short term actions include completing the McDade Trail, identifying a partner -- such as the Milford Enhancements Committee¹ -- to champion construction of a tourist/visitor center in Milford, constructing trailheads along the potential bus route, and providing trail extensions to link with the trailheads, and initiate detailed planning and design of the Country Road Trail.

In the short term, the capital costs required to purchase buses, build bus stops, and construct the additional infrastructure discussed above ranges from \$5,391,000 for a system with a 120 minute headway to \$6,329,000 for a system with a 30 minute headway. Annual operating and maintenance costs of the transit system and supporting infrastructure ranges from \$749,000 for a system with a 120 minute headway to \$1,678,000 for a system with a 30 minute headway. Planning costs are approximately \$150,000. Short-term costs are summarized in Table 7.

¹ The Milford Enhancement Committee was formed in 1997 with the purpose of improving the streetscape and pedestrian facilities in Milford.

- Medium Term: If the short term recommendations are successful, the route would be extended south to Dingmans Ferry, with major bus stops at the Dingmans Falls Visitor Center, Dingmans Ferry Access, and Dingmans Campground.

The system would require one new bus to provide a 120 minute headway and four new buses to provide a 30 minute headway.

Additional actions include constructing a Dingmans transit center, several trailheads along the bus route, and completing the design of the Country Road Trail.

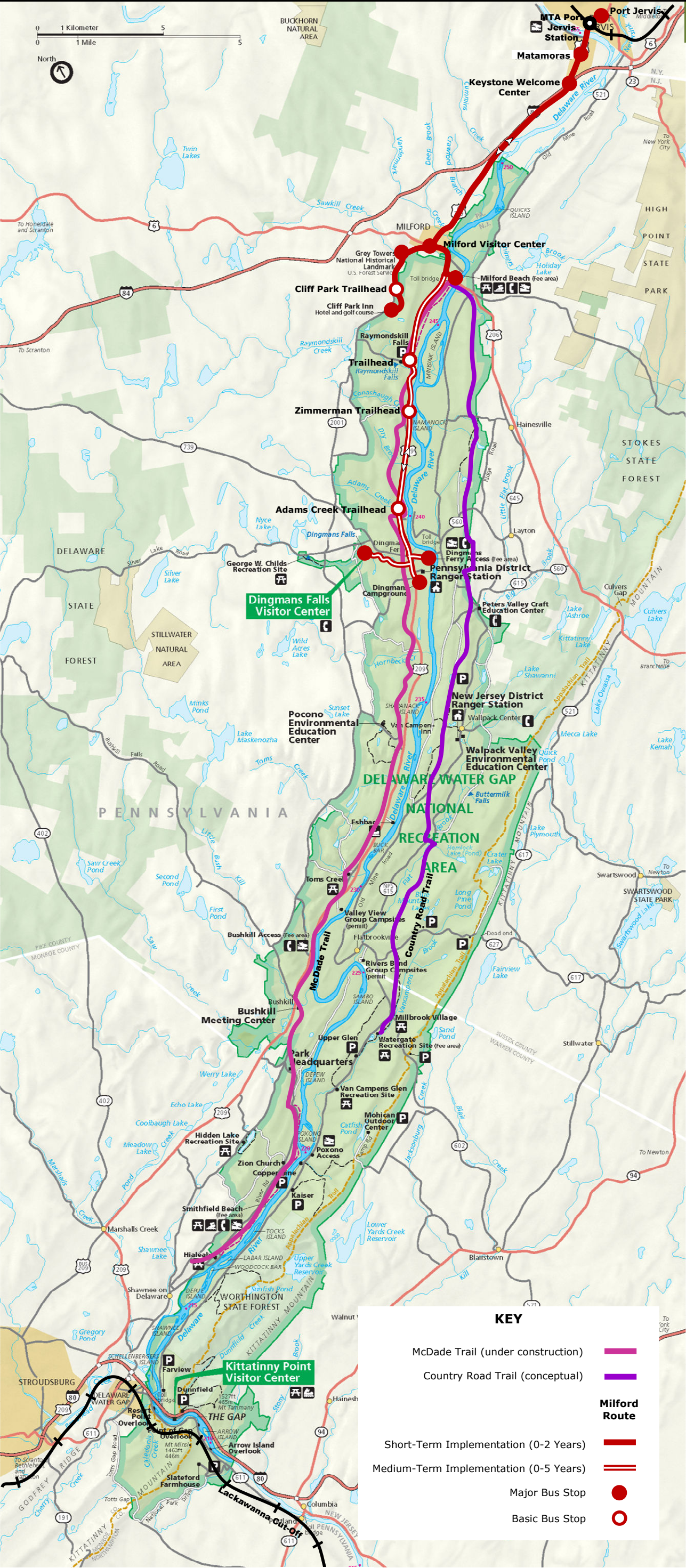
In the medium term, the capital (short and medium term) costs required to purchase buses, install bus stops, and construct supporting infrastructure discussed above ranges from \$6,788,000 for a system with a 120 minute headway to \$8,663,000 for a system with a 30 minute headway. Annual operating and maintenance costs of the transit system and supporting infrastructure ranges from \$1,204,000 for a system with a 120 minute headway to \$2,738,000 for a system with a 30 minute headway. Planning costs are \$150,000. Medium-term costs are summarized in Table 8.

- Long Term: No changes to the transit system are envisioned, however, the park would complete the Country Road Trail.

In the long term, the capital (short, medium, and long term) costs required to purchase buses, install bus stops, and construct supporting infrastructure discussed above ranges from \$13,038,000 for a system with a 120 minute headway to \$14,913,000 for a system with a 30 minute headway. Annual operating and maintenance costs of the transit system and supporting infrastructure range from \$1,704,000 for a system with a 120 minute headway to \$3,238,000 for a system with a 30 minute headway. Planning costs are \$150,000. Long-term costs are summarized in Table 9.

Option A2: Northern Loop

Full Partnership with New Transit Authority



CONCEPT

In Option A2, the NRA would partner with a new Pike County transit authority to provide service between the rail station at Port Jervis and Dingmans Falls Visitor Center. The “Milford Route” would be operated by the new transit authority. It is assumed that the NRA would be responsible for securing the additional funding required to operate the services. This option would be developed in three phases, as described below:

Short Term (0 to 2 Years)

The NPS would work with Pike County to initiate a bus route from Port Jervis to Milford, with major bus stops at Milford Beach, Grey Towers, and the Cliff Park Inn. Proposed short-term actions would be to:

- Complete McDade Trail
- Connect to the Port Jervis rail station
- Identify a partner -- such as the Milford Enhancements Committee -- to champion construction of a visitor center in Milford
- Initiate design of the Country Road Trail
- Provide supportive infrastructure (such as bus stops, trailheads, kiosks, wayfinding, etc.)

Medium Term (0 to 5 Years)

If the short term recommendations are successful, the route would be extended south to Dingmans Ferry, with major bus stops at the Dingmans Falls Visitor Center, Dingmans Ferry Access, and Dingmans Campground. Proposed medium-term actions would be to:

- Construct Dingmans transit center
- Finalize design of the Country Road Trail
- Provide supportive infrastructure (such as bus stops, trailheads, kiosks, wayfinding, etc.)

Long Term (0 to 20 Years)

No changes to the transit system are envisioned, however, the park would complete the Country Road Trail.

Option A2: Northern Loop

Full Partnership with New Transit Authority

TRANSIT CHARACTERISTICS

SUPPORTING INFRASTRUCTURE

SEASONAL OPERATING CHARACTERISTICS

Season	Service Span (hr)	Potential Headway (min)	Runs per Day
Peak	6 am – 8 pm	120	8
		60	15
		30	29
Shoulder	8 am – 6 pm	120	6
		60	11
		30	21
Off-Peak	8 am – 4 pm	120	5
		60	9
		30	17

ROUTE LENGTH AND TRAVEL TIME

		Short Term	Medium Term	Long Term
Milford Route	Route Length (mi)	22	47	47
	Travel Time (hrs)	2	4	4

NUMBER OF BUSES REQUIRED (including spares)

Potential Headway (min)		Short Term	Medium Term	Long Term
Milford Route	120	2	3	3
	60	3	5	5
	30	5	9	9

	Short Term	Medium Term	Long Term
Complete McDade Trail	1		
Complete Country Road Trail			1
Major Bus Stops			
-- Milford	1		
-- Milford Beach	1		
-- Keystone Welcome Center	1		
-- Matamoras	1		
-- Port Jervis	1		
-- Grey Towers	1		
-- Cliff Park Inn	1		
-- Dingmans Campground		1	
-- Dingmans Falls VC		1	
-- Dingmans Ferry Access		1	
Trailheads (w/ basic bus stop)			
-- Adams Creek Trailhead		1	
-- Zimmerman Trailhead		1	
-- Additional Trailhead		1	
Visitor Centers			
-- Milford Visitor Center	1		
Hiking Trails (miles)			
-- Grey Towers	0.50		
-- Additional		0.50	
-- Zimmerman		0.50	
-- Adams Creek		0.50	
Dingmans Transit Center		1	

Table 7: Option A2 Estimated Cumulative Costs in the Short Term (2008 \$)

Cost	120 minutes	60 minutes	30 minutes
Planning & Design	\$150,000	\$150,000	\$150,000
Capital			
-- Transit	\$500,000	\$750,000	\$1,250,000
-- Infrastructure	\$3,813,000	\$3,813,000	\$3,813,000
-- 25% Contingency	\$1,078,000	\$1,141,000	\$1,266,000
-- Total Capital	\$5,391,000	\$5,704,000	\$6,329,000
Annual O&M			
-- Transit	\$368,000	\$678,000	\$1,297,000
-- Infrastructure	\$381,000	\$381,000	\$381,000
-- Total O&M	\$749,000	\$1,059,000	\$1,678,000

Table 8: Option A2 Estimated Cumulative Costs in the Medium Term (2008 \$)

Cost	120 minutes	60 minutes	30 minutes
Planning & Design	\$150,000	\$150,000	\$150,000
Capital			
-- Transit	\$750,000	\$1,250,000	\$2,250,000
-- Infrastructure	\$4,680,000	\$4,680,000	\$4,680,000
-- 25% Contingency	\$1,358,000	\$1,483,000	\$1,733,000
-- Total Capital	\$6,788,000	\$7,413,000	\$8,663,000
Annual O&M			
-- Transit	\$736,000	\$1,355,000	\$2,270,000
-- Infrastructure	\$468,000	\$468,000	\$468,000
-- Total O&M	\$1,204,000	\$1,823,000	\$2,738,000

Table 9: Option A2 Estimated Cumulative Costs in the Long Term (2008 \$)

Cost	120 minutes	60 minutes	30 minutes
Planning & Design	\$150,000	\$150,000	\$150,000
Capital			
-- Transit	\$750,000	\$1,250,000	\$2,250,000
-- Infrastructure	\$9,680,000	\$9,680,000	\$9,680,000
-- 25% Contingency	\$2,608,000	\$2,733,000	\$2,983,000
-- Total Capital	\$13,038,000	\$13,663,000	\$14,913,000
Annual O&M			
-- Transit	\$736,000	\$1,355,000	\$2,270,000
-- Infrastructure	\$968,000	\$968,000	\$968,000
-- Total O&M	\$1,704,000	\$2,323,000	\$3,238,000

Option A3: Northern and Southern Loops

Option A3 is a combination of Option A1 and Option A2. In Option A3, DEWA would partner with MCTA to extend the existing Yellow Route to Dingmans Falls Visitor Center (via US 209). A second route would provide transit service along River Road in the southern portion of the park. This “River Road” route would operate in a one-way loop traveling along River Road and US 209. Both the Yellow Route and the River Road Route would be operated by MCTA. DEWA would also partner with a new Pike County transit authority to provide service between the rail station at Port Jervis and Dingmans Falls Visitor Center. The “Milford Route” would be operated by the new transit authority. For cost estimating purposes, it is assumed that DEWA would be responsible for securing the additional funding required to operate these services.

This potential option would be developed in three phases, which are summarized below. Detailed characteristics of Option A3 are provided at the end of the phasing discussion.

- **Short Term:** The existing MCTA Yellow Route would be extended north to the Pocono Environmental Education Center. DEWA would work with MCTA to initiate the River Road Route, which would operate one-way, traveling in a counterclockwise loop from Kittatinny Point Visitor Center to Bushkill Meeting Center via River Road, then to Marshalls Creek via US 209, before returning to Kittatinny Point Visitor Center. DEWA would also work with Pike County to initiate a bus route from Port Jervis to Milford, with major bus stops at the Port Jervis Rail Station, Matamoras, Milford Beach, Grey Towers, and the Cliff Park Inn.

All routes would be served by medium-size buses. In the short term, the system would require between seven and 19 buses, including a 20% spare ratio. Seven buses are required to operate at a 120 minute headway and 19 buses are required to operate at a 30 minute headway. Since MCTA currently dedicates one bus to operate the existing Yellow Route service, and another as a spare, between five and 17 new buses would need to be purchased.

Passengers would be picked-up and dropped-off both at formal bus stops and upon demand at locations without bus stops by flagging down the bus. Major bus stops would be located at visitor centers, transit centers, resorts, and other key locations. Basic bus stops would be located at trailheads, several commercial areas, and other locations.

Critical to the success of this system and to achieving the goal of DEWA is to create demand for recreational activities in areas beyond the Delaware River and then linking these areas to the transit system. To this end, additional short term actions include completing the McDade Trail, upgrading the Bushkill Meeting Center to a visitor center, identifying a partner -- such as the Milford Enhancements Committee -- to champion construction of a visitor center in

Milford, constructing several trailheads along the bus route, providing trail extensions to link with the trailheads, and initiating detailed planning and design of the Country Road Trail.

In the short term, the capital costs required to purchase buses, build bus stops, and construct the additional infrastructure discussed above ranges from \$9,695,000 for a system with a 120 minute headway to \$13,445,000 for a system with a 30 minute headway. Annual operating and maintenance costs of the transit system and supporting infrastructure ranges from \$1,873,000 for a system with a 120 minute headway to \$5,265,000 for a system with a 30 minute headway. Planning costs are approximately \$150,000. Short-term costs are summarized in Table 10.

- Medium Term: If the short term recommendations are successful, the Milford Route would be extended south to Dingmans Ferry, with a stop at the Dingmans Falls Visitor Center, Dingmans Ferry Access, and Dingmans Campground. The MCTA Yellow Route and River Road Route would continue to operate.

All routes would continue to operate with medium-size buses. The system would require one new bus to provide a 120 minute headway and four new buses to provide a 30 minute headway.

Additional actions include constructing Dingmans transit center, several trailheads along the potential bus route, providing trail extensions to link with the trailheads, and completing the design of the Country Road Trail.

In the medium term, capital (short and medium term) costs required to purchase buses, build bus stops, and construct supporting infrastructure discussed above ranges from \$11,091,000 for a system with a 120 minute headway to \$15,779,000 for a system with a 30 minute headway. Annual operating and maintenance costs of the transit system and supporting infrastructure range from \$2,327,000 for a system with a 120 minute headway to \$6,324,000 for a system with a 30 minute headway. Planning costs are \$150,000. Medium-term costs are summarized in Table 11.

- Long Term: If the medium-term recommendations are successful, the MCTA Yellow Route would be integrated with the Milford Route by extending the Yellow Route north to Dingmans visitor center. Transit service on the River Road route would continue.

All routes would continue to operate with medium-size buses. The system would not require additional buses.

Additional long term actions include improving trails with trailheads along the extended portion of the MCTA Yellow Route bus route, providing trail extensions to link with the trailheads, and completing the Country Road Trail.

In the long term, capital (short, medium, and long term) costs required to purchase buses, build bus stops, and construct supporting infrastructure discussed above range from \$17,130,000 for a system with a 120 minute headway to \$22,130,000 for a system with a 30 minute headway. Annual operating and maintenance costs of the transit system and supporting infrastructure range from \$2,834,000 for a system with a 120 minute headway to \$7,156,000 for a system with a 30 minute headway. Planning costs are \$150,000. Long-term costs are summarized in Table 12.

Option A3: Northern & Southern Loop

Full Partnership with MCTA and New Transit Authority



CONCEPT

Option A3 is a combination of Option A1 and Option A2. In Option A3, the NRA would partner with MCTA to extend the existing Yellow Route to Dingmans Falls Visitor Center (via US 209). A second route would provide transit service along River Road in the southern portion of the park. This “River Road” route would operate in a one-way loop traveling along River Road and US 209. Both the Yellow Route and the River Road Route would be operated by MCTA. The NRA would also partner with a new Pike County transit authority to provide service between the rail station at Port Jervis and Dingmans Falls Visitor Center. The “Milford Route” would be operated by the new transit authority. For cost estimating purposes, it is assumed that the NRA would be responsible for securing the additional funding required to operate these services and that no additional costs would be borne by MCTA or the new transit authority. This option would be developed in three phases, as described below:

Short Term (0 to 2 Years)

The existing MCTA Yellow Route would be extended north to the Pocono Environmental Education Center. The NPS would initiate a new one-way route on River Road, would travel in a counterclockwise loop from Kittatinny Point Visitor Center to Bushkill Meeting Center via River Road, then to Marshalls Creek via US 209, before returning to Kittatinny Point Visitor Center. The NPS would also work with Pike County to initiate a bus route from Port Jervis to Milford, with stops at Milford Beach, Grey Towers, and the Cliff Park Inn. Proposed short-term actions would be to:

- Complete the McDade Trail
- Connect to Port Jervis rail station
- Upgrade the Bushkill Meeting Center to a visitor center
- Identify a partner -- such as the Milford Enhancements Committee -- to champion construction of a visitor center in Milford
- Initiate design of the Country Road Trail
- Provide supportive infrastructure (such as bus stops, trailheads, kiosks, wayfinding, etc.)

Medium Term (0 to 5 Years)

If the short term recommendations are successful, the Milford Route would be extended south to Dingmans Ferry, with a stop at the Dingmans Falls Visitor Center, Dingmans Ferry Access, and Dingmans Campground. The MCTA Yellow Route and River Road Route would continue to operate. Proposed medium-term actions would be to:

- Construct Dingmans transit center
- Finalize design of the Country Road Trail
- Provide supportive infrastructure (such as bus stops, trailheads, kiosks, wayfinding, etc.)

Long Term (0 to 20 Years)

If the medium-term recommendations are successful, the MCTA Yellow Route would be integrated with the Milford Route by extending the Yellow Route north to Dingmans visitor center. Transit service on the River Road route would continue. Proposed long-term actions would be to:

- Construct Country Road Trail
- Connect to Lackawanna Cutoff rail station
- Provide supportive infrastructure (such as bus stops, trailheads, kiosks, wayfinding, etc.)

Option A3: Northern & Southern Loop

Full Partnership with MCTA and New Transit Authority

TRANSIT CHARACTERISTICS

SEASONAL OPERATING CHARACTERISTICS

Season	Service Span (hr)	Potential Headway (min)	Runs per Day
Peak	6 am – 8 pm	120	8
		60	15
		30	29
Shoulder	8 am – 6 pm	120	6
		60	11
		30	21
Off-Peak	8 am – 4 pm	120	5
		60	9
		30	17

ROUTE LENGTH AND TRAVEL TIME

		Short Term	Medium Term	Long Term
Yellow Route	Route Length (mi)	48	48	101
	Travel Time (hrs)	3.2	3.2	6.7
River Road Route	Route Length (mi)	28	28	28
	Travel Time (hrs)	2	2	2
Milford Route	Route Length (mi)	22	47	0
	Travel Time (hrs)	1.5	3.1	0

NUMBER OF BUSES REQUIRED* (including spares)

Potential Headway (min)		Short Term	Medium Term	Long Term
Yellow Route	120	1	1	3
	60	3	3	8
	30	7	7	16
River Road Route	120	2	2	2
	60	3	3	3
	30	5	5	5
Milford Route	120	2	3	0
	60	3	5	0
	30	5	9	0

* Excludes two vehicles currently operated by MCTA.

SUPPORTING INFRASTRUCTURE

	Short Term	Medium Term	Long Term
Complete McDade Trail	1		
Complete Country Road Trail			1
Major Bus Stops			
-- Kittatinny Point	1		
-- Shawnee Resort / Store	1		
-- Smithfield Beach	1		
-- Park Headquarters	1		
-- Marshalls Creek	1		
-- Fernwood Resort / Petrizzo's	1		
-- PEEC	1		
-- Milford	1		
-- Milford Beach	1		
-- Keystone Welcome Center	1		
-- Matamoras	1		
-- Port Jervis	1		
-- Grey Towers	1		
-- Cliff Park Inn	1		
-- Dingmans Campground		1	
-- Dingmans Falls Visitor Center		1	
-- Dingmans Ferry Access		1	
Basic Bus Stops			
-- Hialeah Picnic Area	1		
-- Exxon/Flea Market	1		
-- CVS/McDonalds	1		
-- Super Foodtown	1		
-- Bushkill Launch	1		
Visitor Centers			
-- Upgrade Bushkill Mtg Ctr	0.5		
-- Milford Visitor Center	1		
Trailheads (w/ basic bus stop)			
-- Additional Trailhead	3	1	
-- Toms Creek	1		
-- Eshback	1		
-- Cliff Park Trailhead	1		
-- Adams Creek Trailhead		1	
-- Zimmerman Trailhead		1	
-- Hornbeck Trailhead			1
Hiking Trails (miles)			
-- Additional	2.00		
-- Grey Towers	0.50		
-- Adams Creek Trailhead		0.25	
-- Zimmerman & Additional		0.50	
-- Hornbeck			2.00
Hike/Bike Trails (miles)			
-- Shawnee Resort / Store	1.00		
-- Fernwood / Petrizzo's	1.00		
Dingmans Transit Center		1	

Table 10: Option A3 Estimated Cumulative Costs in the Short Term (2008 \$)

Cost	120 minutes	60 minutes	30 minutes
Planning & Design	\$150,000	\$150,000	\$150,000
Capital			
-- Transit	\$1,250,000	\$2,250,000	\$4,250,000
-- Infrastructure	\$6,506,000	\$6,506,000	\$6,506,000
-- 25% Contingency	\$1,939,000	\$2,189,000	\$2,689,000
-- Total Capital	\$9,695,000	\$10,945,000	\$13,445,000
Annual O&M			
-- Transit	\$1,222,000	\$2,461,000	\$4,614,000
-- Infrastructure	\$651,000	\$651,000	\$651,000
-- Total O&M	\$1,873,000	\$3,112,000	\$5,265,000

Table 11: Option A3 Estimated Cumulative Costs in the Medium Term (2008 \$)

Cost	120 minutes	60 minutes	30 minutes
Planning & Design	\$150,000	\$150,000	\$150,000
Capital			
-- Transit	\$1,500,000	\$2,750,000	\$5,250,000
-- Infrastructure	\$7,373,000	\$7,373,000	\$7,373,000
-- 25% Contingency	\$2,218,000	\$2,531,000	\$3,156,000
-- Total Capital	\$11,091,000	\$12,654,000	\$15,779,000
Annual O&M			
-- Transit	\$1,590,000	\$3,138,000	\$5,587,000
-- Infrastructure	\$737,000	\$737,000	\$737,000
-- Total O&M	\$2,327,000	\$3,875,000	\$6,324,000

Table 12: Option A3 Estimated Cumulative Costs in the Long Term (2008 \$)

Cost	120 minutes	60 minutes	30 minutes
Planning & Design	\$150,000	\$150,000	\$150,000
Capital			
-- Transit	\$1,250,000	\$2,750,000	\$5,250,000
-- Infrastructure	\$12,454,000	\$12,454,000	\$12,454,000
-- 25% Contingency	\$3,426,000	\$3,801,000	\$4,426,000
-- Total Capital	\$17,130,000	\$19,005,000	\$22,130,000
Annual O&M			
-- Transit	\$1,589,000	\$3,138,000	\$5,911,000
-- Infrastructure	\$1,245,000	\$1,245,000	\$1,245,000
-- Total O&M	\$2,834,000	\$4,383,000	\$7,156,000

7.1.2 Option B: DEWA-Operated System

In Option B, DEWA would integrate the Pennsylvania and New Jersey sides of the park with a transit system operated by DEWA or a concessioner. Transit service would be provided from Milford to Kittatinny Point, with service on both sides of the Delaware River.

This potential option would be developed in three phases, which are summarized below. Detailed characteristics of Option B are provided at the end of the phasing discussion.

- Short Term: DEWA would initiate the Southern Route connecting the Pennsylvania and New Jersey sides of the park at Kittatinny Point Visitor Center. It would operate between an upgraded Bushkill Visitor Center and Turtle Beach.

The route would be served by vans. In the short term, the system would require between three and eight vans, including a 20% spare ratio. Three vans are required to operate at a 120 minute headway and eight vans are required to operate at a 30 minute headway.

Passengers would be picked-up and dropped-off both at formal bus stops and upon demand at locations without bus stops by flagging down the bus. Major bus stops would be located at visitor centers, resorts, and other key locations. Basic bus stops would be located at trailheads.

Critical to the success of this system and to achieving the goal of DEWA is to create demand for recreational activities in areas beyond the Delaware River and then linking these areas to the transit system. To this end, additional short term actions include completing the McDade Trail, upgrading the Bushkill Meeting Center to a visitor center, constructing trailheads along the potential bus route, and providing trail extensions to link with the trailheads, and initiate detailed planning and design of the Country Road Trail. In this option, connections would be improved to Worthington State Park and the Appalachian Trail.

In the short term, the capital costs required to purchase vans, build bus stops, and construct the additional infrastructure discussed above ranges from \$6,525,000 for a system with a 120 minute headway to \$6,838,000 for a system with a 30 minute headway. Annual operating and maintenance costs of the transit system and supporting infrastructure ranges from \$1,059,000 for a system with a 120 minute headway to \$2,453,000 for a system with a 30 minute headway. Planning costs are approximately \$150,000. Short-term costs are summarized in Table 13.

- Medium Term: If the short-term recommendations are successful, DEWA would initiate the Milford Route from Milford to Dingmans Visitor Center, with major bus stops at Dingmans Ferry Access, Dingmans Campground, Milford Beach,

Grey Towers, and the Cliff Park Inn. The existing Southern Road route would continue operations.

Both routes would be served by vans. The system would require three new vans to provide a 120 minute headway and six new vans to provide a 30 minute headway.

Additional actions include constructing a Dingmans transit center, identifying a partner – such as the Milford Enhancements Committee – to champion a Milford Visitor Center, constructing several trailheads along the potential bus route, providing trail extensions to link with the trailheads, and completing the design of the Country Road Trail.

In the medium term, capital (short and medium term) costs required to purchase vans, build bus stops, and construct supporting infrastructure discussed above ranges from \$8,053,000 for a system with a 120 minute headway to \$8,553,000 for a system with a 30 minute headway. Annual operating and maintenance costs of the transit system and supporting infrastructure ranges from \$1,626,000 for a system with a 120 minute headway to \$4,181,000 for a system with a 30 minute headway. Planning costs are \$150,000. Medium-term costs are summarized in Table 14.

- Long Term: If the medium-term recommendations are successful, DEWA would integrate the two transit routes. Transit service would be provided in the clockwise direction with the Park Loop and in the counterclockwise direction with the Reverse Park Loop.

The two routes would be operated with vans, due to weight restrictions on the Dingmans Bridge. The system would require two new vans to provide a 120 minute headway and 16 new vans to provide a 30 minute headway.

Additional long term actions include improving trails with trailheads along the extended portions of the transit route, providing trail extensions to link with the trailheads, and completing the Country Road Trail.

In the long term, capital (short, medium, and long term) costs required to purchase vans, build bus stops, and construct supporting infrastructure discussed above would be \$16,211,000 for a system with a 120 minute headway to \$17,586,000 for a system with a 30 minute headway. Annual operating and maintenance costs of the transit system and supporting infrastructure ranges from \$3,465,000 for a system with a 120 minute headway to \$9,039,000 for a system with a 30 minute headway. Planning costs are \$150,000. Long-term costs are summarized in Table 15.

Option B: NPS-Operated System



CONCEPT

In Option B, the NRA would fully integrate the Pennsylvania and New Jersey sides of the NRA with a transit system operated by the NPS or a concessioner. Transit service would be provided from Milford to Kittatinny Point, with service on both sides of the Delaware River. This option would be developed in three phases, as described below:

Short Term (0 to 2 Years)

The NPS would initiate the Southern Route connecting the Pennsylvania and New Jersey sides of the NRA at Kittatinny Point Visitor Center. It would operate between an upgraded Bushkill Visitor Center and Turtle Beach. Proposed short-term actions would be to:

- Complete the McDade Trail
- Upgrade the Bushkill Meeting Center to a visitor center
- Initiate design of the Country Road Trail
- Improve connections to Worthington State Park and the Appalachian Trail
- Provide supportive infrastructure (such as bus stops, trailheads, kiosks, wayfinding, etc.)

Medium Term (0 to 5 Years)

If the short-term recommendations are successful, the NPS would initiate the Milford Route from Milford to Dingmans Visitor Center, with major bus stops at Dingmans Ferry Access, Dingmans Campground, Milford Beach, Grey Towers, and the Cliff Park Inn. The existing Southern Road route would continue operations. Proposed medium-term actions would be to:

- Identify a partner -- such as the Milford Enhancements Committee -- to champion construction of a visitor center in Milford
- Construct Dingmans transit center
- Finalize design of the Country Road Trail
- Provide supportive infrastructure (such as bus stops, trailheads, kiosks, wayfinding, etc.)

Long Term (0 to 20 Years)

If the medium-term recommendations are successful, the NPS would integrate the two transit routes. Transit service would be provided in the clockwise direction with the Park Loop and in the counterclockwise direction with the Reverse Park Loop. Proposed long-term actions would be to:

- Complete the Country Road Trail
- Construct a New Jersey Visitor Center in an existing building near Walpack
- Connect to Lackawanna Cutoff rail station
- Provide supportive infrastructure (such as bus stops, trailheads, kiosks, wayfinding, etc.)

Option B: NPS-Operated System

TRANSIT CHARACTERISTICS

SEASONAL OPERATING CHARACTERISTICS

Season	Service Span (hr)	Potential Headway (min)	Runs per Day
Peak	6 am – 8 pm	120	8
		60	15
		30	29
Shoulder	8 am – 6 pm	120	6
		60	11
		30	21
Off-Peak	8 am – 4 pm	120	5
		60	9
		30	17

ROUTE LENGTH AND TRAVEL TIME

		Short Term	Medium Term	Long Term
River Rd/Old Mine Rd	Route Length (mi)	41	41	168
	Travel Time (hrs)	2.7	2.7	11.2
Milford Route	Route Length (mi)	0	33	0
	Travel Time (hrs)	0	2.2	0

NUMBER OF BUSES/VANS REQUIRED (including spares)

	Potential Headway (min)	Short Term	Medium Term	Long Term
River Rd/Old Mine Rd Route	120	3	3	8
	60	4	4	16
	30	8	8	30
Milford Route	120	0	3	0
	60	0	4	0
	30	0	6	0

SUPPORTING INFRASTRUCTURE

	Short Term	Medium Term	Long Term
Complete McDade Trail	1		
Complete Country Road Trail			1
Major Bus Stops			
-- Kittatinny Point	1		
-- Shawnee Resort / Store	1		
-- Smithfield Beach	1		
-- Park Headquarters	1		
-- Turtle Beach	1		
-- Dingmans Campground		1	
-- Dingmans Falls VC		1	
-- Dingmans Ferry Access		1	
-- Milford		1	
-- Milford Beach		1	
-- Grey Towers		1	
-- Cliff Park Inn		1	
-- PEEC			1
-- Walpack Inn			1
-- Walpack Center			1
-- Peters Valley			1
Basic Bus Stops			
-- Hialeah Picnic Area	1		
-- Bushkill Launch			1
-- Poxono Access			1
Visitor Centers			
-- New Jersey Visitor Center			1
-- Upgrade Bushkill Mtg Center	0.5		
-- Milford Visitor Center		1	
Trailheads (w/ basic bus stop)			
-- Additional Trailheads	2	1	1
-- Kaiser Trail	1		
-- Adams Creek Trailhead		1	
-- Zimmerman Trailhead		1	
-- Toms Creek			1
-- Eshback			1
-- Hornbeck			1
-- Coppermine Trailhead			1
-- Van Campen Glen Picnic Area			1
-- Watergate			1
-- Millbrook Village			1
-- Rivers Bend			1
-- Military Road			1

Option B: NPS-Operated System

SUPPORTING INFRASTRUCTURE

	Short Term	Medium Term	Long Term
Hiking Trails (miles)			
-- Additional	2.00		
-- Additional Trailhead		0.25	
-- Zimmerman Trailhead		0.25	
-- Adams Creek Trailhead		0.25	
-- Grey Towers		0.50	
-- Tom's Creek			2.00
-- Eshback			2.00
-- Hornbeck			2.00
Hike/Bike Trails (miles)			
-- Shawnee Resort / Store	1.00		
Dingmans Transit Center		1	

Table 13: Option B Estimated Cumulative Costs in the Short Term (2008 \$)

Cost	120 minutes	60 minutes	30 minutes
Planning & Design	\$150,000	\$150,000	\$150,000
Capital			
-- Transit	\$150,000	\$200,000	\$400,000
-- Infrastructure	\$5,070,000	\$5,070,000	\$5,070,000
-- 25% Contingency	\$1,305,000	\$1,318,000	\$1,368,000
-- Total Capital	\$6,525,000	\$6,588,000	\$6,838,000
Annual O&M			
-- Transit	\$552,000	\$1,016,000	\$1,946,000
-- Infrastructure	\$507,000	\$507,000	\$507,000
-- Total O&M	\$1,059,000	\$1,523,000	\$2,453,000

Table 14: Option B Estimated Cumulative Costs in the Medium Term (2008 \$)

Cost	120 minutes	60 minutes	30 minutes
Planning & Design	\$150,000	\$150,000	\$150,000
Capital			
-- Transit	\$300,000	\$400,000	\$700,000
-- Infrastructure	\$6,142,000	\$6,142,000	\$6,142,000
-- 25% Contingency	\$1,611,000	\$1,636,000	\$1,711,000
-- Total Capital	\$8,053,000	\$8,178,000	\$8,553,000
Annual O&M			
-- Transit	\$1,012,000	\$1,863,000	\$3,567,000
-- Infrastructure	\$614,000	\$614,000	\$614,000
-- Total O&M	\$1,626,000	\$2,477,000	\$4,181,000

Table 15: Option B Estimated Cumulative Costs in the Long Term (2008 \$)

Cost	120 minutes	60 minutes	30 minutes
Planning & Design	\$150,000	\$150,000	\$150,000
Capital			
-- Transit	\$400,000	\$800,000	\$1,500,000
-- Infrastructure	\$12,569,000	\$12,569,000	\$12,569,000
-- 25% Contingency	\$3,242,000	\$3,342,000	\$3,517,000
-- Total Capital	\$16,211,000	\$16,711,000	\$17,586,000
Annual O&M			
-- Transit	\$2,208,000	\$4,066,000	\$7,782,000
-- Infrastructure	\$1,257,000	\$1,257,000	\$1,257,000
-- Total O&M	\$3,465,000	\$5,323,000	\$9,039,000

7.1.3 Option C: Partnership Transit System with DEWA-Operated Supplemental Routes

In Option C, DEWA would partner with MCTA and a new Pike County transit authority to provide transit service between Port Jervis and Kittatinny Point on both sides of the Delaware River. The transit authorities would operate a spine system on the Pennsylvania side of the Delaware River, along US 209 between Port Jervis and Kittatinny Point. DEWA would operate transit service mostly on park roads, including service on River Road and Old Mine Road on the New Jersey side of the park.

This potential option would be developed in three phases, which are summarized below. Detailed characteristics of Option C are provided at the end of the phasing discussion.

- **Short Term:** DEWA would partner with the two transit authorities to operate the Yellow Route between Stroudsburg and Port Jervis. DEWA would operate the Southern Route connecting the Pennsylvania and New Jersey sides of the park at Kittatinny Point Visitor Center. It would operate between an upgraded Bushkill Visitor Center and Turtle Beach.

The Southern Route would be operated with vans, due to weight restrictions on the Dingmans Ferry toll road, while the Yellow Route would be operated with medium-size buses. In the short term, the system would require between three and eight vans and between three and 15 buses, including a 20% spare ratio. Three vans and three buses are required to operate at a 120 minute headway and eight vans and 15 buses are required to operate at a 30 minute headway.

Passengers would be picked-up and dropped-off both at formal bus stops and upon demand at locations without bus stops by flagging down the bus. Major bus stops would be located at visitor centers, transit centers, resorts, and other key locations. Basic bus stops would be located at trailheads.

Critical to the success of this system and to achieving the goal of DEWA is to create demand for recreational activities in areas beyond the Delaware River and then linking these areas to the transit system. To this end, additional short term actions include completing the McDade Trail, upgrading the Bushkill Meeting Center to a visitor center, identifying a partner – such as the Milford Enhancements Committee – to champion a Milford Visitor Center, constructing trailheads along the potential bus route, and providing trail extensions to link with the trailheads. Additional tasks are to initiate detailed planning and design of the Country Road Trail. In this option, connections would be improved to Worthington State Park and the Appalachian Trail.

In the short term, capital costs required to purchase vans and buses, build bus stops, and construct supporting infrastructure discussed above ranges from \$10,448,000 for a system with a 120 minute headway to \$14,510,000 for a system with a 30 minute headway. Annual operating and maintenance costs of the transit

system and supporting infrastructure ranges from \$2,335,000 for a system with a 120 minute headway to \$6,982,000 for a system with a 30 minute headway. Planning costs are \$150,000. Short-term costs are summarized in Table 16.

- Medium Term: If the short term recommendations are successful, DEWA would extend the Southern Route north to Dingmans Ferry on the New Jersey side of the park. The Yellow Route would continue to operate.

The Southern Route would be operated with vans, due to weight restrictions on the Dingmans Ferry toll road, while the Yellow Route would be operated with medium-size buses. The system would require seven new vans to provide a 120 minute headway. No new buses are required.

Additional medium term actions include constructing a visitor center in New Jersey and improving trails with trailheads along the extended portions of the transit route. In addition, tasks include completing the design of the Country Road Trail.

In the medium term, capital (short and medium term) costs required to purchase vans and buses, build bus stops, and construct supporting infrastructure discussed above would be \$11,853,000 for a system with a 120 minute headway to \$16,290,000 for a system with a 30 minute headway. Annual operating and maintenance costs of the transit system and supporting infrastructure ranges from \$2,994,000 for a system with a 120 minute headway to \$9,034,000 for a system with a 30 minute headway. Planning costs are \$150,000. Medium-term costs are summarized in Table 17.

- Long Term: If the medium-term recommendations are successful, DEWA would extend the Southern Route from Dingmans Ferry to Milford and to the Cliff Park Inn along Old Mine Road. The Southern Route would connect to the Lackawanna Cutoff rail line.

The Southern Route would continue to be operated with vans, due to weight restrictions on the Dingmans Bridge, while the Yellow Route would continue to be operated with medium-size buses. The system would require one new van to provide a 120 minute headway and five new vans to provide a 30 minute headway. No new buses are required.

Additional long term actions include completing the Country Road Trail and improving trails with trailheads along the extended portions of the transit route.

In the long term, capital (short, medium, and long term) costs required to purchase vans and buses, build bus stops, and construct supporting infrastructure discussed above would be \$18,348,000 for a system with a 120 minute headway to \$23,035,000 for a system with a 30 minute headway. Annual

operating and maintenance costs of the transit system and supporting infrastructure ranges from \$3,876,000 for a system with a 120 minute headway to \$10,846,000 for a system with a 30 minute headway. Planning costs are \$150,000. Long-term costs are summarized in Table 18.

Option C: Partnership Transit System with NPS-Operated Supplemental Routes



CONCEPT

In Option C, the NRA would partner with MCTA and a new Pike County transit authority to provide transit service between Port Jervis and Kittatinny Point on both sides of the Delaware River. The transit authorities would operate a spine system on the Pennsylvania side of the Delaware River, along US 209 between Port Jervis and Kittatinny Point. The NPS would operate transit service mostly on NRA roads, including service on River Road and Old Mine Road on the New Jersey side of the NRA. This option would be developed in three phases, as described below:

Short Term (0 to 2 Years)

The NRA would partner with the two transit authorities to operate the Yellow Route between Stroudsburg and Port Jervis. The NPS would operate the Southern Route connecting the Pennsylvania and New Jersey sides of the NRA at Kittatinny Point Visitor Center. It would operate between an upgraded Bushkill Visitor Center and Turtle Beach. Proposed short-term actions would be to:

- Complete the McDade Trail
- Connect to Port Jervis rail station
- Upgrade the Bushkill Meeting Center to a visitor center
- Construct Dingmans transit center
- Identifying a partner -- such as the Milford Enhancements Committee -- to champion construction of a visitor center in Milford
- Improve connections to Worthington State Park and the Appalachian Trail
- Initiate design of the Country Road Trail
- Provide supportive infrastructure (such as bus stops, trailheads, kiosks, wayfinding, etc.)

Medium Term (0 to 5 Years)

If the short term recommendations are successful, the NPS would extend the Southern Route north to Dingmans Falls on the New Jersey side of the park. The Yellow Route would continue to operate. Proposed medium-term actions would be to:

- Construct a New Jersey Visitor Center in an existing building near Walpack
- Complete design of the Country Road Trail
- Provide supportive infrastructure (such as bus stops, trailheads, kiosks, wayfinding, etc.)

Long Term (0 to 20 Years)

If the medium-term recommendations are successful, the NPS would extend the Southern Route from Dingmans Ferry to Milford and to the Cliff Park Inn along Old Mine Road. The Southern Route would connect to the Lackawanna Cutoff rail line. Proposed long-term actions would be to:

- Complete the Country Road Trail
- Connect to Lackawanna Cutoff rail station
- Provide supportive infrastructure (such as bus stops, trailheads, kiosks, wayfinding, etc.)

Option C: Cooperative Transit System with NPS-Operated Routes

TRANSIT CHARACTERISTICS

SEASONAL OPERATING CHARACTERISTICS

Season	Service Span (hr)	Potential Headway (min)	Runs per Day
Peak	6 am – 8 pm	120	8
		60	15
		30	29
Shoulder	8 am – 6 pm	120	6
		60	11
		30	21
Off-Peak	8 am – 4 pm	120	5
		60	9
		30	17

ROUTE LENGTH AND TRAVEL TIME

		Short Term	Medium Term	Long Term
River Rd/Old Mine Rd Route	Route Length (mi)	41	79	111
	Travel Time (hrs)	2.7	5.3	7.4
Yellow Route	Route Length (mi)	93	93	93
	Travel Time (hrs)	6.2	6.2	6.2

NUMBER OF BUSES/VANS REQUIRED* (including spares)

	Potential Headway (min)	Short Term	Medium Term	Long Term
River Rd/Old Mine Road	120	3	4	5
	60	4	8	10
	30	8	15	20
Yellow Route	120	3	3	3
	60	7	7	7
	30	14	14	14

*Excludes two vehicles currently operated by MCTA.

SUPPORTING INFRASTRUCTURE

	Short Term	Medium Term	Long Term
Complete McDade Trail	1		
Complete Country Road Trail			1
Major Bus Stops			
-- Kittatinny Point	1		
-- Shawnee Resort / Store	1		
-- Smithfield Beach	1		
-- Park Headquarters	1		
-- Turtle Beach	1		
-- Marshalls Creek	1		
-- Fernwood Resort / Petrizzo's	1		
-- PEEC	1		
-- Dingmans Campground	1		
-- Dingmans Falls VC	1		
-- Dingmans Ferry Access	1		
-- Milford	1		
-- Milford Beach	1		
-- Keystone Welcome Center	1		
-- Matamoras	1		
-- Port Jervis	1		
-- Walpack Inn		1	
-- Walpack Center		1	
-- Peters Valley		1	
-- Grey Towers			1
-- Cliff Park Inn			1
Basic Bus Stops			
-- Hialeah Picnic Area	1		
-- Exxon/Flea Market	1		
-- CVS/McDonalds	1		
-- Super Foodtown	1		
-- Bushkill Launch	1		
-- Poxono Access		1	
-- Old Mine Road			1
Visitor Centers			
-- New Jersey Visitor Center		1	
-- Upgrade Bushkill Mtg Center	0.5		
-- Milford Visitor Center	1		
Trailheads (w/ basic bus stop)			
-- Additional Trailheads	4		
-- Kaiser Trail	1		
-- Toms Creek	1		
-- Eshback	1		
-- Hornbeck	1		

Option C: Cooperative Transit System with NPS-Operated Routes

SUPPORTING INFRASTRUCTURE

	Short Term	Medium Term	Long Term
Trailheads (continued)			
-- Adams Creek Trailhead	1		
-- Zimmerman Trailhead	1		
-- Coppermine Trailhead		1	
-- Van Campen Picnic Area		1	
-- Watergate		1	
-- Millbrook Village		1	
-- Rivers Bend		1	
-- Military Road Trail		1	
Hiking Trails (miles)			
-- Additional	2.00		
-- Toms Creek	2.00		
-- Eshback	2.00		
-- Hornbeck	2.00		
-- Additional Trailhead	0.25		
-- Zimmerman Trailhead	0.25		
-- Adams Creek Trailhead	0.25		
-- Grey Towers			0.50
Hike/Bike Trails (miles)			
-- Shawnee Resort / Store	1.00		
-- Fernwood Resort / Petrizzo's	1.00		
Dingmans Transit Center	1		

Table 16: Option C Estimated Cumulative Costs in the Short Term (2008 \$)

Cost	120 minutes	60 minutes	30 minutes
Planning & Design	\$150,000	\$150,000	\$150,000
Capital			
-- Transit	\$900,000	\$1,950,000	\$4,150,000
-- Infrastructure	\$7,458,000	\$7,458,000	\$7,458,000
-- 25% Contingency	\$2,090,000	\$2,352,000	\$2,902,000
-- Total Capital	\$10,448,000	\$11,760,000	\$14,510,000
Annual O&M			
-- Transit	\$1,589,000	\$3,138,000	\$6,236,000
-- Infrastructure	\$746,000	\$746,000	\$746,000
-- Total O&M	\$2,335,000	\$3,884,000	\$6,982,000

Table 17: Option C Estimated Cumulative Costs in the Medium Term (2008 \$)

Cost	120 minutes	60 minutes	30 minutes
Planning & Design	\$150,000	\$150,000	\$150,000
Capital			
-- Transit	\$950,000	\$2,150,000	\$4,500,000
-- Infrastructure	\$8,532,000	\$8,532,000	\$8,532,000
-- 25% Contingency	\$2,371,000	\$2,671,000	\$3,258,000
-- Total Capital	\$11,853,000	\$13,353,000	\$16,290,000
Annual O&M			
-- Transit	\$2,141,000	\$4,155,000	\$8,181,000
-- Infrastructure	\$853,000	\$853,000	\$853,000
-- Total O&M	\$2,994,000	\$5,008,000	\$9,034,000

Table 18: Option C Estimated Cumulative Costs in the Long Term (2008 \$)

Cost	120 minutes	60 minutes	30 minutes
Planning & Design	\$150,000	\$150,000	\$150,000
Capital			
-- Transit	\$1,000,000	\$2,250,000	\$4,750,000
-- Infrastructure	\$13,678,000	\$13,678,000	\$13,678,000
-- 25% Contingency	\$3,670,000	\$3,982,000	\$4,607,000
-- Total Capital	\$18,348,000	\$19,910,000	\$23,035,000
Annual O&M			
-- Transit	\$2,508,000	\$4,832,000	\$9,478,000
-- Infrastructure	\$1,368,000	\$1,368,000	\$1,368,000
-- Total O&M	\$3,876,000	\$6,200,000	\$10,846,000

7.2 Evaluation Criteria

Several evaluation criteria were established for each goal of the study. These criteria will be used to evaluate each candidate option and to ultimately select a preferred option. A detailed discussion of each criterion, including methodologies and calculations, is provided in Appendix K.

Goal 1 is to enhance and diversify recreational opportunities for more people. Three criteria were defined for this goal:

- Criterion 1.1: Ability to increase and disperse visitation to different park sites/resources without increasing number of vehicles on public roads
- Criterion 1.2: Ability to increase use of the park's trail system
- Criterion 1.3: Scalability to ridership expectations

Goal 2 is to address parking, safety, and congestion issues. Three criteria were defined for this goal:

- Criterion 2.1: Facilitates safer crossings at major roadways
- Criterion 2.2: Ability to improve access to park resources without dramatically increasing parking areas
- Criterion 2.3: Ability to reduce vehicle miles traveled per visitor throughout the park

Goal 3 is to improve integration of park with surrounding resources and gateway communities. Two criteria were defined for this goal:

- Criterion 3.1: Ability to integrate park and gateway communities and businesses
- Criterion 3.2: Ability to connect with surrounding resources

Goal 4 is to promote healthy parks and healthy living. Six criteria were defined for this goal and are organized into two categories:

- Protection of park resources
 - Criterion 4.1: Impact to sensitive cultural and historical resources
 - Criterion 4.2: Impact to sensitive ecological areas
 - Criterion 4.3: Footprint of the transportation system on park lands
- Encourage use of parks in a healthy way
 - Criterion 4.4: Encourages diverse populations to use park
 - Criterion 4.5: Ability to reduce vehicular emissions in the park and the surrounding communities
 - Criterion 4.6: Ability to encourage visitors to be physically active

Goal 5 is to identify opportunities for public-private partnerships. Three criteria were defined for this goal:

- Criterion 5.1: Ability to promote public-private partnership opportunities
- Criterion 5.2: Supports economic development of surrounding communities

In addition, the cost of the five candidate options was evaluated:

- Capital costs: the cost of constructing all transit and trail improvements, as well as purchase transit vehicles.
- Annual operating and maintenance costs: the annual cost to run the transit services and maintain infrastructure investments.

7.3 Evaluation of Candidate Options

The consultant team evaluated the candidate options with the criteria in order to determine the extent to which each candidate option met the goals of the study. The evaluation process first required establishing performance measures for each criterion. These performance measures provided a quantifiable and objective approach for evaluating the criteria. Candidate options with the highest relative scores based on the performance measures were considered to best meet the corresponding goals. The capital costs and annual operating and maintenance costs were also evaluated. The options were assigned the following ratings:

Highest = •••
Average = ••
Lowest = •

This section first evaluates the five candidate transportation options based on how well each option scored based on the performance measures and costs. It then provides a summary evaluation of each option. Several criteria were evaluated in a similar fashion. Detailed calculations for the criteria are provided in Appendix K.

7.3.1 Evaluation of Goal 1

Goal 1 is to enhance and diversify recreational opportunities for more people and is evaluated by three criteria:

- Criterion 1.1: Ability to increase and disperse visitation to different park sites/resources without increasing number of vehicles on public roads
- Criterion 1.2: Ability to increase use of the park's trail system
- Criterion 1.3: Scalable to ridership expectations

The results of this analysis are summarized using a three-tier evaluation in Table 19.

Criterion 1.1: Ability to increase and disperse visitation to different park sites/resources without increasing number of vehicles on public roads

In the short term, Option C has the most potential to increase and disperse visitation to park sites and resources without increasing the number of vehicles on public roads, with Option A3 in second place. Option C would reach the largest number of visitor centers, destinations, and external locations, such as accommodations and gateway communities. All other options would reach fewer key locations, with Option A2 reaching the fewest number of such locations.

In the medium term, Option C would continue to best achieve Criterion 1.1, although its score for connecting to the most external locations would fall below Option A3. Option A1 and Option A2 would now reach the fewest key locations. All options except for

Option A1 would feature expanded transit service that reaches a larger number of visitor centers, destinations, and external locations.

In the long term, Option C would continue to best achieve this criterion, achieving parity with Option A3 in the highest number of connections to external locations. Option A3 and Option B could be considered a tie for second place, though Option A3 would reach more external destinations, while Option B would reach more visitor centers and other park destinations. All options, except for Option A2, would feature expanded transit service that reaches a larger number of visitor centers, destinations, and external locations. As a result, Option A2 would now reach the lowest number of key locations, although Option A1 performs similarly.

Criterion 1.2: Ability to increase use of the park's trail system

In the short term, Option C also has the greatest ability to increase visitor use of the park's trail system because it would connect to the most trailheads and would be able to support one-way hiking and bicycling trips. Conversely, Option A2 has the lowest potential to increase visitor use of the park's trail system because it provides service to only one trailhead and cannot support one-way trips. Other options would provide a moderate number of trailhead connections and would be able to support one-way hiking and bicycling trips.

In the medium term, Option C continues to provide the largest number of trailhead connections, although all options, except for Option A1, would provide more trailhead connections. All options would also now support one-way hiking and bicycling trips.

In the long term, Option C continues to provide the largest number of trailhead connections, although all options, except for Option A2, would provide more trailhead connections. All options continue to support one-way hiking and bicycling trips.

Criterion 1.3: Scalable to ridership expectations

Should actual transit demand vary from projected ridership, both Option B and Option C are best suited to be scaled appropriately in the short term. These options feature transit routes with routing, vehicle capacities, and headways that can be most easily modified to reflect ridership. Scalability of the options remains the same in the medium and long terms.

Table 19: Evaluation of Goal 1

Goal 1: Enhance and diversify recreational opportunities for more people	Short Term					Medium Term					Long Term				
	A1	A2	A3	B	C	A1	A2	A3	B	C	A1	A2	A3	B	C
1.1 Ability to increase and disperse visitation to different park sites/resources without increasing # of vehicles on public roads															
-- # of Visitor Centers	••	•	••	••	•••	•	•	••	••	•••	••	•	••	•••	•••
-- # of Other Destinations	••	•	••	•	•••	•	•	••	•	•••	•	•	••	•••	•••
-- # of External Resorts & Gateway Communities	••	••	•••	•	•••	•	•	•••	•	••	•	•	•••	•	•••
1.2 Ability to increase use of the park's trail system															
-- # of Trailheads	••	•	••	•	•••	•	•	••	••	•••	•	•	••	•••	•••
-- Ability to establish one-way hiking/bicycling trails (yes or no)	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
1.3 Scalable to ridership expectations															
-- Based on geographic coverage	Maybe	Maybe	Maybe	Yes	Yes	Maybe	Maybe	Maybe	Yes	Yes	Maybe	Maybe	Maybe	Yes	Yes
-- Based on vehicle size and headway	Yes	Maybe	Yes	Yes	Yes	Yes	Maybe	Yes	Yes	Yes	Yes	Maybe	Yes	Yes	Yes

Highest = •••

Average = ••

Lowest = •

7.3.2 Evaluation of Goal 2

Goal 2 is to address parking, safety, and congestion issues and is evaluated by three criteria:

- Criterion 2.1: Facilitates safer crossings at major roadways
- Criterion 2.2: Ability to improve access to park resources without dramatically increasing parking areas
- Criterion 2.3: Ability to reduce vehicle miles traveled per visitor throughout the park

The results of this analysis are summarized using a three-tier evaluation in Table 20.

Criterion 2.1: Facilitates safer crossings at major roadways

In the short term, Option C would facilitate the greatest number of safe pedestrian crossings along US 209 by providing a total of eight improved crossing locations within DEWA. These crossings would be located at bus stops. Options A1 and Option A3 would each provide three improved crossing locations, while Option A2 and Option B would not provide improved crossing locations since these options do not have bus stops with bus pull-out areas along the portion of US 209 within DEWA.

In the medium term, Option C would continue to score highest based on Criterion 2.1. Option A3 would now provide seven improved crossing locations, nearly matching Option C. Option A2 and Option B would feature expanded transit service, and subsequently, would each provide four improved crossing locations. Option A1 does not propose new infrastructure in the medium term, and would provide the lowest number of improved crossing locations.

In the long term, Option A3, Option B, and Option C would best achieve this criterion. Each of these options would provide eight improved crossing locations. Option A1 would provide two additional bus stops, resulting in a total of five improved crossing locations. Option A2 does not propose new infrastructure in the long term. Consequently, this option would continue to provide four improved crossing locations, the lowest number among all options.

Criterion 2.2: Ability to improve access to park resources without dramatically increasing parking areas

This criterion was evaluated in the same fashion as Criterion 1.1, which evaluated the ability to increase and disperse visitation to different park sites/resources without increasing number of vehicles on public roads.

Criterion 2.3: Ability to reduce vehicle miles traveled per visitor throughout the park

This criterion was evaluated in the same fashion as Criterion 1.1, which evaluated the ability to increase and disperse visitation to different park sites/resources without increasing number of vehicles on public roads.

Table 20: Evaluation of Goal 2

Goal 2: Address parking, safety, and congestion issues	Short Term					Medium Term					Long Term				
	A1	A2	A3	B	C	A1	A2	A3	B	C	A1	A2	A3	B	C
2.1 Facilitates safer crossings at major roadways	••	•	••	•	•••	•	•	•••	•	•••	•	•	•••	•••	•••
2.2 Ability to improve access to park resources without dramatically increasing parking															
-- # of Visitor Centers	••	•	••	••	•••	•	•	••	••	•••	••	•	••	•••	•••
-- # of Other Destinations	••	•	••	•	•••	•	•	••	•	•••	•	•	••	•••	•••
-- # of External Resorts & Gateway Communities	••	••	•••	•	•••	•	•	•••	•	••	•	•	•••	•	•••
2.3 Ability to reduce vehicle miles per visitor traveled throughout the park															
-- # of Visitor Centers	••	•	••	••	•••	•	•	••	••	•••	••	•	••	•••	•••
-- # of Other Destinations	••	•	••	•	•••	•	•	••	•	•••	•	•	••	•••	•••
-- # of External Resorts & Gateway Communities	••	••	•••	•	•••	•	•	•••	•	••	•	•	•••	•	•••

Highest = •••

Average = ••

Lowest = •

7.3.3 Evaluation of Goal 3

Goal 3 is to improve integration of the park with surrounding resources and gateway communities and is evaluated by two criteria:

- Criterion 3.1: Ability to integrate park and gateway communities
- Criterion 3.2: Ability to connect with public lands and surrounding resources

The results of this analysis are summarized using a three-star evaluation in Table 21.

Criterion 3.1: Ability to integrate park and gateway communities

In the short term, Option C and Option A3 have the most potential for integrating DEWA with six gateway communities: Stroudsburg, Delaware Water Gap Borough, Marshalls Creek, Milford, Matamoras, and Port Jervis. Both options would connect to all six gateway communities. Option A1 and Option A2 would both serve three gateway communities (Stroudsburg, Delaware Water Gap Borough, and Marshalls Creek), while Option B would serve only Delaware Water Gap Borough.

In the medium term, Option C and Option A2 would continue to score the highest based on Criterion 3.1. All options, with the exception of Option B, would continue to serve the same gateway communities as in the short term. Option B would serve one additional gateway community (Milford), although its score would remain the lowest among all options.

In the long term, Option C and Option A2 would continue to score the highest based on Criterion 3.1. All options would continue to serve the same gateway communities as in the medium term.

Criterion 3.2: Ability to connect with public lands and surrounding resources

In the short term, Option C also has the greatest ability to connect DEWA with surrounding resources because it would serve Worthington State Forest and Dingmans Falls. Option A2, Option A3, and Option B would each provide transit service to one surrounding resource. The former two would serve the Grey Towers National Historic Site, and the latter would serve Worthington State Forest. Option A1 scores the lowest among all option, providing no connections to the identified surrounding resources.

In the medium term, Option B has the greatest ability to connect DEWA with surrounding resources because it would serve Worthington State Forest, Dingmans Falls, and Grey Towers National Historic Site. Option A2, Option A3, and Option B would now each provide transit service to two surrounding resources. Option A1 would continue to provide no connections to surrounding resources.

In the long term, Option B and Option C have the greatest ability to connect DEWA with surrounding resources. Both options would serve Worthington State Forest, Dingmans Falls, and Grey Towers National Historic Site. As in the medium term,

Option A2 and Option A3 would serve two surrounding resources: Dingmans Falls and Grey Towers National Historic Site. Option A1 would also now serve Dingmans Falls, although its score would remain the lowest among all options.

Table 21: Evaluation of Goal 3

Goal 3: Improve integration of park with surrounding resources and gateway communities	Short Term					Medium Term					Long Term				
	A1	A2	A3	B	C	A1	A2	A3	B	C	A1	A2	A3	B	C
3.1 Ability to integrate park and gateway communities	••	••	•••	•	•••	•	•	•••	•	•••	•	•	•••	•	•••
3.2 Ability to connect with surrounding resources	•	••	••	••	•••	•	••	••	•••	••	•	••	••	•••	•••

Highest = •••

Average = ••

Lowest = •

7.3.4 Evaluation of Goal 4

Goal 4 is to promote healthy parks and healthy living. This goal is assessed as six criteria and is divided into two categories:

Goal 4a: Protection of Park Resources

- Criterion 4.1: Impact to sensitive cultural and historical resources
- Criterion 4.2: Impact to sensitive ecological areas
- Criterion 4.3: Footprint of the transportation system on park lands

Goal 4b: Encourage Use of the Park in a Healthy Way

- Criterion 4.4: Encourages diverse populations to use park
- Criterion 4.5: Ability to reduce vehicular emissions in the park and the surrounding communities
- Criterion 4.6: Ability to encourage visitors to be physically active

The results of this analysis are summarized using a three-star evaluation in Table 22.

Criterion 4.1: Impact to sensitive cultural and historical resources

Given the limited nature of proposed new infrastructure, the impact to sensitive cultural and historical resources is assumed to be low for all options in the short, medium, and long terms. A detailed analysis of this criterion is beyond the scope of this project. As a potential indicator of possible impacts, see Criterion 4.3 and Appendix G, which provides more detailed information.

Criterion 4.2: Impact to sensitive ecological areas

Same as Criterion 4.1.

Criterion 4.3: Footprint of the transportation system on park lands

In the short term, Option A2 best meets Goal 4 based on Criterion 4.3. The transportation system infrastructure in this option requires the smallest estimated footprint on DEWA land. This option has an estimated footprint of one-half acre. Conversely, Option C has the largest estimated footprint of 9.2 acres, and, as a result, scores the lowest based on this criterion. The remaining options have estimated footprints ranging from 3.3 to 5.5 acres.

In the medium term, Option A2 best meets Goal 4 based on this criterion, with a footprint of 1.3 acres. Conversely, Option C scores the worst, with an estimated footprint of 9.8 acres. The other options also have moderate footprints of 4.2 to 6.2 acres, reflecting the proposed transportation system support facilities.

In the long term, Option A2 best meets Goal 4 based on this criterion, with a footprint of 1.3 acres. Option C scores the worst, with an estimated footprint of 10.2 acres. The estimated footprints of the other options range from 4.4 to 8.8 acres.

Criterion 4.4: Encourages diverse populations to use park

In the short term, Option A3 and Option C have the most potential for attracting a diverse population of visitors to DEWA. These options would each serve 12 key locations, comprised of visitor centers, accommodations, rail stations, and gateway communities. Option A1 has the next highest score, serving seven key locations. Option A2 would serve a more limited geographic area on the northern end of DEWA, with only five key locations. Option B would serve the fewest key locations because it would operate primarily within DEWA.

In the medium term, Option A3 and Option C would continue to score the highest based on Criterion 4.4. Both options would extend routes to Dingmans Falls, resulting in transit systems that serve 13 key locations. Option B would add three additional locations to its roster of key locations, while Option A2 and Option B would continue to serve the same locations as in the short term.

In the long term, Option C scores the highest based on this criterion. Option C would serve 15 key locations, while Option A3 would serve one less location. Option A1 and Option B would each serve one additional location, for a total of 9 key locations in each option. Option A2 does not propose transit expansion in the long term, and, as a result, scores the lowest for this criterion.

Criterion 4.5: Ability to reduce vehicular emissions in the park and the surrounding communities

This criterion was evaluated in the same fashion as Criterion 1.1, which evaluated the ability to increase and disperse visitation to different park sites/resources without increasing number of vehicles on public roads.

Criterion 4.6: Ability to encourage visitors to be physically active

Transit service is considered to be supportive of physical activity because all transit trips require at least one walking trip to and from the transit vehicle. Therefore, options that have a greater ability to attract riders because they connect with more destinations were considered to be more supportive of physical activity, including both walking and bicycling. As a result, this option performs in a similar fashion for this criterion as for Criterion 1.1.

Table 22: Evaluation of Goal 4

Goal 4: Promote healthy parks and healthy living	Short Term					Medium Term					Long Term				
	A1	A2	A3	B	C	A1	A2	A3	B	C	A1	A2	A3	B	C
4a. Protection of park resources															
4.1 Impact to sensitive cultural and historical resources	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low
4.2 Impact to sensitive ecological areas	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low
4.3 Footprint of the transportation system on park lands	••	•••	••	•••	•	••	•••	••	••	•	••	•••	•	•	•
4b. Encourage use of parks in a healthy way															
4.4 Encourages diverse populations to use park															
-- Visitor Centers/Accommodations	••	•	•••	•	•••	•	•	•••	•••	•••	••	•	•••	•••	•••
-- Rail Stations	•	•••	•••	•	•••	•	•••	•••	•	•••	•	•	•••	•	•••
-- Gateway Communities	••	•	•••	•	•••	••	•	•••	•	•••	••	•	•••	•	•••
4.5 Ability to reduce vehicular emissions in the park and the surrounding communities															
-- # of Visitor Centers	••	•	••	••	•••	•	•	••	••	•••	••	•	••	•••	•••
-- # of Other Destinations	••	•	••	•	•••	•	•	••	•	•••	•	•	••	•••	•••
-- # of External Resorts & Gateway Communities	••	••	•••	•	•••	•	•	•••	•	••	•	•	•••	•	•••
4.6 Ability to encourage visitors to be physically active															
-- # of Visitor Centers	••	•	••	••	•••	•	•	••	••	•••	••	•	••	•••	•••
-- # of Other Destinations	••	•	••	•	•••	•	•	••	•	•••	•	•	••	•••	•••
-- # of External Resorts & Gateway Communities	••	••	•••	•	•••	•	•	•••	•	••	•	•	•••	•	•••

Highest = •••
Average = ••
Lowest = •

7.3.5 Evaluation of Goal 5

Goal 5 is to identify opportunities for public-private partnerships and is evaluated by two criteria:

- Criterion 5.1: Ability to promote public-private partnership opportunities
- Criterion 5.2: Supports economic development of surrounding communities

The results of this analysis are summarized using a three-star evaluation in Table 23.

Criterion 5.1: to promote public-private partnership opportunities

In the short term, Option A3 has the greatest ability to promote public-private partnership opportunities because it proposes the greatest number of transit agency and local business partners. This option would establish partnerships with the Monroe County Transit Authority (MCTA), a emerging Pike County transit authority, and the Metro-North station at Port Jervis, as well as seven bus stop improvements at local businesses along the transit route. Option C would also promote partnerships with the same transit authorities and six local businesses. Conversely, Option B would provide bus stop improvements at only two businesses, and there would be no transit agency partners. Option A1 and Option A2 both scored moderate. Option A1 would provide bus stop improvements at six businesses, while Option A2 would promote partnerships with both MCTA and the emerging Pike County transit authority, but provide bus stop improvements at only one business.

In the medium term, Option A3 and Option C score equally high based on Criterion 5.1. The transit system in Option C would be extended to the Walpack Inn, making this option comparable to Option A3. Option B would also serve one additional business bus stop, but scores poorly on the criterion. Other options would have the same partnerships as in the short term.

In the long term, Option C scores the highest based on this criterion. Option C would now promote partnerships with the MCTA, the emerging Pike County transit authority, the Metro-North station at Port Jervis, and the New Jersey Transit station at Delaware Water Gap, and provide bus stop improvements at eight local businesses. Option A3 would promote the same transit authority partnerships, but provides bus stops at one less business. Option A1 and Option A2 would each promote partnerships with two transit agencies, although the former option would provide bus stop improvements at six businesses, while the latter option would provide bus stop improvements at only one business. Option B would promote a partnership with only Metro-North Railroad at the Port Jervis station, but would provide bus stop improvements at four businesses.

Criterion 5.2: Supports economic development of surrounding communities

This criterion was evaluated in the same fashion as Criterion 3.1, which evaluated the ability to integrate the park with gateway communities.

Table 23: Evaluation of Goal 5

Goal 5: Identify opportunities for public-private partnerships	Short Term					Medium Term					Long Term				
	A1	A2	A3	B	C	A1	A2	A3	B	C	A1	A2	A3	B	C
5.1 Ability to promote public-private partnership opportunities															
-- Transit Agency Partners	••	••	•••	•	•••	••	••	•••	•	•••	••	••	•••	•	•••
-- Business Partners	•••	•	•••	•	•••	•••	•	•••	••	•••	•••	•	•••	••	•••
5.2 Supports economic development of surrounding communities	••	••	•••	•	•••	•	•	•••	•	•••	•	•	•••	•	•••

Highest = •••

Average = ••

Lowest = •

7.3.6 Evaluation of Cost

This section compares the capital costs and annual operating and maintenance costs in 2008 dollars. Capital costs are illustrated graphically in Figure 13, Figure 14 and Figure 15. Figure 13 shows cumulative capital costs. Costs in the medium term and long term include costs from earlier phases. Figure 14 shows incremental capital costs. Costs in the medium term and the long term do not include costs from earlier phases. Operating and maintenance costs are illustrated in Figure 15. For evaluation purposes, capital costs are presented for 120-minute service frequencies.

In the short term, Option A2 has the lowest estimated capital cost of \$5,391,000 because it proposes the smallest transit network and fewer infrastructure improvements. The corresponding annual operating and maintenance costs of \$749,000 for this option also reflect the smaller transportation system. Conversely, Option C has the greatest estimated capital cost at \$10,448,000 and the highest operating and maintenance costs at \$2,335,000 per year. This high cost reflects the longer transit route and more extensive infrastructure improvements.

In the medium term, Option A2 has the lowest estimated capital cost of \$6,788,000 because it proposes the smallest transit network and fewer infrastructure improvements. The corresponding annual operating and maintenance costs of \$1,204,000 for this option also reflect the smaller transportation system. Conversely, Option C has the greatest estimated capital cost at \$11,853,000 and the highest operating and maintenance costs at \$2,994,000 per year. This high cost reflects the longer transit route and more extensive infrastructure improvements.

In the long term, Option A2 has the lowest estimated capital cost of \$13,038,000 because it proposes the smallest transit network and fewer infrastructure improvements. The corresponding annual operating and maintenance costs of \$1,704,000 for this option also reflect the smaller transportation system. Conversely, Option C has the greatest estimated capital cost at \$18,348,000 and the highest operating and maintenance costs at \$3,876,000 per year. This high cost reflects the longer transit route and more extensive infrastructure improvements.

Figure 13: Cumulative Capital Costs at 120-Minute Headways (millions of 2008 \$)

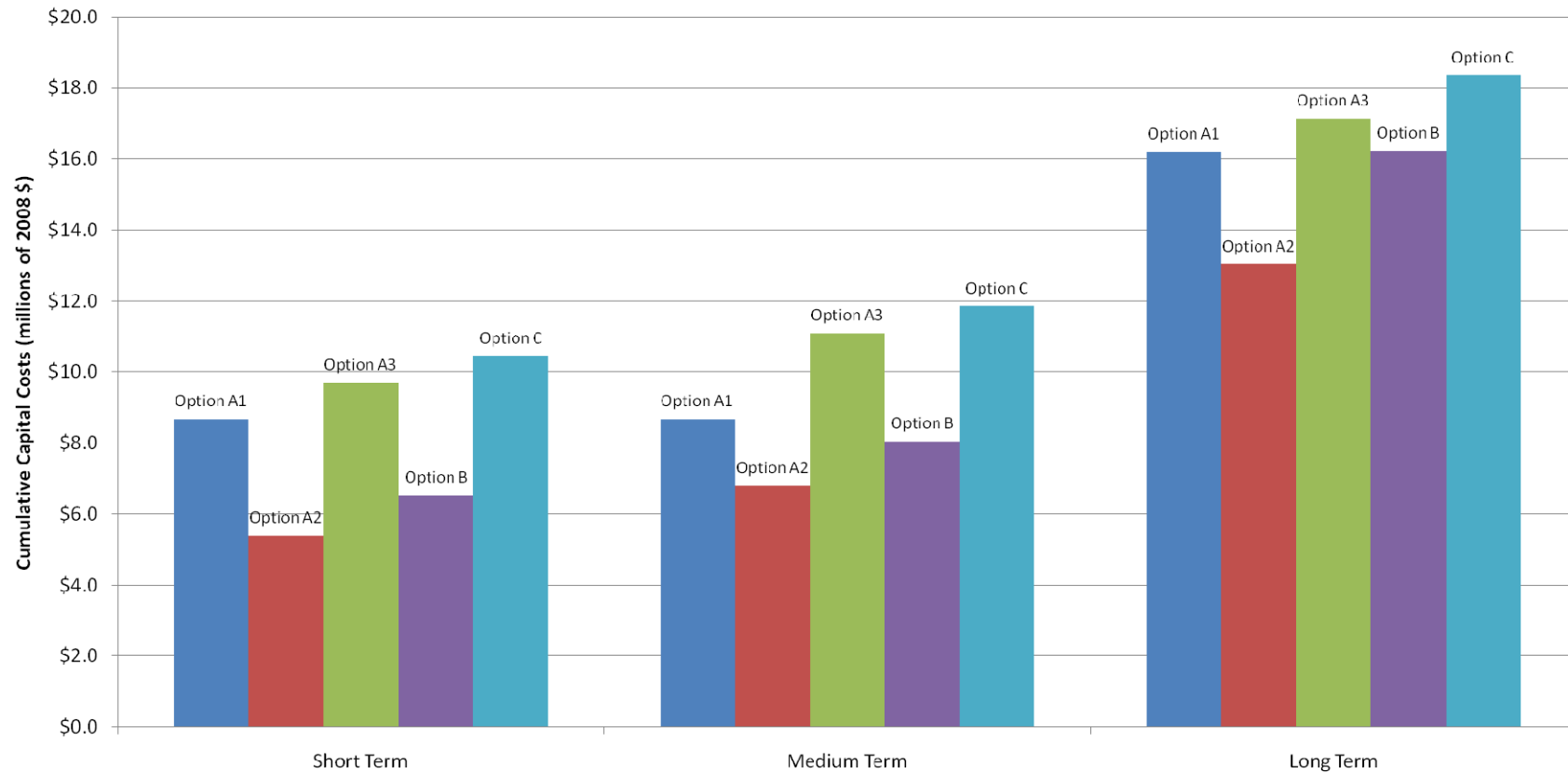


Figure 14: Incremental Capital Costs at 120-Minute Headway (millions of 2008 \$)

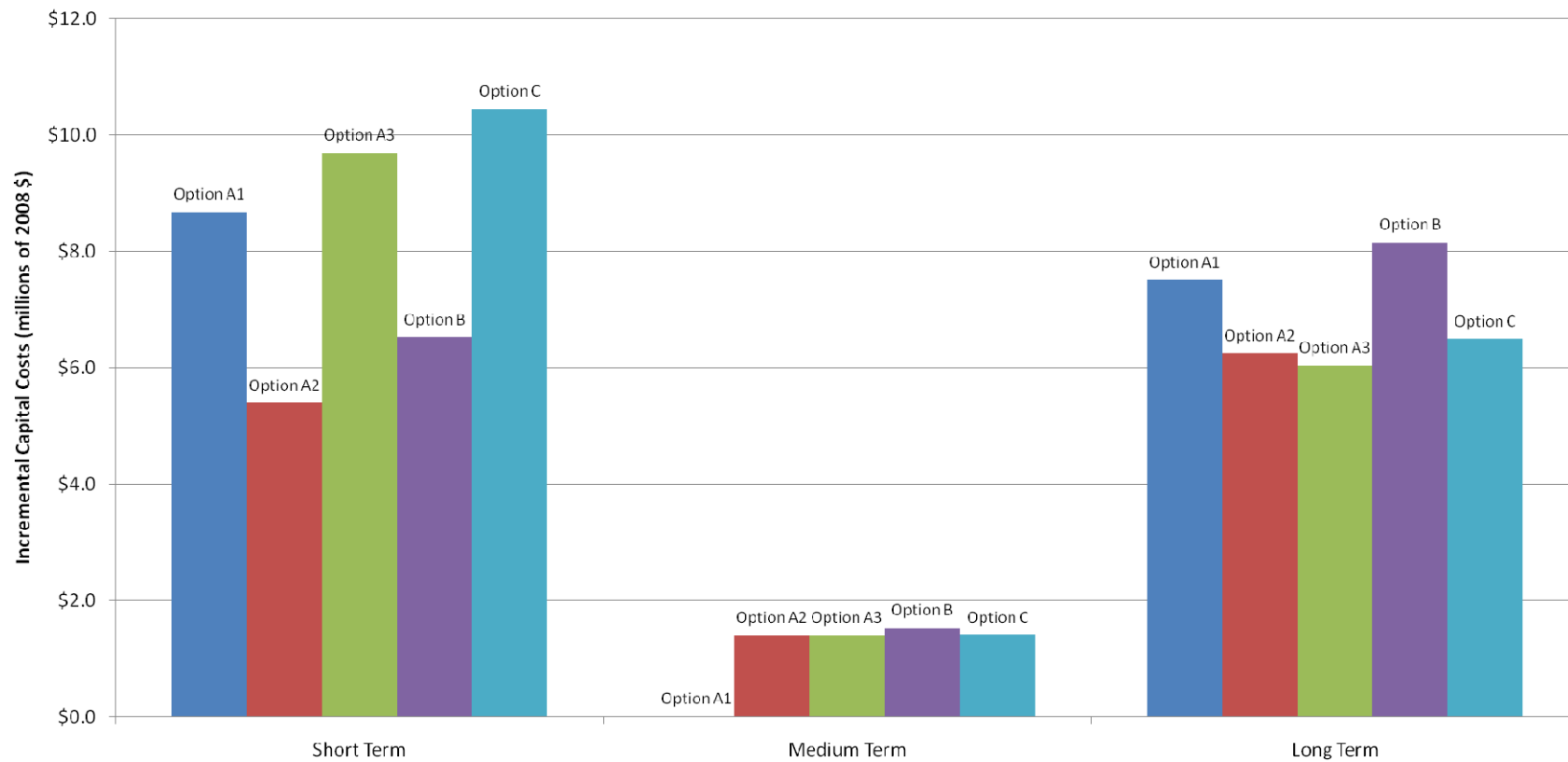
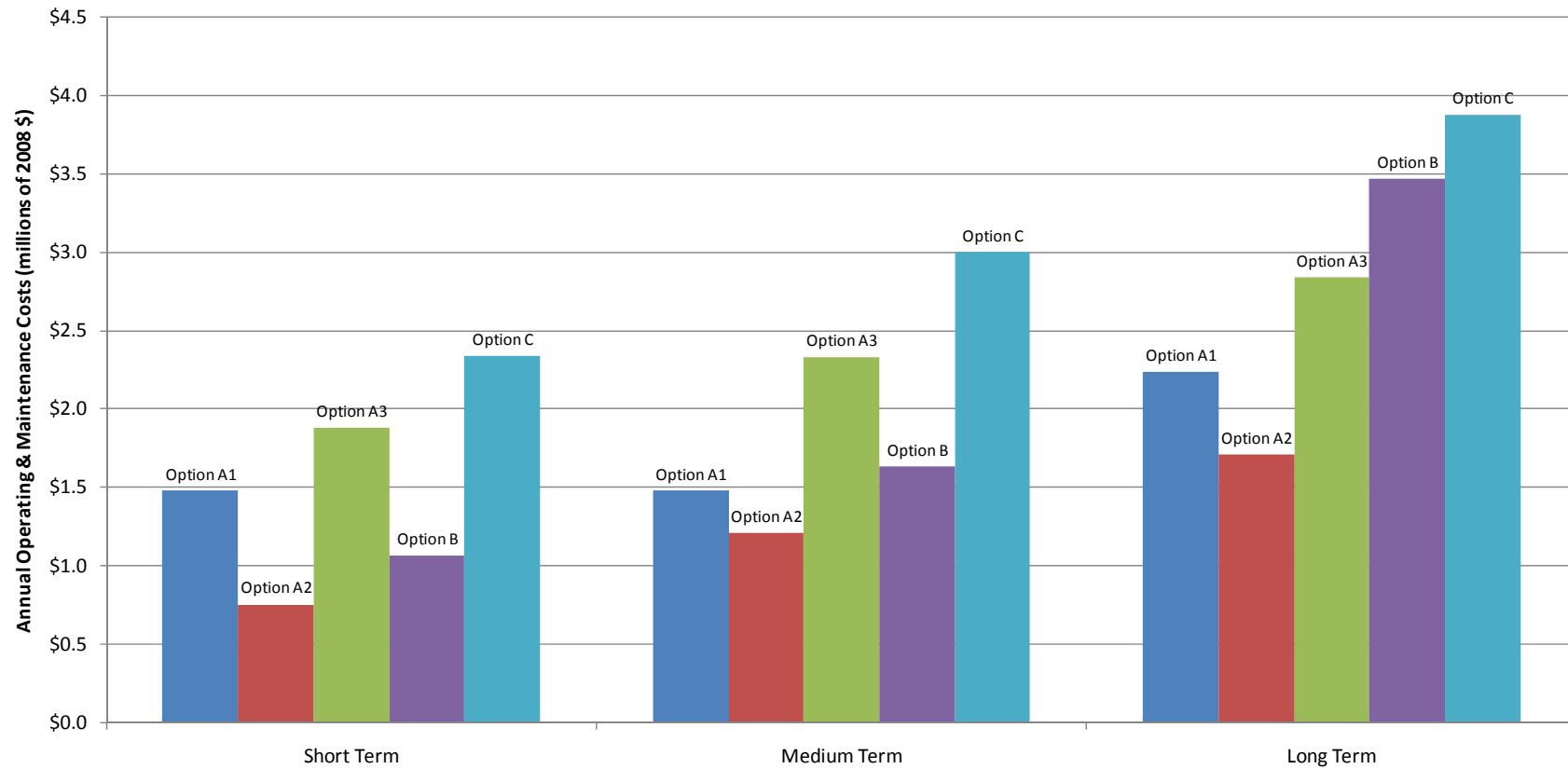


Figure 15: Annual Operating and Maintenance Costs at 120-Minute Headways (millions of 2008 \$)



7.3.7 Evaluation Summary

The five candidate transportation options were compared based on the evaluation of the five goals, capital costs, operating and maintenance costs, as well as the annual lifecycle costs.

Option C would best meet Goal 1, which is to enhance and diversify recreational opportunities for more people, based on an evaluation of the criteria in the short, medium, and long terms. Option C has the most potential to increase and disperse visitation to park sites and resources without increasing the number of vehicles on public roads because the transit system would serve the greatest number of visitor centers, DEWA destinations, and external locations, such as accommodations and gateway communities. Option C also has the greatest ability to increase visitor use of the park's trail system because it would connect to the most trailheads and would be able to support one-way hiking and bicycling trips. Should actual transit demand vary from projected ridership, both Option B and Option C are best suited to be scaled appropriately.

Option C would best meet Goal 2, which is to address parking, safety, and congestion issues, based on an evaluation of the criteria in the short, medium, and long terms. This option would facilitate the greatest number of safe pedestrian crossings along US 209. The option also has the greatest potential for improving visitor access to park resources without dramatically increasing parking areas and for reducing vehicle miles traveled (VMT) per visitor throughout DEWA because it would provide transit service to the greatest number of visitor centers and other destinations within the park.

Option C would best meet Goal 3, which is to improve integration of DEWA with surrounding resources and gateway communities, based on an evaluation of the criteria in the short, medium, and long terms. Overall, this option has the most potential for integrating DEWA with gateway communities at Stroudsburg, Delaware Water Gap Borough, Marshalls Creek, Milford, Matamoras, and Port Jervis as well as with nearby resources, such as the Worthington State Forest, Dingmans Falls, and Grey Towers National Historic Site. Option A3 scored second highest based on the evaluation, serving an equal number of gateway communities and only one less surrounding resource.

Option A2 would best meet Goal 4a based on an evaluation of the criteria in the short, medium, and long terms. This option requires the smallest estimated footprint on DEWA land, while Option C has the greatest footprint. All candidate options were deemed to have low impacts to cultural and historical resources as well as ecological areas, although a detailed study of these issues would be needed as part of an implementation plan.

Option C would best meet Goal 4b based on an evaluation of the criteria in the short, medium, and long terms. This option has the most potential for attracting a diverse

population of visitors to DEWA because the transportation system would serve the greatest number of key locations, including visitor centers, accommodations, rail stations, and gateway communities. By improving accessibility between these key locations and DEWA, Option C also has the greatest potential for reducing vehicular emissions and encouraging visitors to be physically active. Option A3 scored second highest based on these criteria.

Option A3 would best meet Goal 5 based on an evaluation of the criteria in the short term, while Option C would best meet this goal in the medium and long terms. Option A3 and Option C would establish the greatest number of transit agency and local business partnerships. Although Option A3 would involve more business partners in the short term, Option C would involve the greatest number of business partners in the long term. Both options have potential to support the greatest economic development because these options serve the most gateway communities.

Option A2 has the lowest overall cost based on the evaluation of capital costs and annual operating and maintenance costs. This option proposes a smaller transit system in which costs may be shared through a partnership with a transit authority. As a result, fewer bus purchases would be required, and fewer infrastructure improvements would be needed to support the system. In contrast, Option C, which best meets Goal 1, Goal 2, Goal 3, and Goal 4b in all terms as well as Goal 5 in the medium and long terms, has the highest overall cost. The high capital and annual operating and maintenance costs reflect the extensive transportation system proposed in this option.

8 Recommendation

The following five transportation options were compared based on the results of the evaluation and their relative costs:

- Option A1: Southern Bus Loop Operated in Partnership with MCTA
- Option A2: Northern Bus Loop Operated in Partnership with a new transit authority
- Option A3: Full Circulation Operated in Partnership with MCTA and a new transit authority
- Option B: Park-Operated or Concessioner-Operated System
- Option C: Partnership Transit System with DEWA-Operated Supplemental Routes

Each option is focused on expanded service in and around DEWA and is supported by an expanded trails network that connects with the transit service, and transportation demand management measures that encourage visitors to make fewer trips in a private vehicle. The five candidate transportation options were compared based on the evaluation of the five goals, capital costs, operating and maintenance costs, as well as the annual lifecycle costs.

While Option C best meets the goals of DEWA based on an evaluation of the goals and evaluation criteria, it has a substantially higher cost than the other options. DEWA may start with a phased approach that would implement the short-term phases of Option A1, evolving over time to Option A3 or Option C. Since MCTA is the only transportation agency currently providing transit service in the area and much of the activity in Delaware Water Gap NRA is currently focused on the Pennsylvania side, this approach would enable DEWA to implement the short-term option that is the most feasible and is likely to generate the highest ridership at a much lower cost. It leaves open the possibility of a substantial expansion in transit service if warranted by ridership demand and if funds become available. However, this recommendation should not preclude DEWA from exploring modifications to the transit routes (and other characteristics) described in this study.

In the short term, the existing MCTA Yellow Route would be extended to the north to the Pocono Environmental Education Center. The River Road Route would operate one-way, traveling in a counterclockwise loop from Kittatinny Point Visitor Center to Bushkill Meeting Center via River Road, then to Marshalls Creek via US 209, before returning to Kittatinny Point Visitor Center. Passengers would be picked-up and dropped-off both at formal bus stops and upon demand at locations without bus stops by flagging down the bus. Major bus stops would be located at visitor centers, transit centers, resorts, and other key locations. Basic bus stops would be located at trailheads, several commercial areas, and other locations. Critical to the success of this system and to achieving one of DEWA's primary goals is to create demand for recreational activities in areas beyond the Delaware River and then linking these areas to the transit system. To

this end, additional short term actions include completing the McDade Trail, upgrading the Bushkill Meeting Center to a visitor center, constructing several trailheads along the bus route, and providing trail extensions to link with the trailheads. An additional task is to initiate detailed planning and design of the Country Road Trail.

In subsequent phases, if DEWA chooses to pursue the long-term vision for Option A3, the Yellow Route would be extended north to Port Jervis, with service to Dingmans Falls, and Dingmans Ferry. This route would be operated by MCTA and Pike County.

If DEWA chooses to pursue the long-term vision for Option C, the Yellow Route would be extended north to Port Jervis, with service to Dingmans Falls, and Dingmans Ferry. This route would be operated by MCTA and Pike County.

Additional long term actions include improving trails with trailheads along the extended portion of the transit system, providing trail extensions to link with the trailheads in DEWA and with external trail networks (such as the recently dedicated Pinchot Greenway, which connects the McDade Trail with the Grey Towers National Historic Site via downtown Milford), and completing the Country Road Trail.

Figure 16 illustrates these short-term and long-term recommendations.

Table 1 shows the total capital costs for the recommended short-term and long-term options described above to operate 120-minute, 60-minute, and 30-minute headways. For example, the short-term transit service would require capital costs of \$8.7 million to maintain 120-minute headways but would rise to \$11.5 million to maintain 30-minute headways.

Table 24: Capital Costs (2007 \$)

Option	Headway		
	120-Minutes	60-Minutes	30-Minutes
Short Term (Option A1)	\$8,679,000	\$9,616,000	\$11,491,000
Long Term (Option A3)	\$17,130,000	\$19,005,000	\$22,130,000
Long Term (Option C)	\$18,348,000	\$19,910,000	\$23,035,000

Table 2 shows the annual operating costs for the recommended short-term and long-term options described above for 120-minute, 60-minute, and 30-minute headways. For example, the short-term transit service would cost \$1.5 million per year to operate 120-minute headways but would rise to \$4.0 million to operate 30-minute headways.

Table 25: Annual Operating Costs (2007 \$)

Option	Headway		
	120-Minutes	60-Minutes	30-Minutes
Short Term (Option A1)	\$1,473,000	\$2,402,000	\$3,936,000
Long Term (Option A3)	\$2,834,000	\$4,383,000	\$7,156,000
Long Term (Option C)	\$3,876,000	\$6,200,000	\$10,846,000

The next step in the planning process is to select a transportation option to pursue and to develop a detailed implementation plan that carefully evaluates the specific routes, bus stop locations, trailheads, and crossing locations proposed in this study, and to enter discussion with potential partnering agencies and businesses. In addition to MCTA and Pike County, the Water Gap Trolley may be an appropriate agency to operate transit service in DEWA.

Please note, while this study considered specific routings in each of the options, this should not preclude future planning studies from exploring modifications to the transit routes (and other characteristics) described in this report.

DELAWARE WATER GAP NATIONAL RECREATION AREA

Alternative Transportation Study



Summary

Transit service at DEWA could include a phased approach that would implement the short term phase of Option A1, which extends the **Yellow Route** and provides service on River Road. This would evolve over time into either the long term phase of Option A3 or Option C, which expand transit service to Port Jervis. Since Monroe County Transit Authority (MCTA) is currently the only transportation agency providing transit service in the area, this phased approach would enable DEWA managers to partner with an existing transit provider that operates in the vicinity. This would provide a focus on addressing active day use areas, while leaving open the possibility of future transit service expansion if warranted by ridership demand.

Short Term Recommendation

The short term recommendation envisions implementing Option A1, which extends the MCTA **Yellow Route** to the Pocono Environmental Education Center (PEEC) and initiates a **River Road Route**. The **River Road Route** would operate one-way, traveling in a counterclockwise loop from Kittatinny Point Visitor Center to Bushkill Meeting Center via River Road, then to Marshalls Creek via US 209, before returning to Kittatinny Point Visitor Center. Other short term actions would include completing the McDade Trail, upgrading the Bushkill Meeting Center to a Visitor Center, providing supporting infrastructure for the transit system, and initiating design of the Country Road Trail.

Long Term Recommendation

The long term recommendation envisions evolving implementing the long term phases of Option A3 or Option C. Option A3 and Option C both envision a **Milford Route** that extends from Port Jervis to the northern terminus of the **Yellow Route**. Option C introduces an optional transit extension along the New Jersey side of DEWA.

9 Climate Friendly Parks Program

The Climate Friendly Parks Program is a partnership between the Environmental Protection Agency and the National Park Service that provides national parks with technical assistance and resources to address climate change. It works with parks to develop short-term and long-term plans to reduce greenhouse gas (GHG) and criteria air pollutant (CAP) emissions². DEWA is a member of the Climate Friendly Parks Program and as part of the Climate Friendly Parks Workshop in November, 2005, prepared an Action Plan to reduce these emissions. According to this Action Plan, in 2004 DEWA's total GHG emissions were 5,185 metric tons of carbon equivalent (MTCE).

Approximately 85 percent of these emissions were from mobile combustion, including highway vehicles, non-road equipment, and watercraft. The single largest CAP emission is carbon monoxide (CO), though nitrogen oxides (NOx) and volatile organic compounds (VOC) are also major contributors. Nearly all (over 97%) of these CAP emissions are generated by visitor vehicles. Therefore, one of the four strategies in the Action Plan to address GHG and CAP emissions in DEWA's climate action plan is to "Reduce Fuel Use and GHG Emissions from Transportation Sources." This will be addressed by targeting fuel use and emissions by three user groups: park staff, visitors (including recreational visitors, commuters, and commercial vehicles), and partner organizations. Since visitors emit the vast majority of pollutants, the recommendations in this report have the potential to reduce overall emissions generated in the park.

However, since the transit system recommended in this report are largely to recreational visitors, the ability to reduce vehicle emissions by commuters and commercial vehicles is limited. Once implemented, ridership from an operating bus system and use of regional multi-use trails will be monitored to gauge potential GHG reductions.

² CAPs are associated with air quality and public health problems. They include sulfur dioxide (SO₂), nitrogen oxides (NO_x), volatile organic compounds (VOC), particulate matter (PM₁₀ and PM_{2.5}), and carbon monoxide (CO).

10 Stakeholder Participation

10.1 Introduction

Stakeholder and public involvement was a critical component of the study because it identifies opportunities for partnerships and encourages the exchange of ideas for alternative transportation systems that would be both feasible and have the support of local communities. Stakeholder and public involvement is an overall goal of DEWA, which has a stated mission to work cooperatively with surrounding communities and the public to achieve the conservation goals of the Delaware River Region.

10.2 Overview

At the project kickoff meeting DEWA expressed a desire to reach out to a wide group of stakeholders who would represent potential partners in the implementation of an alternative transportation system. The following stakeholders were identified:

- Delaware River Joint Toll Bridge Commission;
- Delaware Township;
- Dingmans Campground and River Trips;
- Fernwood Resort (Bushkill Group);
- Middle Smithfield Township;
- Monroe County Transit Authority;
- New Jersey Transit Authority;
- New Jersey Transportation Planning Authority;
- New Jersey Division of Parks and Forestry (Worthington State Forest);
- New Jersey Department of Environmental protection – Division of Parks and Forestry – State Parks Service;
- New Jersey Department of Transportation;
- Parks and Recreation for Northampton County;
- PennDOT, District 4-0;
- Peter's Valley Craft Center;
- Pike County Office of Community Planning;
- Pike County Roads Task Force;
- Lehman Township;
- Pocono Mountains Visitor's Bureau;
- Shawnee General Store;
- Shawnee Resort & Golf Course;
- Smithfield Township;
- Sussex County Planning Department;
- TransOptions, Northwest New Jersey; and
- Warren County Transportation Advisory Council.

Two stakeholder interviews were conducted on July 17, 2008 with the Monroe County Transit Authority and with the Pike County Office of Community Development at their offices. These were followed with 22 additional face-to-face interviews at the Bushkill Meeting Center and the Kittatinny Point Visitor Center on the afternoon of August 25, 2008, and the morning of August 26, 2008. Interview tables were set up in the meeting center and hour long face-to-face stakeholder interviews were conducted using the interview packages that were prepared. A number of telephone interviews were also held in September with stakeholders who were unable to attend the August 2008 face-to-face stakeholder interviews.

On September 25, 2008 a stakeholder meeting was held between 1:30 pm and 3:00 pm. The purpose of the meeting was to share the interview findings with stakeholders. A public open house was then held between 4:00 pm and 8:00 pm, where additional information and insights on alternative transportation options were gathered.

In addition, a second series of meetings were conducted on December 9, 2008, also conducted in the Bushkill Meeting Center, PA. These meetings were to update the stakeholders and general public on the progress of the study, present findings, and again gain input on the ideas and project themes presented.

Interview, stakeholder, and public meeting outcomes are presented in Appendix C.