

Fort Pickens/Gateway Community Alternative Transportation Study

Gulf Islands National Seashore
Florida District, Fort Pickens Area



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Contents

Chapter 1: Introduction

1.1 Fort Pickens Area	1-1
1.2 Previous Studies	1-3
1.3 Alternative Transportation Study and Goals.....	1-4
1.4 Report Structure	1-4

Chapter 2: Gulf Islands National Seashore Overview

2.1 Introduction	2-1
2.2 Resource Condition Assessment Related to Transportation.....	2-4
2.3 Visitation.....	2-6
2.4 Regional Trends	2-9

Chapter 3: Current Transportation Conditions

3.1 Transportation Modes to Fort Pickens	3-1
3.2 Existing Contracts, Agreements, and Regulatory Requirements .	3-7
3.3 Activity Nodes.....	3-9

Chapter 4: Stakeholder Partnership Opportunities

4.1 Introduction	4-1
4.2 Partnership Opportunities by Stakeholder.....	4-2
4.3 Partnership Opportunities by Mode	4-5

Chapter 5: State of the Practice

5.1 Introduction	5-1
5.2 Water-Based Alternative Transportation Systems	5-2
5.3 Shuttle/Bus Alternative Transportation Systems	5-11
5.4 Alternative Fuels Overview	5-20
5.5 Conclusions	5-21

Chapter 6: Service Options

6.1 Ferry Service	6-1
6.2 Ferry Service Characteristics	6-2
6.3 Commercial Use Authorization Services.....	6-26
6.4 Improved Bicycle Facilities.....	6-27
6.5 ECAT Bus Service	6-30
6.6 Seasonal Trolley Service	6-35
6.7 Internal Circulation Service	6-37
6.8 Road Closures - Impacts/Options	6-41

Chapter 7: Conclusions and Next Steps

7.1 Ferry Service to Fort Pickens.....	7-1
7.2 Commercial Use Authorization Services.....	7-3
7.3 Seasonal Trolley Service to Fort Pickens.....	7-3
7.4 Intra-park Circulation	7-4
7.5 ECAT Service to Fort Pickens	7-5

Figures

Figure No.	Description	Page
1.1	GIS Study Area: Fort Pickens Area	1-2
2.1	GIS Recreational Visitors, 1973-2007	2-1
2.2	Fort Pickens Annual Vehicle Visitation	2-7
2.3	Florida District Modal Split 2003	2-7
2.4	Fort Pickens Monthly Visitations by Automobile 2003	2-8
3.1	Fort Pickens Annual Vehicle Count	3-2
3.2	Pensacola Region Population Density	3-9
3.3	Pensacola Region Population and Visitor Density	3-10
3.4	Pensacola Region Activity Nodes	3-11
6.1	Two Boat Ferry Service Routes	6-3
6.2	One Boat Ferry Service Routes	6-7
6.3	Potential Dock Locations at Fort Pickens	6-20
6.4	Dock Concepts for Fort Pickens	6-24
6.5	Proposed Bicycle Rack Locations	6-28
6.6	ECAT Service within Fort Pickens Area	6-33
6.7	Seasonal Trolley Service into Fort Pickens Area	6-35
6.8	Tram Service in Fort Pickens Area	6-40

Tables

Table No.	Description	Page
2.1	Endangered and Threatened Species in or near the Fort Pickens Area.....	2-5
3.1	Parking Capacity	3-3
5.1	National Park System Ferry Service.....	5-10
5.2	National Park Shuttle/Bus Service	5-19
3.4	Pensacola Region Activity Nodes.....	3-11
6.1	Ferry Boat Travel Time Between Destinations.....	6-3
6.2	Example Schedule: Two-Boat Service	6-4
6.3	Cost Estimate: Two-Boat Ferry Service (15-Week Peak Season)	6-5
6.4	Ridership Required for Breakeven Operation Two-Boat Ferry Service (15-Week Peak Season)	6-6
6.5	Example Schedule: One-Boat Service	6-7
6.6	Cost Estimate: One-Boat Ferry Service (15-Week Peak Season)	6-8
6.7	Ridership Required for Breakeven Operation One-Boat Ferry Service (15-Week Peak Season)	6-9
6.8	Updated Bourne Study Ridership Estimates: Ferry Service in Pensacola Bay.....	6-10
6.9	Ridership Projections between Fort Pickens, Downtown Pensacola, and Quietwater (Daytime).....	6-12
6.10	Ridership Projections between Fort Pickens and Quietwater	6-13
6.11	Ridership Projections between Fort Pickens and Downtown Pensacola	6-14
6.12	Ridership Projections between Downtown Pensacola and Quietwater (Daytime).....	6-15
6.13	Comparison of Updated Bourne Study Ridership Estimates and Ridership Required for Breakeven Operations	6-16
6.14	Class C Cost Estimate for Fort Pickens Pier.....	6-25
6.15	Example Schedule: Year-Round ECAT Service to Pensacola Beach	6-31
6.16	Example Schedule: ECAT Service into Fort Pickens	6-32
6.17	Example Schedule: Seasonal Trolley Service.....	6-36

Chapter 1: Introduction

Established by Congress in 1971, Gulf Islands National Seashore (GUIS) was created to preserve areas possessing outstanding natural, historic, and recreational resources for public use and enjoyment along a 160-mile stretch of the northern coast of the Gulf of Mexico. The wide variety of natural and cultural resources shaped by the dynamic coastal processes and by the unique historic role of coastal defense of barrier island systems has made the Seashore one of the most popular destinations in the national park system.

Unfortunately, a series of hurricanes in 2004 and 2005 significantly damaged roads and other Seashore facilities. While much of the Seashore has recovered, the Fort Pickens Area on Santa Rosa Island in Florida has yet to fully reopen to the public. GUIS is in the process of replacing the sole road leading to this recreational, cultural, and natural-resource-rich site, but this disruption in Seashore operations has underscored the vulnerability of the Fort Pickens Area transportation system.

A strategy for supplementing the road with alternative transportation systems is essential to providing consistent public access to the Fort Pickens Area in the future. Additionally, increasing transportation options to the Fort Pickens Area has the potential to reduce congestion and parking demand in the Area while maintaining or increasing visitation. The implementation of alternative transportation systems also has the potential to protect natural resources and reduce impacts on the environment associated with private vehicle transportation.

1.1 Fort Pickens Area

The Fort Pickens Area covers over 1,700 acres among the westernmost seven miles of Santa Rosa Island, a long, narrow barrier island (see Figure 1.1). The Fort Pickens Area takes its name from the United States military fort that helped protect Pensacola Bay from 1834 to 1947 and represents one of the greatest concentrations of coastal defense fortifications in the country. Over its history, the fort and surrounding area were updated with evolving military technology. The remnants of this military facility provide visitors with a unique educational experience demonstrating evolving military technology and touching on many important historical events, including the Civil War, Geronimo's imprisonment, and World War II.

In addition to the exciting cultural artifacts, the Fort Pickens Area also contains diverse marine and land ecosystems. The Fort Pickens Area is habitat for federal and state endangered and threatened species and species of special concern, including four species of sea turtles and various shorebirds, and is designated critical habitat for gulf sturgeon.

While many visitors come to the Fort Pickens Area to experience the historic or natural resources, many also come for the excellent recreational opportunities. Fishing, beaches, bicycling, hiking, surfing, and camping are all accommodated in the Fort Pickens Area. The two campgrounds include 200 campsites with paved parking pads, water, and electricity, making it one of the few locations in the national park system that can accommodate utility hook-ups for visitors with recreational vehicles.

Figure 1.1¹
 GIS Study Area: Fort Pickens Area



The diverse attractions in the Fort Pickens Area and its proximity to multiple population centers — Gulf Breeze, Navarre, Pensacola Beach, the City of Pensacola, and the Pensacola Naval Air Station — help make the Fort Pickens Area a major local and regional tourist attraction. When fully operational the Fort Pickens Area hosts over 700,000 visitors per year and generates more than \$1.3 million in fee revenue. However, since hurricanes in 2004 and 2005 damaged Fort Pickens Road access has been limited to hikers, bikers, private boats, and a few small commercial providers, drastically reducing visitation.

1.1.1 Fort Pickens Area Transportation Issues

The popularity of the Fort Pickens Area is not without consequences. Since the creation of Gulf Islands National Seashore, the primary means of accessing the Fort Pickens Area has been by private automobile along a single road. During peak periods of visitation, this road can become congested and the parking areas reach capacity. Additionally, the road is vulnerable to storms; it was significantly damaged during a hurricane in 2004 and has been out of service ever since.

Congestion

Private automobiles have always been the dominant mode of transportation to the Fort Pickens Area. Although car transportation is how most visitors access this area of the Seashore, the road facilities are fairly limited due to a series of constraints. The geography of Santa Rosa Island and the surrounding region requires a system of bridges to connect The Fort Pickens Area to the mainland. Once on the island, a single road, Fort Pickens Road, leads to and provides circulation within the Fort Pickens Area. To the east a single road (J. Earle Bowden Way) leads to the Navarre Beach Areas, which is also part of GUIs. These traffic flow limitations led to frequent bottlenecks during peak visitation periods.

While Fort Pickens Road was open, the vast majority of all visitors arrived by automobile. The existing infrastructure had trouble handling this level of traffic, which led to congestion within the park and the surrounding communities. The Fort Pickens Area also frequently exceeded its parking capacity, contributing to congestion and potential impacts on park resources. Traffic flow was further disrupted by recreational vehicles accessing the campground in the Fort Pickens Area.

Road Closures

The need for an alternative means to access Fort Pickens is all the more apparent since Hurricane Ivan wiped out large segments of the road. Flooding, winds, and erosion severely damaged Fort Pickens Road in 2004 and then again in 2005, eliminating vehicle access. Currently, the only means of access to this seven-mile long stretch of the Seashore is by foot, bicycle, private boat, or limited Commercial Use Authorization permit holders. This severely restricts access to the park for those with disabilities, the elderly, and the very young. Local and national visitor frustration is at high levels due to the severe restrictions on access for recreational uses.



Fort Pickens Road has been closed since it was damaged by storms in 2004.

1.2 Previous Studies

The transportation issues identified above have led to several planning and study efforts over the years. Since the establishment of the Seashore, various groups have explored or proposed ferry service for Pensacola Bay. Other general planning efforts for the Seashore also affect the transportation needs addressed through this Alternative Transportation Study. Three other planning and study efforts particularly relevant to this current study are summarized below.

1.2.1 Gulf Islands National Seashore General Management Plan

Gulf Islands National Seashore is currently updating its General Management Plan (GMP). The GMP is the park-wide plan for meeting the management objectives of the Seashore which provides a long-range strategy for resources management, visitor use, and development at a level of detail that will facilitate implementation of the proposed actions. The previous GMP adopted in 1978 discussed ferry connections and shuttles at length. The updated GMP addresses four action alternatives for GUIIS, all of which include a ferry and shuttle service. This Alternative Transportation Study is intended to inform and tier to the concurrent GMP update effort.

1.2.2 Pensacola Bay Area Transportation System Study: Market Feasibility Study and Plan for Implementation

In 2000, the Pensacola Metropolitan Planning Organization (MPO) published a study on the feasibility of a passenger ferry service within Pensacola Bay conducted by Bourne Consulting Engineering. The purpose of the study was to determine if there is sufficient ridership to offset the cost of providing waterborne transportation within Pensacola Bay. The impetus for the study was the geographic layout of destinations located around Pensacola Bay, where distances between the points were relatively short by water, but required relatively long drive times by land, and the growing congestion on the local roads. The study focused on the communities of Pensacola, Gulf Breeze, and Pensacola Beach, as well as the Naval Air Station (NAS) and the Fort Pickens Area. The study concluded that a ferry service would be feasible and recommended a ferry operation during the high season with two 149-passenger catamarans operating at 25 knots between four stops: Pensacola, NAS, Pensacola Beach, and Fort Pickens.

1.2.3 GUIS Environmental Assessment: Restore Visitor Access to Fort Pickens Area, Santa Rosa Island

An environmental assessment (EA) was prepared in 2006 addressing the restoration of Fort Pickens Road in the Fort Pickens Area. Because the road restoration affects much of the same area considered in this study, the discussions concerning park resources found in the Fort Pickens Road EA are applicable to this study.

1.3 Alternative Transportation Study and Goals

The Fort Pickens Area/Gateway Community Alternative Transportation Study will determine the feasibility of alternative modes of transportation in the Area, centering on variations and combinations of water-based transportation and land-based shuttle systems. The alternative transportation systems identified in this study are intended to:

- provide public access to the Fort Pickens Area during times of road closure
- reduce motor vehicle use
- provide a more environmentally sustainable means of access along this section of the Seashore
- reduce impacts on threatened and endangered species
- be more consistent with the NPS/DOI management policy for barrier islands
- enhance visitor safety
- reduce emissions in the Seashore and air shed
- interface and support other alternative transportation systems and activity centers in the area

1.4 Report Structure

This planning study assesses the current and future transportation needs of the Fort Pickens Area and identifies potential alternative transportation systems capable of meeting those needs. This study is organized as follows:

- **Chapter 1 – Introduction:** This chapter introduces the transportation challenges facing the Fort Pickens Area, reviews previous relevant studies, identifies study goals, and presents an outline of the report.
- **Chapter 2 – Gulf Islands National Seashore Overview:** This chapter details both existing and pre-hurricane conditions in GUIS generally and the Fort Pickens Area specifically.
- **Chapter 3 – Current Transportation Conditions:** This chapter identifies existing and pre-hurricane transportation services and facilities in the Fort Pickens Area and Pensacola region.
- **Chapter 4 – Stakeholder Partnership Opportunities:** This chapter identifies stakeholders in a regional alternative transportation system and potential partnership opportunities by transportation mode.
- **Chapter 5 – State of the Practice:** This chapter provides examples of alternative transportation systems in national park system.
- **Chapter 6 –Service Options:** This chapter explores the financial and operational feasibility of various land and water alternative transportation options for the Seashore.
- **Chapter 7 – Conclusions and Next Steps:** This chapter discusses the findings of viable alternative transportation service options and summarizes key next steps towards their implementation.

Chapter 2: Gulf Islands National Seashore Overview

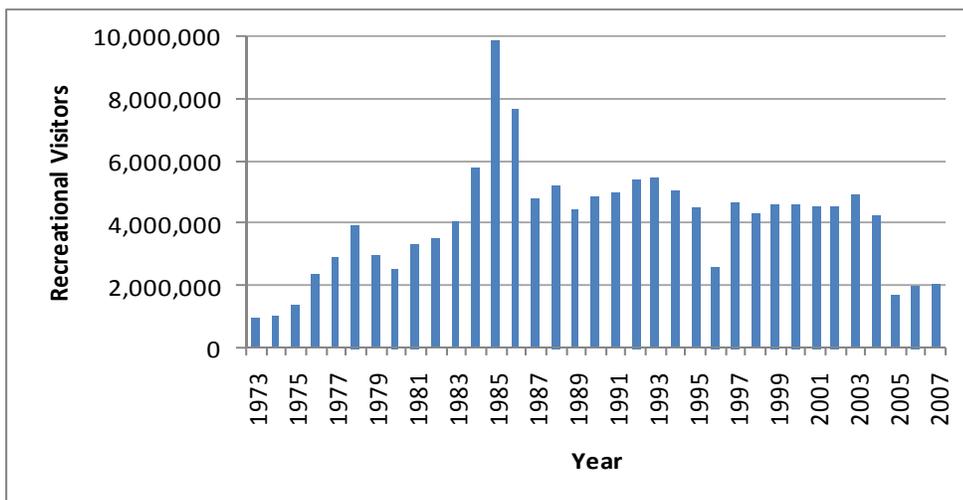
Gulf Islands National Seashore has historically been one of the most popular destinations in the national park system, regularly attracting four to five million visitors per year. A series of hurricanes and storms in 2004 and 2005 dramatically impacted the Seashore. While much of the Seashore has recovered and is operating as normal, access to the Fort Pickens Area remains limited. This chapter provides an overview of the historic conditions at the Seashore and current state of operations. It is the intention of GUIS to return to the pre-hurricane conditions as quickly as possible.

2.1 Introduction

The establishment of the Gulf Islands National Seashore (GUIS) in 1971 provided wide-scale public access to recreation and natural resources spanning two states. Located in the northeastern portion of the Gulf of Mexico, the Seashore comprises mainland tracts and a widely spaced chain of barrier islands extending nearly 160 miles from Cat Island in Mississippi to Okaloosa, Florida.

Annual visitation rose steadily in the early years of the park and then stabilized in the range of four to five million recreational visitors per year. Steady visitation since the late 1980s reinforces how valuable a resource the park is for local, regional, and national populations.

Figure 2.1
GUIS Recreational Visitors, 1973-2007



Source: NPS Public Use Statistics Office

Note: The anomalous spike in visitation recorded for 1985 is the result of over-inclusive counting of vehicles passing through park areas, which was rectified in subsequent years.

The precipitous decline in visitation to the park in 2005 is the direct result of transportation infrastructure damage sustained during a series of hurricanes and major storms starting in 2004. While much of the Seashore has recovered and is operating as normal, access to Fort Pickens—one of the most popular attractions in the Seashore—remains limited. During the storms of 2004 and 2005, the sole road to Fort Pickens was breached, resulting in the destruction of significant segments of the road. Although the road has been out of commission since 2004, a dedicated trickle of visitors continues to travel the seven miles to Fort Pickens by other modes.

As Fort Pickens becomes fully operational again with the restoration of Fort Pickens Road, many of the current modes of transportation to the fort will remain available, providing visitors with a range of choices and experiences within the area. Since this area of the Seashore is not operating under normal conditions due to the closure of the road, it is important to review not only existing conditions, but also the historic operations that the Seashore is working toward restoring. It is also an important reminder that uncontrollable weather patterns are a reality facing the park and can alter existing conditions in unpredictable ways. In the Fort Pickens Area, Santa Rosa Island now regularly experiences temporary over-washes of water even during minor storm events far away in the Gulf of Mexico.

2.1.1 Fort Pickens Area

The Fort Pickens Area covers the westernmost seven miles of Santa Rosa Island. Historically, private automobile has been the predominate mode of transportation to Fort Pickens. With the loss of Fort Pickens Road, access is restricted primarily to hiking and personal or small commercial boats. In the summer of 2008 a small over-sand ATV shuttle service began bringing visitors to Fort Pickens. The desire for visitors to keep traveling out to this area of the Seashore demonstrates that there are many attractions still available today. Once full access to the Fort Pickens Area is restored, GUIIS intends to resume the many educational and recreational programs and activities that visitors have come to appreciate.

Natural Resources

The Fort Pickens Area contains diverse marine and land ecosystems. The Area is habitat for federal and state endangered and threatened species and species of special concern, including four species of sea turtles, various shorebirds, and gulf sturgeon. The northern waters of the Fort Pickens Area also include 422 acres of seagrass habitat. Under the current conditions, some visitors still travel into the Fort Pickens Area—via boat, over-sand shuttle, or hiking—to view wildlife and enjoy nature. Prior to the storms, GUIIS ran multiple interpretive programs in the Fort Pickens Area focused on the coastal ecosystems, geology, and natural resource protection efforts.

Recreation

The Fort Pickens Area provides many recreational opportunities, including fishing, beaches, bicycling, hiking, surfing and camping. Visiting the white sand beaches was one of the most popular attractions in the Fort Pickens Area. When the road was open, GUIIS staffed Langdon Beach with lifeguards. The campgrounds were also a popular draw. The campgrounds include 200 campsites with paved parking pads water and electricity, making it a popular destination for visitors with recreational vehicles. Although RVs cannot currently travel into the Fort Pickens Area a small number of tent campers still take advantage of the campsites, which now have fewer amenities. While many of the recreational opportunities are currently scaled back, the fishing pier remains a popular destination. Now most of the fishers arrive in the Fort Pickens Area by private boat.



Four species of threatened or endangered sea turtles nest in the Fort Pickens Area

Cultural Resources

The Fort Pickens Area preserves one of the greatest concentrations of coastal defense fortifications in the country, with military installations spanning 151 years of continuous military use. Fort Pickens, a brick masonry fort built in 1834, is the largest of four forts built to defend Pensacola and the nearby navy yards. The fort and surrounding area were updated with evolving military technology through the 1940s, providing a timeline of coastal defense fortifications to today's visitors. The entire western three miles of the Fort Pickens Area is included on the National Register of Historic Places. Prior to closure of Fort Pickens Road, GUIIS ran many programs and tours focused on the history of the fort.

Interpretive Programs

Prior to the 2004-2005 storms seasons, GUIIS staff conducted many ranger-guided programs in the Fort Pickens Area. At the east end of the park, the Three Ponds Walk explored the wetlands to the north of the road. Although Battery Langdon was closed to the public, the beach served as a meeting point for Full Moon Walks and for snorkeling programs on calm days.

On either side of Campground A, the Dune Nature Trail and the Blackbird Marsh Trail were used for the "Cross Island Walk", which was often offered to school groups through the Environmental Education program. To the immediate east of the Battery Worth pavilion, nature films and the popular astronomy program were presented at the amphitheater. To the south of Battery Worth, the interior of Battery Cooper contained ranger-tended displays of period furnishing, ammunition storage, and a natural history room.

Near the fishing pier, Building Five was the center of interpretive activity in the Fort Pickens Area. The building contained a museum, an aquariate displaying aquatic life gathered daily, and an auditorium for indoor seated programs. The building served as a starting point for the Sunset Walk on the seawall, the Evening Sea Life program, and others.

The Fort Pickens Visitor Center and Bookstore was located in the fort itself. Fort Tours, Campfire Programs, Candlelight Tours and history tours conducted in conjunction with the Environmental Education program also took place at Fort Pickens.



Fort Pickens is located at the tip of Santa Rosa Island, overlooking the entrance to Pensacola Bay. It is the site of the largest land battle in Florida during the Civil War.

2.2 Resource Condition Assessment Related to Transportation¹

Gulf Islands National Seashore serves many purposes: it provides recreational opportunities, a cultural experience, and protection of valuable natural resources. The successful operation of the Seashore requires a balance among these diverse elements of GUI's mission. In the Fort Pickens Area, the ability of visitors to enjoy the recreational facilities and cultural sites requires transportation into and around this area of the Seashore. Both the location and use of transportation facilities present potential impacts for the natural resources located on the island. Understanding the variety and location of natural resources currently on the island will help inform decisions about the most appropriate future transportation for the Fort Pickens Area.

The Fort Pickens Area covers approximately seven miles (1740 acres) of the western tip of Santa Rosa Island, one of several barrier islands and mainland areas constituting Gulf Islands National Seashore in the northeastern portion of the Gulf of Mexico. Santa Rosa Island is a long, narrow barrier island approximately 50 miles long and a quarter to a half mile wide separating the Gulf of Mexico from Santa Rosa Sound and Pensacola Bay.

Coastal barrier islands, such as those located in Gulf Islands National Seashore, are unique land forms that provide many vital functions. They serve as the mainland's first line of defense against the impacts of severe coastal storms and erosion. Additionally, coastal barrier islands protect the aquatic habitats between the barrier island and the mainland. Together with the adjacent wetland, marsh, estuarine, and near shore water habitats, coastal barrier islands support a tremendous variety of organisms. Millions of fish, shellfish, birds and other wildlife depend on barrier islands and their associated wetlands for vital feeding, spawning, nesting, nursery, and resting habitat.

As the frontline defense against severe coastal storms and erosion, coastal barrier islands are susceptible to major changes altering their physical form and vegetation. During the period 2004-2005, in Hurricanes Ivan, Dennis, and Katrina, sand was removed from the beach-dune system and deposited as a broad overwash fan across much of the island burying beach vegetation. The result is a flat bare expanse of sand in many areas. Similar to the natural changes taking place on Santa Rosa Island, any changes to the transportation system in the Fort Pickens Area have the potential to disrupt these resources, requiring close consideration of the effects any project will have on all aspects of the park.

Below, some of the key natural resources located in the Fort Pickens Area potentially affected by changes to the transportation system are identified. For a more complete description of the resource condition assessment related to transportation see *Environmental Assessment: Restore Visitor Access to Fort Pickens, Santa Rosa Island*, October 31, 2006.

¹ *Environmental Assessment: Restore Visitor Access to Fort Pickens, Santa Rosa Island*, 2006.

2.2.1 Threatened, Endangered, or Special Concern Species

Santa Rosa Island serves important geological functions and fosters diverse vegetation that provides habitat for a wide variety of fish and wildlife. Several species of fish, wildlife, and plants found in the Fort Pickens Area are listed as threatened, endangered, or special concern species by the U.S. Fish and Wildlife Service or the State of Florida. Table 2.1 sets forth wildlife species that may occur in or near the Fort Pickens Area that are listed by the U.S. Fish and Wildlife Service or the state of Florida as threatened (T), endangered (E), or as species of special concern (SSC):

Table 2.1
Endangered and Threatened Species in or near the Fort Pickens Area

Species	Federal in FL	State of FL
Wildlife		
Santa Rosa Beach Mouse	-	SSC
Sea Turtles		
Atlantic loggerhead sea turtle	T	
Green sea turtle	E	
Kemp's Ridley sea turtle	E	
Leatherback sea turtle	E	
Fish		
Gulf sturgeon		SSC
Birds		
Saltmarsh topminnow		SSC
Piping plover	T	T
Southeastern snowy plover		T
Least tern		T
Black skimmer		SSC
Reddish egret		SSC
Little blue heron		SSC
Snowy Egret		SSC
Brown pelican		SSC
Southeastern American kestrel		SSC
Plants		
Cruise's golden aster		SSC
Large-leaved jointweed		SSC
Coastal plain honeycomb head		SSC

Vehicle traffic along Fort Pickens road is the primary point of conflict between the transportation system and various forms of wildlife. Both sea turtles and birds nest near Fort Pickens Road resulting in car-related deaths of mature and newly hatched animals each year. Foot traffic from visitors can disturb nesting species and destroy fragile dune vegetation. Transportation improvements that can reduce conflicts of wildlife with vehicle and foot traffic within the area have the potential to benefit these key species.

2.3 Visitation

In the years leading up to the damage sustained in the storms of 2004 and 2005, the entire Gulf Islands National Seashore consistently attracted four to five million annual visitors. In 2003, the last full year of regular operation for the Seashore, visitation had climbed to 4.9 million annual visitors, an eight percent increase in visitation since 1999, the same period when annual visitation to the entire national park system decreased by seven percent.

After the damage to the Seashore in 2004 and 2005, total visitation to the park precipitously declined. In 2007, with the Santa Rosa and Fort Pickens area still closed to vehicular traffic, the entire park attracted just over two million annual visitors, less than half the visitation recorded when the Seashore was fully operational. The effect of the closure of Fort Pickens Road on the total visitation to the Seashore speaks to the popularity of driving to this specific area.

2.3.1 Visitation by Automobile

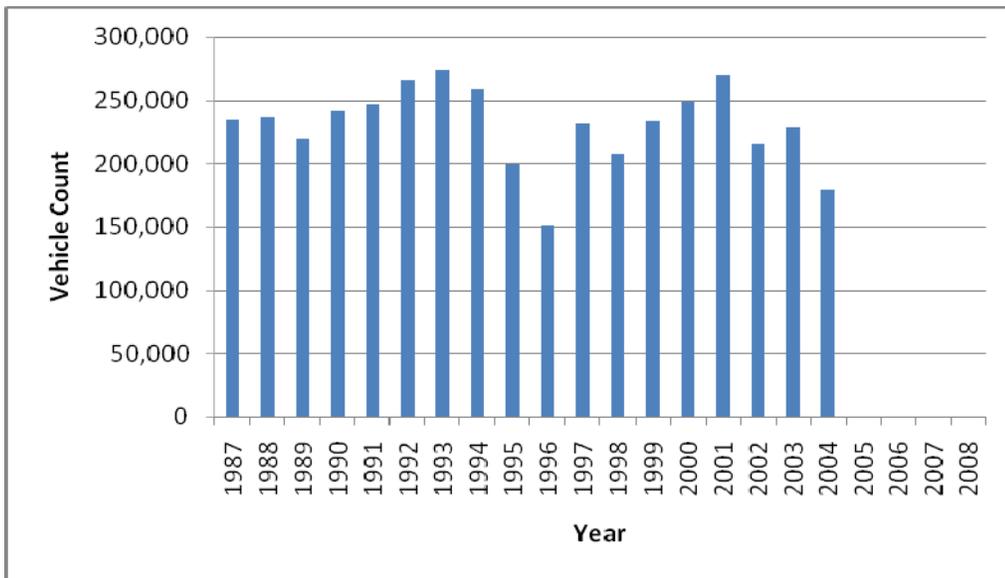
The vast majority of visitors arriving at the Fort Pickens Area traveled via personal automobiles. Due to the dominance of this mode of transportation in accessing Fort Pickens, the Seashore's visitation counts for this area are based exclusively on vehicle counts conducted at the entrance station on Fort Pickens Road. The number of vehicles arriving at Fort Pickens has fluctuated over the years as is evident in Figure 2.2. In 2003, approximately 230,000 vehicles (carrying approximately 670,000 visitors) were recorded at Fort Pickens, a six percent increase over 2002, but still below the recent peak of 270,000 vehicles in 2001. After large segments of the road were washed out in 2004, Fort Pickens has been inaccessible by car and no visitation counts have been conducted.

2.3.2 Visitation by Other Transportation Modes

The Seashore does not track visitation by transportation mode other than personal automobile. Since the road closed in 2004, walking, biking, or taking a boat are the only ways to access Fort Pickens. Historically, the Seashore recorded bus and boat visitation for the entire park, but did not disaggregate the visitation data by areas within the Seashore. No visitation counts are currently conducted at the Fort Pickens Area, although a small number of visitors continue to travel there by these alternative modes.

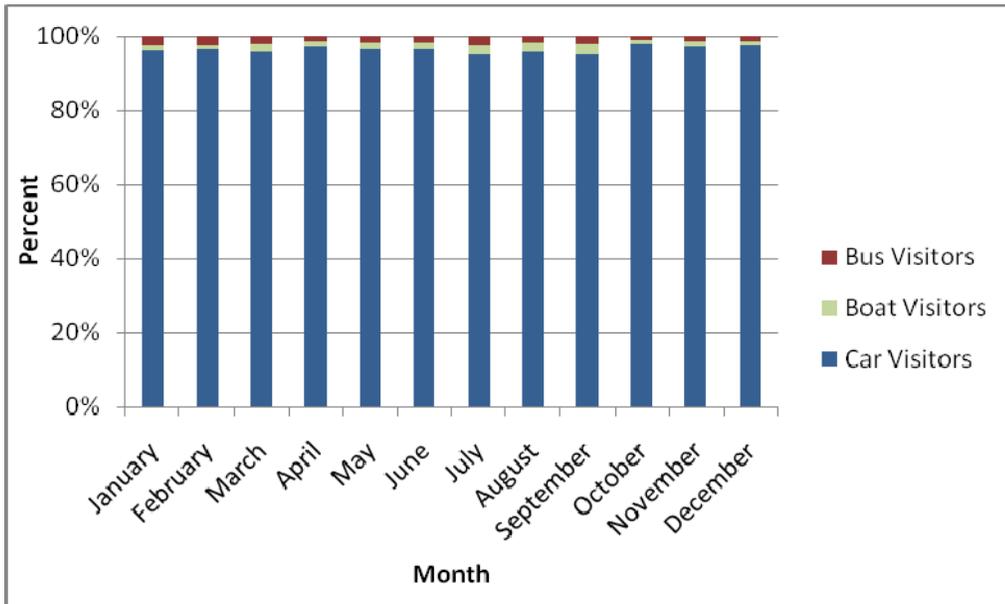
Examining the modal split for visitors arriving in the Florida District—all areas of the Seashore located in Florida—reveals that personal automobile visitation dominated all other modes. In 2003, 95 to 98 percent of visitors traveled by automobile depending on the month (see Figure 2.3), excluding pedestrians and cyclists who were not counted. The disproportionate number of visitors arriving by car in the Florida District mirrors the anecdotal evidence provided by park staff for the Fort Pickens Area.

Figure 2.2
Fort Pickens Annual Vehicle Visitation



Source: NPS Public Use Statistics Office

Figure 2.3
Florida District Modal Split 2003



Source: NPS Public Use Statistics Office

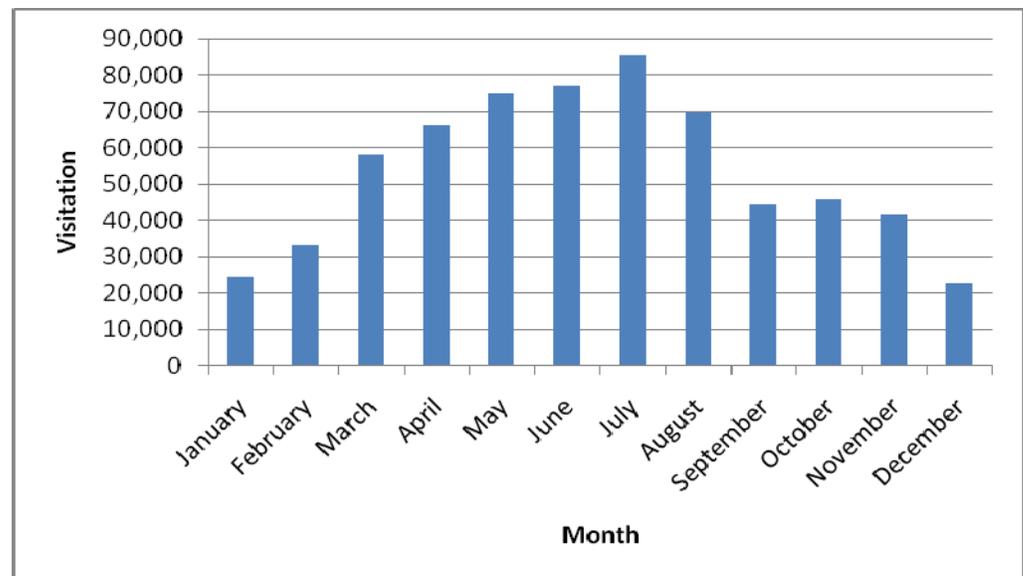
2.3.3 Seasonal Visitation

Within any given year visitation varies from month to month. The popularity of the Fort Pickens Area as a summer beach and camping destination is reflected in the high rates of visitation during the peak summer months: May through August (see Figure 2.4).

During these months, the Seashore reflects a change in the visitation trend by using a higher person-per-vehicle factor to calculate overall visitation in the Florida District (3.1 versus 2.7 during all other times of the year). During the summer months, the average number of visitors per car rises, likely a result of families on vacation and weekend trips compared to the many retirees who visit the park in the off season.

While the total visitation to the Fort Pickens Area and the rest of the Seashore fluctuates throughout the year, modal split remains relatively consistent. As shown in Figure 2.3, visitors arriving by car among all areas within the Seashore ranges from 95 to 98 percent. There is a slight increase in visitors arriving by boat or bus in July, but these alternative modes of transportation do not see a significant swing in use based on the season.

Figure 2.4
Fort Pickens Monthly Visitation by Automobile 2003



Source: NPS Public Use Statistics Office

2.4 Regional Trends

Since the Fort Pickens Area has been largely closed to the public since 2004, regional trends provide important insights for park visitation expectations upon resuming operations.

2.4.1 Regional Population

Between 2003 and 2007, the regional population — comprising Escambia and Santa Rosa counties — increased by 4.6 percent to approximately 450,000 people. During this same period, the City of Pensacola lost approximately 3 percent of its population. The ability of the region to attract a net increase in residents while its major urban area experiences a population loss demonstrates the strength of growth focused outside of the city.

2.4.2 Pensacola Beach Visitation

Pensacola Beach found itself facing obstacles similar to GUIS after suffering severe damage from the 2004 and 2005 storms. While Pensacola Beach is still in the process of recovering—it has approximately 800 hotel rooms on line compared to 1,200 before the storms—it has continued to attract large numbers of visitors. The University of West Florida’s Haas Center tracks monthly bed taxes as an indicator of the number of overnight tourists who visit Northwest Florida. For Escambia County—which reflects tourism on Pensacola Beach—the amount of bed taxes collected during July, August, and September of 2007 showed a 22 percent increase over the same period in 2006.² Even accounting for inflation, this represents a 16 percent increase. This increase in bed taxes follows the overall trend in northwest Florida, which has shown steady growth since 2003 when GUIS was last in full operation.

Visitation to Pensacola Beach is anticipated to continue on the upward trend represented in the increased bed taxes collected. As part of the Pensacola Beach’s recovery from the storms, new hotels are replacing older structures. The Santa Rosa Island Authority expects these higher-capacity hotels to increase the total number of hotel rooms in Pensacola Beach to between 1,500 and 1,600. Once this development is complete, the number of hotel rooms in the area adjacent to Fort Pickens will have increased by one third since the park was last in operation in 2004. Increasing visitors to Pensacola Beach stands to increase visitors to Fort Pickens, which has always attracted vacationers to its beaches and cultural sites.

² University of West Florida, Haas Center, “Northwest Florida Bed Taxes Continue to Climb, March 7, 2008, at <http://haas.uwf.edu/article.asp?articleID=283>.

2.4.3 GUIS Florida District Visitation³

While access to the Fort Pickens and Santa Rosa Areas has been limited since 2004, all other Areas of the GUIS Florida District have resumed full operation. These Areas provide some indication of how visitation to the park has changed since 2003 and may affect visitation to Fort Pickens once it fully reopens. Total visitation to these areas is down since 2003, likely due to the reduction of visitors drawn to the District for its two most popular areas: Fort Pickens and Santa Rosa. Although these areas cannot currently benefit from their proximity to the better known destinations within the Seashore, there has been a recent upward trend in their visitation. During the primary summer months of 2008 — June, July, and August — visitation to the Florida District Areas, excluding Fort Pickens and Santa Rosa, was approximately ten percent higher than the same period in 2003, the last year the Seashore was fully operational. This increase in visitation may reflect a trend of regional residents turning to more local attractions during a period of high gas prices.

2.4.4 Regional Traffic

The Florida Department of Transportation (FDOT) tracks average annual daily traffic (AADT) throughout the state. These data show that the traffic volume on Pensacola Beach had decreased in 2007 slightly from 2003. The decrease in traffic on the island is likely related to the lack of vehicle access at the Fort Pickens and Santa Rosa Areas. On the mainland, traffic volumes have increased during the same period. Interstate 10 has seen approximately a 13 percent increase in AADT near downtown Pensacola. Local streets in downtown Pensacola have also seen a rise in traffic since 2003; traffic on Palafox Street (which leads to Plaza de Luna on the downtown waterfront) had increased by approximately 10 percent in 2007. This increase in traffic reflects the population growth the region has experienced over the past several years.

2.4.5 Regional Transit

Public transit service is provided in the Pensacola region by Escambia County Area Transit (ECAT). The service areas for ECAT covers 160 square miles and a population of over 300,000. Due to service reductions required by financial constraints transit ridership declined by almost one-third between 2003 and 2007. In 2008 ridership increased by approximately 4% and now exceeds 1.1 million rides annually.

³ NPS Statistics at www.nps.gov/yell/parkmgmt/statistics.htm.

Chapter 3: Current Transportation Conditions

Although private automobile has been the primary way most visitors travel to the Fort Pickens Area, there have always been a range of transportation options. Now that cars can no longer currently access this section of the Seashore, visitors have been required to use these other modes. Understanding the current and historic transportation opportunities at Fort Pickens provides a solid foundation for planning future transportation infrastructure and services that will meet the transportation needs of both the park and its visitors.

3.1 Transportation Modes to Fort Pickens

The location of the Fort Pickens Area at the western tip of Santa Rosa Island historically provided visitors the opportunity to use multiple modes of transportation to access Fort Pickens, including by private automobile, bicycle, private boat, and foot. Together, these various modes serve as a transportation network connecting visitors to attractions and facilitating circulation within the area. Although private automobiles have been the primary mode of transportation visitors employ when visiting Fort Pickens the roads and paths enabled visitors to tour the park by foot or bike once there.

Since the loss of Fort Pickens Road, visitors are limited to private or commercial boats, hiking, bicycle, or a small over-sand ATV shuttle to access this section of the Seashore until the road is rebuilt. This present condition highlights the alternative transportation options available in the park, which may be poised to play a larger role in providing access to Fort Pickens in the future by maintaining consistent access to the park whether infrastructure is damaged or the park is congested.

3.1.1 Private Automobiles

Private automobile access—cars, RVs, tour buses, etc.—to the Fort Pickens Area has remained unavailable since Hurricane Ivan in 2004, which resulted in the initial damage of Fort Pickens Road. Despite the interruptions to vehicular access, the Park has demonstrated a commitment to maintaining a road to Fort Pickens. In the wake of Hurricane Ivan, the Park repaired the road and is now in the process of replacing the segments of road damaged during a series of storms in 2005. The road is anticipated to be in operation by summer 2009 barring weather delays.

Fort Pickens Road is the sole road leading to Fort Pickens from Pensacola Beach. Once the road is repaired, Fort Pickens Road will be a 30-foot paved two-lane road (two 11-foot lanes and two 4-foot bike lanes). An entrance station will be restored on the road near the eastern edge of the park. Near the fort, there are several loops that branch off of the main road, providing access to campgrounds, parking areas, GUIS facilities, and cultural sites. As the primary land access corridor, this road will be shared by tour buses, school buses, bicycles, and pedestrians.

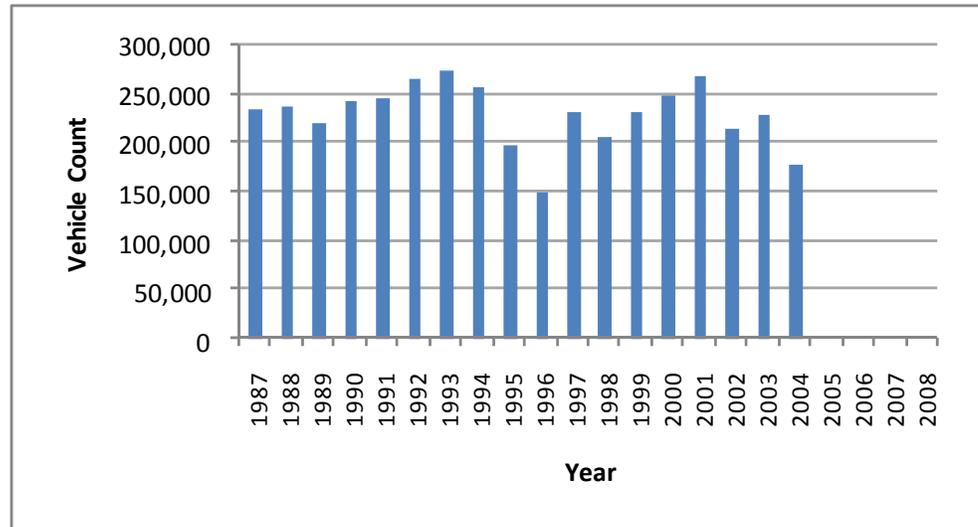
Historically, the majority of visitors arrive at the Fort Pickens Area by private automobile, primarily cars and RVs. In 2003, the last full year of uninterrupted service at the park, approximately 230,000 vehicles visited the Area (see Figure 3.1). Since 1987, Fort Pickens has accommodated over 200,000 vehicles each year the area remained fully open to vehicles. The heavy vehicle traffic, especially during the peak season in the



Fort Pickens Road has been closed since 2004. It is expected to reopen by summer 2009.

summer, can lead to congestion on the two-lane road. The large volume of vehicles accessing this park area also underscores the importance of appropriate parking facilities to avoid damage to natural and cultural resources and ensure a positive visitor experience.

Figure 3.1
Fort Pickens Annual Vehicle Count



Source: NPS Public Use Statistics Office

As shown in Table 3.1, the Fort Pickens Area has a total of 629 parking spaces, including those in two parking lots that are to be rebuilt in conjunction with the project to restore vehicular access to Fort Pickens. Parking is restricted to designated spaces; parking along the road or in the sand is not permitted in the Fort Pickens Area. It is reported by Seashore staff that the Fort Pickens Area parking supply is inadequate for the highest demand days, making parking difficult for visitors on certain days of the year. The lot at Langdon Beach tends to fill first followed by the other two beach lots.

Additionally, Fort Pickens will continue to provide accommodations for campers at the 200-site campground. These campgrounds, with full electrical facilities, are one of the most popular attractions at this park area. In 2003, the campground’s last full year of operation, the park registered a 15-year high of over 250,000 overnight campers.⁴

Tour buses—both private buses and school buses—constitute a relatively small proportion of private vehicles accessing the Fort Pickens Area. In fiscal years 2000 through 2004, a total of 47 tour buses were registered at the entrance station. Parking for buses is accommodated in the Fort Pickens parking lot (three designated bus spaces). While there is sufficient parking to accommodate buses during most days of the year, conflicts can occur when buses are forced take multiple parking general spaces when no other bus parking is available.

⁴ NPS Statistics at www.nps.gov/yell/parkmgmt/statistics.htm.

TABLE 3.1
Parking Capacity

Area	General	Handicap	Bus	Total
Beach East *	27	2		29
Beach West *	27	2		29
Ranger Station	5	1	10	16
Battery Langdon	27			27
Langdon Beach	98	2		100
A Loop Campground	12	1		13
Campground Store	6	2		8
Dune Nature Trail	10			10
Battery Worth	160	6		166
Battery Cooper	7	1		8
Battery 234	8			8
Graves	2			2
Battery Payne	9			9
Battery Trueman	8			8
Fishing Pier Lot	27			27
Building 1 & 5	24			24
Seawall Parking	84	3		87
Jetties	7	2		9
Information Center	44	2	3	49
Total	592	24	13	629

* To be rebuilt as part of Fort Pickens Road reconstruction project

Outside of Fort Pickens, there is also limited roadway infrastructure providing access to the park entrance. From downtown Pensacola, vehicle access to Santa Rosa Island is only available by crossing two bridges, the one connecting to Santa Rosa Island requiring a \$1.00 toll. Currently, with the closure of J. Earle Bowden Way in the Santa Rosa Area of GUIIS, the toll bridge is the only way to access Pensacola Beach and Fort Pickens by car.

Just outside of the park entrance, Santa Rosa Island Authority has a two free parking lots—one with approximately 252 spaces and another with approximately 130 spaces—providing visitors to Fort Pickens the opportunity to park and walk or bike into the area.

3.1.2 Transit

Currently, there is no direct public transit service at Fort Pickens, nor has transit historically served internal points in this park area. Although there is no public transit at the fort, transit does play an important role in expanding transportation options for residents and visitors in metropolitan Pensacola. Escambia County Area Transit (ECAT) operates 15 fixed-route bus lines in the Pensacola area. Most of the routes operate on weekdays and Saturdays; there is no Sunday service. On weekdays, routes typically operate hourly between at least 6 a.m. and 6 p.m. Several routes provide a longer service span and operate every half hour. Limited service is available on Saturday. The base fare

for a local bus route is \$1.75 per ride. In fiscal year 2007, the ECAT system carried over 1.1 million riders.⁵

The network of ECAT bus routes is focused on downtown Pensacola with individual routes branching out from downtown. This system provides for mobility in the city core, but also facilitates transportation between the city and surrounding area, connecting residents to many important employment, service, retail, and entertainment destinations. Two of ECAT's services operate on Santa Rosa Island and stop near the entrance to the park: Route 61 and the Pensacola Beach Trolley.



Route 61 is a new commuter service connecting Pensacola Beach, Gulf Breeze, and the City of Pensacola. The route includes a stop at the Palm Beach Club on the western edge of Pensacola Beach near the Fort Pickens entrance. The route makes two runs per day—one at 7:55 a.m. and the other at 4:10 p.m.—from the ECAT Transfer Center to Pensacola beach and back. This bus route is designed primarily to connect Pensacola residents to jobs on Santa Rosa Island. The base fare for this service is \$2.35 per ride.

ECAT also operates a free seasonal beach trolley on Santa Rosa Island. The trolley runs on a half-hour schedule along Fort Pickens Road and Via de Luna Drive. The loop bus route operates between the Palm Beach Club to the west and Portofino to the east with several stops in between. The trolley is available from May 16 through September 1: Fridays from 6:00 p.m. to midnight, Saturdays from noon to midnight, and Sundays from 5:00 p.m. to 10:00 p.m. This service caters primarily to visitors in need of transportation for dining and evening entertainment. The Beach Trolley carried over 30,000 riders in 2008.

These two existing public transit services do provide some access to the entrance of the Fort Pickens area, each stopping at Palm Beach Club, a condominium development not far from the entrance of the park. Unfortunately, the hours of operation of these services and the distance between the bus stop and the park facilities (approximately seven miles) reduce the usefulness of public transit for park visitors.

In the absence of other land transportation options—private automobiles or public transit—traveling to the Fort Pickens facilities, due to the closure of Fort Pickens Road, a private shuttle company has recently begun operating an over-sand shuttle service. Harris & Squazzo LLC obtained a commercial use authorization (CUA) from GUIIS to operate a six-seat off-road vehicle (Polaris Ranger Crew) along the marked roadway right of way. This vehicle operates on the remaining asphalt as well as sand where the road was washed away. The vehicle can carry wheelchairs and provides accessible access for visitors.

The shuttle makes hourly trips into the park during the summer from 8:00 a.m. until 2:00 p.m. The last shuttle available out of the park is at 5:00 p.m. The shuttle will makes stops at Campground A, Battery 234, the fishing pier, dive jetties, and the fort. A roundtrip ticket costs \$15 for an adult and \$10 for children under twelve, with additional charges for hauling diving and camping gear. The success of this new service suggests there is a desire to regain access to Fort Pickens and that shuttle service is a viable transportation alternative in the park.



An ATV shuttle service began operation in 2008.

⁵ National Transit Database
www.ntdprogram.gov/ntdprogram/pubs/profiles/2007agency_profiles/4038.pdf

3.1.3 Water Transportation

The location of Fort Pickens on the western edge of a barrier island ideally suits it to water transportation. Although there is no publicly available boat dock at the park, boats can still access the park through its miles of shoreline on either the gulf or bay side of the island. Both private boats and three private boat companies regularly visit the Fort Pickens Area. Currently, these water vessels can drop passengers at a pier located at the Ranger Station or on the beach directly east of the fishing pier.

Private boats require no special permission to visit the park and no visitation fees are collected. Private boats primarily access the park from the bay side, many to take advantage of fishing off the coast of the park. Although it is common for boat visitors to come ashore to visit the historic sites or fish, many boat visitors remain on their craft to enjoy the scenery and fishing without ever stepping foot on land. In July 2008, the Florida District of the Seashore recorded 10,400 boat visitors, 400 more than recorded in July 2003 before any storm damage despite the lack of full park facilities at the Fort Pickens Area.⁶ The consistent visitation to the park by boat demonstrates the reliability of water transportation to Fort Pickens. There is no need for additional infrastructure at the park for small boats that can anchor near shore, as they can access the park regardless of infrastructure available on land.

Three private water taxi services—Blue Marlin Water Taxi, Kaitlyn, and Key Sailing—offer access to Fort Pickens via water transportation to the general public. Each of these companies provides a variety of water transportation services from different points in the metropolitan area. All of these companies operate under Commercial Use Authorization (CUA) agreements with GUIIS.

Blue Marlin Water Taxi

The Blue Marlin Water Taxi offers marine-based tours that include Fort Pickens as a destination. Passengers disembark at Fort Pickens and Fort McRee, look for dolphins at Perdido Key, and view Fort Barrancas, the Coast Guard Lighthouse on NAS, downtown Pensacola, and other historical sites such as the underwater archeological sites at Dead Man’s Island. The tour takes approximately four hours and costs \$50 per passenger. During the peak summer season, the Blue Water operation runs up to three times a day on one of two approximately 17-foot boats, each with a 6 person capacity. This year, Captain Hinojosa estimates that half of his passengers were visiting from Louisiana. At Fort Pickens, the passengers disembark on the beach near Fort Pickens.

Captain “Bubba” Thorsen

Captain Thorsen operates out of Daybreak Marina in Pensacola Beach with two charter boats. The 65-foot, 63-passenger *Chulamar* is used exclusively for private charters and walk-on fishing tours. The 26-foot, 12-passenger *Katelyn* is also used for fishing tours, as well as diving, sightseeing, and beach-combing tours, or combinations of these activities. Captain Thorsen charges \$25 per person for water taxi service to Fort Pickens on the *Katelyn*, with a minimum of six people. The ride from Daybreak Marina to Fort Pickens takes approximately 30 minutes.

Captain Thorsen estimates that he has taken 180 people to Fort Pickens in the two years that he has operated under the Commercial Use Authorization with GUIIS. Campers are dropped at the ranger station pier because of its proximity to the campground and the need to keep equipment dry. All other visitors are taken to Fort Pickens, disembarking by either jumping off of the bow onto the sand or by jumping over the side into the water. The *Katelyn* cannot accommodate passengers in wheelchairs who want to visit



Private boats land on the beach along the shore, as shown here near the fort. The fishing pier is in the background.

⁶ NPS Stats

Fort Pickens because there is no dock. Visitors to the Fort Pickens Area stay an average of between four and five hours.

Captain Thorsen finds that the cost of the trip and the lack of a pier at Fort Pickens are the main reasons that his ridership to Fort Pickens is so low. However, he cannot run the trip for less due to fuel costs. Captain Thorsen says that he gets many calls, but that the price of \$25 per person is prohibitive to many. He finds that using the ranger station pier can be dangerous when a North wind is blowing, and has damaged his equipment when trying to drop off campers at the pier. The method of unloading passengers near Fort Pickens, by jumping off of the boat, is not feasible for some older customers and some people with disabilities. He would like to see a pier built as close to the east side of the fishing pier as possible, as this is the most protected area from the north wind.

Key Sailing



The Harbor Lady is a 34-passenger catamaran.

Key Sailing operates out of Quietwater Beach in Pensacola Beach, and offers parasailing rides and sailboat, pontoon boat, jet ski and kayak rentals in addition to offering tours to Fort Pickens and other Pensacola Bay destinations. Cruises are on the new boat *Harbor Lady*, a 34 passenger front-loading catamaran operating at 12 to 18 knots. The front-loading ramp provides handicap accessibility for those boarding the boat, although landings at Fort Pickens take place on the beach and must be coordinated with use of the park's beach wheelchair in order to provide ADA access to the fort area.

Cruises currently run as interest is expressed, but will only run with 15 or more passengers. In July, the operation was running two trips daily. Cruises with stops at Fort Pickens can be combined with a dolphin or sunset cruise, or with snorkeling or kayaking expeditions. Cruises take from 2.5 to 3 hours. The trip from Quietwater Beach to Fort Pickens takes 35 to 40 minutes. Cruises cost \$30 for adults and \$20 for children ages 3 to 12. The cruise operation began in March, although bad weather restricted the operation to two to three times per week until Memorial Day, and will run until November 1st.

The new service was popular enough during the 2008 season that Key Sailing will likely offer set times next year, with three departure times per day. The Blue Angels practice flights provide an additional attraction to morning cruises on Tuesdays and Wednesdays during the first half of the summer, with 2008 cruises averaging approximately 15 passengers per practice session. In 2008, Key Sailing carried approximately 2,000 passengers on the Fort Pickens cruise.

3.1.4 Pedestrian and Bicycle Access



Bicycles must be walked through the miles of soft sands where the road was washed away.

Pedestrian and bicycle access in Fort Pickens was historically provided via the westernmost portion of the Florida Trail, consisting of an oyster shell path that ran between the fort and Battery Langdon. Since the 2004 and 2005 storms, this path has become overgrown and sees little use. To travel into the Fort Pickens Area, pedestrians and bicyclists used to share Fort Pickens Road with motorized vehicles for the five-mile trip. Today, the asphalt remaining from Fort Pickens Road serves as the primary pedestrian and bike path to the fort since only a few official vehicles use the roadway. Where asphalt remains from Fort Pickens Road, there is a clear path and a stable surface leading to the historic site. A large segment of the road—over four miles long—was completely washed away. This segment requires pedestrians and bicyclists to walk over sand, following a clearly marked roadway realignment. Pedestrians also have the option to walk into the park along the beachfront. Restricting pedestrians and bicyclists to the existing roadway alignment or the beachfront is essential to protecting natural resources located on the island.

The long, narrow shape of the barrier island presents challenges to pedestrians and bicyclists. It is approximately seven miles from the park entrance to the fort, requiring a 14-mile round trip to walk or bike to the fort and back to Pensacola Beach. Pedestrians and bicyclists can also enjoy the beaches in the park without traveling quite so far, but the park beaches currently lack facilities and supervision. Dedicated visitors still walk and bike to the fort, but compared to past visitation relatively few visitors choose these modes to access the park. Currently, no fees are collected from pedestrians or bicyclists at Fort Pickens.

The repairs made to Fort Pickens road will include the addition of bike lanes for a large segment of the road. As part of the contract for installing the new road (expected completion date of spring 2009), striped and signed four-foot bike lanes will be installed on either side of the road between the eastern boundary of the park and the ranger station. This will effectively complete a bikeway from the City of Navarre to Fort Pickens, with the exception of a short span between the end of the marked bike lane at the ranger station and the merging of bike traffic onto the gravel Florida Trail.

There are currently no plans to provide discrete pedestrian infrastructure, such as a sidewalk or pathway, as part of the road replacement project.

3.2 Existing Contracts, Agreements, and Regulatory Requirements

Gulf Islands National Seashore allows outside entities to conduct business on National Park Service lands through two types of agreements: Concessions Contracts and Commercial Use Authorizations

3.2.1 Concessions Contracts

The National Park Service Concessions Management Act of 1998 sets forth the parameters under which the National Park Service authorizes park concession operations. The act limits development to that which is necessary and appropriate for public use and enjoyment of the national park area in which it occurs, and that development be consistent to the highest practicable degree with the preservation and conservation of the areas. Concessions are awarded through a publicly solicited competitive selection process. Concessions contracts are generally awarded for less than 10 years and do not include a preferential right for renewal. NPS generally avoids contract provisions allowing concessionaires to make capital improvements on Park Service land because such a provision would create a leasehold surrender interest requiring compensation by the Park Service upon termination of the contract. Therefore, concessions contracts generally provide that the Park Service will provide any necessary capital improvements related to the contract. The contract will require that the concessionaire charge reasonable fees and specify a franchise fee to be paid to the National Park Service.

Existing Concessions Contracts Operating in the Fort Pickens Area

Gulf Islands National Seashore currently offers one Concessions Contract held by Dudley Food and Beverage, Inc. The contract covers two facilities located in Fort Pickens Area of the Seashore — the Firehouse Snack Bar and the Fort Pickens Campground Store. These facilities have not been in operation since 2004. The concessions contract limits the services to be offered at the Fort Pickens Area locations to groceries; fishing supplies and equipment; beverages including beer, wine, and soft

drinks; prepackaged food and snack items; film; souvenirs; sundry items; laundry facilities; bicycle and beach equipment rentals; and a snack bar consisting of short order sandwiches, beverages, and accompaniments. The Contract set the price of lease for government-owned structures at annual rates of \$2,700 for the Fort Pickens Campground Store and \$2,220 for the Firehouse Snack Bar. In addition, a franchise fee was paid to the government of 3 percent of the gross receipts of the preceding year, 80 percent of which is spent within Gulf Islands National Seashore.

Both of the facilities were damaged in the 2004-2005 hurricane season. As of 2008, Dudley Food and Beverage, Inc. has not been able to reopen any of the facilities at the Fort Pickens Area. The original concessions contract between GUIS and Dudley Food and Beverage, Inc. was signed in 1982. The current contract will expire in 2010, but may be extended.

3.2.2 Commercial Use Authorizations

Commercial Use Authorizations (CUAs) also authorize a private person, corporation, or other entity to provide commercial services for a fee to visitors to units of the national park system. They are only available to those providing services deemed to have minimal impact on resources and values of the unit. CUAs are intended to provide a simple means to authorize suitable commercial services to visitors in Park areas in the limited circumstances found in the legislation. CUA contracts are for terms up to two years. Subcontracting or transfer of CUAs is not permitted.

Existing Commercial Use Authorizations Operating in the Fort Pickens Area

Four entities currently operate in the Fort Pickens Area of the Seashore under CUAs, offering transportation to the area. The CUAs are for “Out-of-Park” activities where the commercial service must originate and terminate outside of the boundaries of the park area. The CUAs specify the type of and passenger capacity of the vehicle or vessel authorized and the liability insurance required. Each of the contracts circumscribes the hours of operations and the sites where passengers may get on or off the vehicle or boat. The CUA for an ATV-based shuttle (service described above) lists seven specific sites for disembarkation and embarkation. The CUA for three boat services (services described above) are limited to two loading locations, with detailed instructions on how to approach while protecting sea grass beds.

3.3 Activity Nodes

In the Pensacola region, public transportation can be most effective if it connects clusters of activities—recreation areas, attractions, facilities, services, etc.—to one another and to population centers. Public transportation would then allow visitors and residents to conveniently access the few points around the region with the highest density of opportunities. Identifying the existing regional activity nodes provides important insight into where public transportation could best serve the region. Using this information to define potential routes will help ensure the implementation of the most viable service for the region.

3.3.1 Demographic Overview

The metropolitan Pensacola area, comprising Escambia and Santa Rosa counties, had a population of approximately 450,000 people in 2007.⁷ Many of the areas with the highest population densities—over six persons per acre—are focused in and around the City of Pensacola. As Figure 3.2 shows, population density tends to be higher on the mainland than in Gulf Breeze or Pensacola Beach, but there are large sections of downtown Pensacola that have very low population densities. These areas of the city tend to be dominated by commercial development with few residential units. The City of Pensacola had a population of approximately 54,000 people in 2007, locating the majority of the regional population outside of the city.

Figure 3.2
Pensacola Region Population Density



Source: West Florida Regional Planning Council

⁷ Annual Population Estimates July 1, 2007. *United States Census Bureau.*

As a major vacation destination, the residential population density underestimates the amount of people in the region, especially during the summer months. As a popular vacation destination, the Pensacola region receives an influx of people at certain times throughout the year. Accounting for the approximate population associated with hotels, Figure 3.3 shows that the population density in downtown Pensacola, Pensacola Beach, and Gulf Breeze all noticeably increase compared to Figure 3.2. Although the population staying in hotels rotates throughout the summer months, visitors associated with hotels are likely to take advantage of regional activities.

The population density also does not account for the thousands of sailors cycling through the Naval Air Station. The housing of these students in barracks results in a high population density on the base. Although these students may also be interested in the region's attractions, most students do not have access to personal automobiles.

Figure 3.3
Pensacola Region Population and Visitor Density

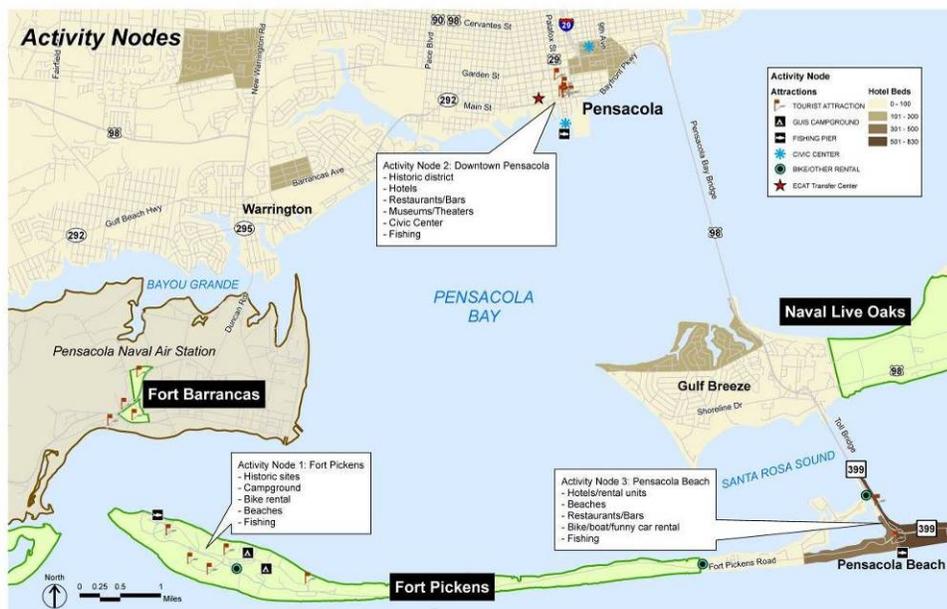


Source: West Florida Regional Planning Council

3.3.2 Activity Nodes

While attractions, opportunities, and resources are located throughout the metropolitan area, three areas within the region stand out as obvious activity nodes: Fort Pickens, Downtown Pensacola, and Quietwater Pensacola Beach. The Naval Air Station also offers a concentration of attractions that could also be considered an activity node. The position of these areas around the bay (as shown in Figure 3.4) raises the possibility of using ferry service to connect them via public transportation. The use of water transportation has the advantage of providing a more direct route than land-based transportation.

Figure 3.4
Pensacola Region Activity Nodes



Source: West Florida Regional Planning Council

Fort Pickens

Before operations were interrupted by a series of hurricanes in 2004 and 2005, the Fort Pickens Area regularly attracted over 600,000 visitors per year. This area of the Seashore is renowned for both its cultural and natural resources including historic Fort Pickens, white sand beaches, and fishing pier. Fort Pickens draws both local residents and visitors from around the region and country. The Park Service also operates a popular campground at this site.

Major activities:

- Historic Sites
- Campgrounds
- Beaches

Downtown Pensacola

Downtown Pensacola has increased the number of attractions in its historic downtown in recent years. Through economic development efforts, more restaurants and shops are opening downtown and city-sponsored events bring people to Plaza de Luna. The downtown also offers other cultural activities such as theaters and museums. Downtown Pensacola is the second largest location of hotel rooms in the region. The downtown also benefits from a transit network, enabling people to get to downtown from around the region.

Major activities:

- Hotels/motels
- Museums
- Civic Center/Plaza de Luna
- City-sponsored events
- Transit hub

Quietwater Pensacola Beach

Pensacola Beach is a major tourist destination in the southeastern United States. The primary draw of this location is the white sand beaches of Santa Rosa Island. To accommodate the thousands of vacationers who cycle through Pensacola Beach each year, hundreds of hotel/motel rooms and house/condo rentals are offered on the island. As part of the tourist industry on the island, activities and entertainment opportunities cater to the constant cycle of families during the summer. In addition to the many restaurants and bars located at Quietwater, there are also bike and watercraft rental. Pensacola Beach also hosts events throughout the year at Casino Beach.

Major activities:

- Beaches
- Hotels/motels/house rentals
- Restaurants/bars
- Bike/boat/funny car rentals

Naval Air Station

The Naval Air Station is home to several attractions open to the public. GUIIS controls two historic sites within the boundaries of the base: the Advanced Redoubt and Fort Barrancas. Another attraction is the U.S. Coast Guard Lighthouse, which still is in operation. The major public draws to NAS are the National Naval Aviation Museum and the Blue Angels precision flying team. The museum attracts approximately 800,000 visitors per year. Additionally, several naval training schools are located on the base. These schools bring thousands of sailors to the base each year, their stays ranging from six weeks to six months. While many people visit NAS each year, it is a functioning military facility, which limits public access to its attractions.

Major activities:

- Historic sites
- National Naval Aviation Museum
- Coast Guard Lighthouse
- USN Flight Demonstration Squadron (Blue Angels)
- Naval Air Technical Training Center

Chapter 4: Stakeholder Partnership Opportunities

4.1 Introduction

The location of the Fort Pickens Area on the western tip of Santa Rosa Island depends on the local and regional transportation network to provide visitor access. All visitors to Fort Pickens must at some point traverse a county bridge, travel along a local road, or launch in a boat from a dock in the surrounding region to reach their destination. No matter how visitors arrive, they all rely on a diversity of transportation infrastructure under the jurisdiction of several different entities.

To maximize access to Fort Pickens through a variety of transportation modes, the Seashore will need to partner with government agencies, non-profit organizations, and cultural institutions that also have a stake in regional transportation. Without healthy partnerships around the region, the ability of the Seashore to implement alternative transportation solutions will largely be limited to within the boundaries of the Fort Pickens Area. Looking beyond the Fort Pickens Area will create opportunities to find mutually beneficial solutions to coordinate services and funding for the broadest regional impact.

Discussions regarding the improvement of alternative transportation in the Pensacola region through the introduction of a ferry service in Pensacola Bay stretch back decades. Although the idea of a ferry has long been popular, the possibility of implementing a ferry service has only recently gained traction through the hard work of the City of Pensacola's Community Redevelopment Agency (CRA). The prospect of ferry service in the bay raises a host of other transportation needs, from parking to public transportation availability at ferry destinations. A convenient and complete transportation network that will benefit everyone with a stake in the Pensacola region will require many different agencies and organizations to work together.

Although the Seashore is just one component in a large regional transportation network, this study offers an opportunity to bring together many different transportation stakeholders and identify potential partnerships. Through this study each of the stakeholders identified below was interviewed regarding their services, transportation needs, and resources. Additionally, stakeholders were brought together to discuss coordination opportunities as plans for enhancing alternative transportation in the Pensacola region advance.

The interviews revealed that the various transportation stakeholders have been working together for some time and are eager to increase their interactions to improve alternative transportation in the region. The continued development of these relationships will be essential in establishing the regional vision for a ferry service and providing the necessary landside support transportation services to truly connect the region.

4.2 Partnership Opportunities by Stakeholder

The Seashore identified external stakeholders that could provide information on regional transportation services or needs.

4.2.1 City of Pensacola, Community Redevelopment Agency

The City of Pensacola established the Community Redevelopment Agency (CRA) to fund public infrastructure improvements that would foster private investment in new development and renovation within the city's urban core. The CRA also plays a role in coordinating events and facilitating services affecting downtown.

In its effort to bring more people downtown and encourage downtown development, the CRA has a strong interest in promoting regional transportation, especially a ferry service that would also serve as an attraction. To this end, the agency has been working to establish a ferry service in the bay: facilitating potential agreements required to initiate ferry service and preparing a request for proposals (RFP) to contract a ferry service to operate from the Plaza de Luna. In developing the RFP, the CRA has already coordinated with the Seashore to include Fort Pickens as one of three initial ferry stops. The CRA is also interested in ensuring land-side transportation services from ferry stops, including expanded bus service and foot taxis.

4.2.2 Florida-Alabama Transportation Planning Organization

The Florida-Alabama Transportation Planning Organization (TPO), a local intergovernmental board, plans and prioritizes transportation programs and projects in the Pensacola Urbanized Area, as required by the Federal Highway Act. The West Florida Regional Planning Council (WFRPC), a multi-purpose, regional entity provides technical guidance and staff support to the TPO.

The TPO must create and maintain a Long Range Transportation Plan (LRTP) that identifies transportation improvement projects for the next 20 years. The TPO prioritizes LRTP projects annually in a 5-year Transportation Improvement Plan (TIP). The TIP is submitted to the Florida Department of Transportation for funding. Working with WFRPC and the TPO to include any regional alternative transportation improvements recommended through this study will increase likelihood of funding and implementation. FDOT could only fund regional alternative transportation projects recommended in this study if the projects are included in both the LRTP and the TIP.

4.2.3 Santa Rosa Island Authority

The Santa Rosa Island Authority (SRIA) is a division of Escambia County created by the Florida Legislature to administer and oversee the growth of Pensacola Beach, which is owned by the County. The SRIA board, which governs the unincorporated community of Pensacola Beach, consists of five members appointed by the five Escambia County Commissioners and one member elected by registered voters of Pensacola Beach. The Authority is funded by lease fees collected from the island's leaseholders.

One of SRIA's many functions is maintaining a series of free public parking lots in Pensacola Beach. Two of these parking lots are adjacent to the entrance of the Fort Pickens Area and serve some park visitors. Additionally, SRIA has introduced in Pensacola Beach a free weekend Beach Trolley in Pensacola Beach during the summer. This shuttle service is funded by SRIA and operated by ECAT. While the Beach Trolley is largely designed to connect vacationers to restaurants and entertainment within

Pensacola Beach, it also stops near the entrance to the Fort Pickens Area. As is evident from the provision of the Beach Trolley, SRIA has a broad interest in continuing and enhancing the attraction of Pensacola Beach. Fort Pickens is a major attraction for beach visitors in addition to local residents. The Fort Pickens Area was also a major campground that brought thousands of visitors through Pensacola Beach each year. Resuming full operations in the Fort Pickens Area and improving transportation between the park and Pensacola Beach will enhance the desirability of this vacation spot and support local businesses. SRIA has also expressed interest in increasing regional connections to Pensacola Beach.

4.2.4 Escambia County Area Transit

Escambia County Area Transit (ECAT) provides public transportation in the Pensacola region through a fixed-route bus system, seasonal Pensacola Beach trolley, and ADA paratransit service. The bus system contains approximately 15 bus routes that generally operate during commute times and the business day on weekdays and Saturdays. Ridership on the system has reached a record high of 1.6 million annual trips.

Beyond providing bus service, ECAT has looked into operating a ferry service in Pensacola Bay. Although ECAT never established ferry service and is not currently looking to operate a ferry service, the bus system would play an important role in any future transportation network that included a ferry. In anticipation of a ferry service, ECAT began operating a downtown circulator trolley in the City of Pensacola many years ago. Without the implementation of a ferry, this service has been scaled back to a one-day-a-week juror trolley. The original downtown trolley service demonstrates the need for public transportation to connect ferry passengers to specific destinations. Public bus service also has the potential to reduce the need for parking at ferry stops through shuttling ferry passengers from park-and-ride lots, and to provide supplemental connections along ferry routes. ECAT also operates the Beach Trolley in Pensacola Beach and a commuter route (Route 61) between downtown Pensacola and Pensacola Beach once in the morning and once in the evening.

4.2.5 National Naval Aviation Museum

The National Naval Aviation Museum, located on the Pensacola Naval Air Station (NAS), is the largest aviation museum in the world and one of the most visited museums in Florida. The Museum displays a collection of 150 historic and modern Navy, Marine Corp and Coast Guard aircraft. The Museum currently runs a trolley that gives a free 20-minute tour of the approximately 50 planes displayed outdoors near the Museum. The Naval Aviation Museum is situated near the Gulf Islands National Seashore properties of Fort Barrancas and the Advanced Redoubt also located within NAS. These mainland sites are located a short distance (approximately two miles) directly across the bay from Fort Pickens.

The Naval Aviation Museum ties in well with many of the other maritime and military attractions around Pensacola Bay, but it is one of the most isolated destinations. Although the Naval Aviation Museum is only two miles by water from Fort Pickens, a 32-mile road trip is required to travel between the two. Connecting the two points of interest would allow the many visitors at the museum to access the Seashore and expose visitors to the water-based military history of the area in conjunction with the aviation history presented in the Museum. Additionally, the proximity of the museum to other GUIS sites provides a potential opportunity to provide physical or educational connections, potentially integrating the trolley service into all three sites.

4.2.6 Naval Air Station Pensacola

The Naval Air Station (NAS) Pensacola provides training for Navy and Marine personnel through the Naval Education and Training Command (NETC) and the Naval Air Technical Training Center (NATTC), attracting approximately 16,000 personnel to the base annually for short stays. NAS is also home of the Navy's precision-flying team, the Blue Angels, a major tourist attraction for the Pensacola region. Many parts of the base are publicly accessible, allowing visitors to reach the Naval Aviation Museum, Fort Barrancas, and the Advanced Redoubt, which are located on the grounds of the base.

NAS is currently looking into ways to segregate active military functions that require higher security to increase public access to the open attractions on the base. If NAS is able to increase public access in the future, there may be opportunities to better connect the base to other Pensacola attractions through alternative transportation. NAS has already partnered with ECAT to allow a bus route to stop on the base, providing an important connection to Pensacola destinations. This bus service provides access for thousands of visiting sailors without cars to the Pensacola region. The popular tourist destinations and visiting sailor population, make NAS both a point of attraction and generation for transportation trips.

4.2.7 Maritime Museum

The Community Maritime Park project — a public-private venture — is planned for a 30-acre, waterfront parcel adjacent to City Hall in historic Pensacola. The Vice Admiral John H. Fetterman State of Florida Maritime Museum and Research Center will be the main component of the Community Maritime Park. The project also includes a multi-purpose stadium, a conference/continuing education center, and mixed-use development including retail and commercial space. The Maritime Museum will be dedicated to continued education, preservation and research of Florida's cultural and natural maritime resources. In addition to displays, the museum will also house maritime-related research facilities in areas such as public history, underwater archaeology, marine biology and environmental science.

The Maritime Museum has a strong interest in cultivating visitor experiences that feed into the history of Pensacola Bay. A ferry service could complement the museum by providing transportation access via water, enabling visitors to experience the bay firsthand while also connecting the museum to historic Fort Pickens. The museum's proposed location in historic downtown is a short walk from Plaza de Luna, a potential ferry landing site in downtown Pensacola. The Maritime Museum expects to be a major tourist attraction that would strengthen the downtown as a destination and bolster the maritime connection of the region.

4.2.8 Historic Pensacola Village

Historic Pensacola Village is managed by West Florida Historic Preservation Incorporated (WFHPI), a non-profit organization affiliated with the University of West Florida. The Historic Village consists of 20 properties in downtown Pensacola, including two museums. Guided tours of the Historic Village are offered three times a day.

The WFHPI would like to install a marked walking route along the historic waterfront trail. Such a route would make the walk between Plaza de Luna and the Maritime Museum an interesting interpretive experience regarding the history of downtown Pensacola. This trail would provide a convenient pedestrian connection between the Maritime Museum and a potential ferry dock location. WFHPI would also like to initiate a trolley service that would loop through the Pensacola Historic District, connecting

attractions such as the Museum of Art, the Community Maritime Park, the Historic Village, and downtown restaurants and shops.

4.3 Partnership Opportunities by Mode

There are many possibilities for improving alternative transportation to the Fort Pickens Area. While the suitability and specifics of different options will be explored later in this study, general partnership opportunities by transportation mode are identified below. Understanding the potential for GUIs to partner with regional transportation stakeholders as well as the interests of those stakeholders is an important component in considering the viability for potential transportation solutions capable of developing a broad base of support. There are three primary modes of transportation generally under consideration for the Fort Pickens Area: water transport, surface (bus/trolley/tram) transit, and bicycle/pedestrian access.

4.3.1 Water Transport

All interviewed stakeholders were interested in seeing ferry service brought to Pensacola Bay. The CRA has already significantly advanced the concept to the point of preparing an RFP to issue to ferry operators. The leadership the CRA has taken in implementing the ferry service makes the City a natural partner for GUIs in realizing regularly scheduled transportation in the bay. The initial concept for ferry service also includes Quietwater as a ferry stop, making SRIA and Pensacola Beach businesses potential partners in a ferry service. Regardless of the success of the CRA's forthcoming RFP, any future water transportation service will likely require a partnership between GUIs, the City of Pensacola, and Pensacola Beach, since these are three major generators and attractions in the region.

The success of an initial ferry service may also help demonstrate the potential water transportation has for other destinations in the bay. Even the stakeholders not directly involved in the operation of the ferry service can help demonstrate the regional support for the project, competitively positioning such a service for limited funding.

4.3.2 Surface (Bus/Trolley/Tram) Transit

Two of the stakeholders interviewed are already engaged in providing surface transportation in the area: ECAT and SRIA. ECAT operates the bus system serving the Pensacola region in addition to the free Beach Trolley funded by SRIA. These two organizations are potential partners with GUIs either for extending existing bus service into the park or for providing public transportation connections to any service internal to the park. Landside transportation service could also play an important role in providing mobility for passenger ferries at the ferry stops. Regardless of land transportation within the park, working with ECAT and the other stakeholders in the ferry service will help ensure an integrated transportation network. Downtown Pensacola stakeholders—such as the Maritime Museum and Downtown Historic District—could also help support expanded surface transportation options around Pensacola Bay.

4.3.3 Bicycle and Pedestrian Access

The repairs planned for Fort Pickens Road within the Seashore include bike lanes for the majority of the road. This will provide connections between GUIs's Fort Pickens Area, Pensacola Beach, GUIs's Santa Rosa Area, and Navarre Beach along the 29-mile Seashore Trail multi-use pathway. The Trail is maintained by the Santa Rosa Island

Authority. Additionally, SRIA is also a natural partner for improving pedestrian access to the park since many visitors walk and jog along Pensacola Beach's Oyster Trail.

If a ferry service is successfully implemented in the bay, it would enable cyclists to transport their bikes between the city and park, making the CRA and TPO potential partners for improving regional bicycle access. In this case, bicycle accommodations in downtown Pensacola would contribute to park visitors integrating bicycles into their trips.

Chapter 5: State of the Practice

The national park system and other parks provide a trove of examples of alternative transportation systems. Looking to examples of parks with similarities to GUIS will provide insight into the range of options available and what has proven successful elsewhere. Based on the lessons taken from other parks, GUIS will be in a stronger position to develop and select the most effective alternative transportation system that meets its needs.

5.1 Introduction

The use of alternative transportation systems in the national park system to mitigate a variety of transportation and operational issues continues to grow. Employing alternative transportation is becoming more popular because of the ability of these solutions to improve visitor access and experience in a park while reducing impacts on natural resources. By contributing to the efficient operation of a park unit, successful alternative transportation also allows park managers to direct limited personnel and resources to park programs rather than traffic and parking oversight.

Alternative transportation has helped improve the operation of several park units, but it is not a cookie-cutter solution that prescribes a uniform remedy to the wide range of transportation issues facing the diverse array of NPS units. Instead, alternative transportation comprises a toolbox of transportation options — including different modes, costs, and amenities — that can be tailored to meet the unique challenges of each individual NPS unit. Through exploring examples of the alternative transportation systems already in operation in NPS units similar to GUIS, GUIS will be better informed of the options available, especially those that have found success elsewhere in the national park system.

This chapter provides an overview of the characteristics of several water- and land-based alternative transportation systems in operation in parks. Comparing the different alternative transportation systems provides GUIS with a range of service characteristics — such as vehicle types, fares, interpretation services, and amenities — that will help inform the development of service options suitable for a unique GUIS alternative transportation system.

More in-depth case studies are provided for several parks to highlight some of the issues associated with developing partnerships and securing funding for alternative transportation in the national park system. These examples of existing alternative transportation systems are supplemented with an overview of select water- and land-based vehicles available for use in alternative transportation systems and alternative fuel options.

5.2 Water-Based Alternative Transportation Systems

There are many examples in the national park system of ferries connecting visitors to NPS units, particularly to coastal fortifications on the East Coast. Although some of these NPS units are accessible through multiple modes of transportation — like the Fort Pickens Area — many of them can only be reached by boat. The dependence of most visitors on ferries to access these areas contributes to the success of the ferry services. Those NPS areas that are also accessible by car tend to be just one stop in a larger ferry system. In these cases, ferries provide a unique experience beyond basic access or a more direct trip.

Below, brief overviews of several park units with ferry service are provided. These examples of successful ferry services within the national park system can provide important lessons and guidance as GUIS considers ferry service to the Fort Pickens Area. Additionally, select services with unique characteristics are highlighted in greater detail in the case studies section.

5.2.1 Ferry Service Operation Overviews

Alcatraz Island, California



A 70'-long monohull ferry approaching Alcatraz Island.

Alcatraz Island is part of Golden Gate National Recreation Area. A trip to the island offers a close-up look at the site of the first lighthouse and US fort on the West Coast and the infamous federal penitentiary.

A concessionaire operates a daily ferry service between Alcatraz Island and Fisherman's Wharf in San Francisco on an annual basis. The ferry service is the only way to visit the island and carries approximately 1.4 million visitors annually. There are 16 daily trips during the summer season and 11 during the winter season (October – March). Trips operate on a reservation basis approximately every 30 minutes. The trip takes 15 to 20 minutes. Fares are \$26.00 for adults, \$16.00 for children (age 5-11), with a family fare of \$79.00 (2 adults and 2 children).

The concessionaire operates a fleet of seven boats for the Alcatraz ferry service, other ferry services, guided tours, and private charters. The vessels used for the Alcatraz service have a capacity of 400 to 700 passengers and are fully handicap accessible. The boats' cruising speed range from 9 to 11 knots and they make the 1.25-mile trip in eight minutes. The length of the boats ranges from 70' to 125'.

The boats have full concessions and TVs providing interpretive information. The concessionaire recently obtained a 64'-long catamaran diving boat and converted to a hybrid-propulsion passenger ferry. The boat uses solar and wind-energy to charge batteries that supplement the diesel engines.

Cumberland Island, Georgia

Cumberland Island is Georgia's largest and southernmost barrier island. Established as a national seashore in 1972, Cumberland Island provides a unique opportunity to view the flora and fauna of a natural coastal ecosystem as well as to learn about the coastal heritage of the region.

The island is only accessible by boat, making the ferry service operated by a concessionaire the only way to access the island other than by private boat. Access to the island is restricted to 300 people at a time. In 2007, approximately 40,000 visitors used the ferry to visit the island.

The concessionaire owns three boats, all of which are 65'-long, 146-passenger monohull ferries. They have a cruising speed of nine knots. The ferry trip is seven miles long and takes approximately 45 minutes. Concessions are available on the boat.

The ferry service operates throughout the year: on a daily basis during the peak season (March – November) and five days per week the remainder of the year. The ferry makes two trips to the island, plus a third trip on Wednesday through Saturday from March to September. An adult roundtrip fare costs \$17.00, with discounts available for children and seniors. A \$4.00 park entrance fee is also charged. The ferry concessionaire provides bicycle rentals on the island.

Dry Tortugas, Florida

Dry Tortugas is a cluster of seven islands almost 70 miles west of Key West. The area is known for its bird and marine life, its legends of pirates and sunken gold, and its military past. Dry Tortugas is also home to Fort Jefferson, an outstanding example of nineteenth century masonry fortification. There are two companies with concessionaire's licenses operating ferry service to Dry Tortugas. These ferries are the only way to access the island other than by private boat or seaplane.

The trip to the islands takes over two hours and the two operators use high-speed boats with cruising speeds of 26 to 27 knots. One of the boats is an 83' monohull with a certified capacity of 250 passengers although it carries a maximum of 100 passengers to ensure passenger comfort on the long trip. The other boat is a 60' catamaran certificated for 100 passengers.

Both of the services operate one tour to Dry Tortugas per day on an annual basis. As part of the full day tour, the services both offer breakfast and lunch in addition to concessions. Other amenities are also included, such as snorkeling equipment and interpretive services.

The cost of a tour ticket ranges from \$135 to \$159 for adults, with discounts available for children, seniors, park pass holders, military, and local residents. The \$5.00 park entrance fee is collected by the ferry operators at check-in. Camping fees are paid at the park. In 2007, approximately 46,000 people visited Dry Tortugas via ferry.



A 146-passenger monohull ferry at the Cumberland Island dock.



The 60'-long Fast Cat II cruises at 27 knots and carries 100 passengers on the 2¼ hour trip to Dry Tortugas.



The 83'-long Yankee Freedom II cruises at 26 knots and carries 100 passengers.

Fort Matanzas, Florida



Park staff operates the boat used for the short trip across the river to Fort Matanzas

Fort Matanzas National Monument consists of a 1740 Spanish fort, Fort Matanzas, and about 100 acres of salt marsh and barrier islands along the Matanzas River on the northern Atlantic coast of Florida. The fort guards Matanzas Inlet, the southern mouth of the Matanzas River, which can be used as a rear entrance to St. Augustine.

The only way to access this national monument is via a ferry operated by park staff. The trip to the barrier island home to the fort departs from a portion of the park on the mainland. The trip takes approximately 15 minutes.

Park staff operates eight trips per day on a daily basis throughout the year. The service is available to visitors free of charge. In 2007, approximately 52,000 visitors made the ferry trip to see the fort. The vessel used by the park is a 35-passenger catamaran boat.

Fort McHenry, Maryland



The water taxi service is specifically marketed as “recreational transportation” where the experience of the ride is valued more than a quick trip or precise schedule.

Fort McHenry National Monument and Historic Shrine is a star-shaped fort with beautiful waterfront grounds preserving the place where Baltimore soldiers saved the Union from the British invasion by the sea, during the War of 1812. It is where the National Anthem was first written by a Baltimore lawyer, Francis Scott Key, during the great bombardment.

Ferry service is one of many transportation modes available to this park site. In addition to ferry, visitors can drive, walk, bike, or take public transportation. The ferry stop at the fort is one of 12 stops made by a water taxi service in Baltimore’s Inner Harbor, which is able to access park property with a commercial use authorization. Approximately 33,000 visitors arrived at this national monument in 2007 by this ferry service.

The water taxi service operates a fleet of vessels that carry between 26 and 84 passengers. The water taxi operates year round, although service to Fort McHenry is operated only April through September. There are two fixed routes, between the Fells Point section and Inner Harbor, and between Fells Point and Fort McHenry (in season). Transfers at Inner Harbor and Fells Point provide connections to other stops in the harbor.

From April through September water taxis typically serve designated stops every 15 to 20 minutes between 10:00 a.m. and 11:00 p.m. The last trip from Fort McHenry is at 5:00pm. An adult fare costs \$9.00, but is good for travel on the water taxis for the full day. Once at the fort, an additional entrance fee of \$7.00 is required of visitors. Parking at the fort and then traveling on the ferry is prohibited.

Fort Sumter, South Carolina

Fort Sumter National Monument is the site where decades of growing strife between the North and South erupted in civil war on April 12, 1861. This national monument located in Charleston Harbor is only accessible by boat. A concessionaire operates a ferry tour service to Fort Sumter year round.

The tour takes approximately two and a half hours, including the 30-minute travel time over the three miles between downtown Charleston and the fort. The tour is fully narrated. An adult fare for a roundtrip costs \$15.00, with discounts available for children and seniors. Approximately 265,000 people take the tour annually.

Peak season is from mid-March to mid-August. During peak season one boat operates three tours per day out of the Fort Sumter Visitor Education Center. A second boat operates three tours per day from a naval and maritime museum elsewhere in the harbor. During the off-season there are 2 to 3 trips per day from the visitor center and 1 to 2 trips per day from the museum.

The concessionaire has three boats, one of which is used for harbor tours and dinner cruises. The two ferry boats used for the Fort Sumter service include a 71' monohull with a capacity of 311 passengers and a 102' monohull with a capacity of 423 passengers. Both ferries have cruising speeds of approximately 10 knots.

Sandy Hook, New Jersey

Sandy Hook is one of three units composing Gateway National Recreation Area. There are many attractions at Sandy Hook including the Sandy Hook Light, America's oldest operating lighthouse (1764), as well as Fort Hancock, and the Sandy Hook Proving Ground. These sites complement outstanding beaches, a holly forest, and other natural and recreational resources.

The Sandy Hook Unit is accessible by a variety of transportation modes, including ferry, car, and public transportation. The ferry provides the quickest trip to the park from New York City; a trip that could take in excess of two and a half hours by car is reduced to an hour boat ride. The trip to Sandy Hook costs \$45.00 for a roundtrip adult ticket, with discounts available for children. Daily service is available July through the end of September and weekend service is offered in June.

The operator has a fleet of four 140' 400-passenger high-speed catamaran ferries that have a cruising speed of 38 knots. The boats are primarily used for service on two commuter routes from New Jersey to Manhattan. The service to Sandy Hook provides complements the commuter service by providing ridership in the non-peak directions.

The service is not directly contracted or arranged through the park. Rather, a nonprofit organization associated with the park has made direct arrangements with the ferry operator. As part of the ferry service, the ferry operator also contracted the operation of a shuttle system to provide internal circulation at the Sandy Hook Unit (see shuttle/bus operation overviews).



The Fort Sumter Visitor Education Center and the Spirit of Charleston ferry.



One of commuter ferries used for summer service to Sandy Hook. The ferry has a cruising speed of 38 knots and is among the fastest ferries in the country.

5.2.2 Water-Based Alternative Transportation Case Studies

The following three examples illustrate different efforts within the national park system to provide ferry service for visitors. As the different cases identified demonstrate, each individual park unit need not tailor ferry service characteristics to meet the unique needs of its visitors, but it is also necessary to identify the most appropriate partnerships and funding mechanisms to sustain the service.

Boston Harbor Islands National Recreation Area

Boston Harbor Islands National Recreation Area consists of 34 islands and peninsulas in the Boston Harbor. The park is managed by a 13-member partnership of public and private entities. Seventeen of the islands are managed as a state park operated by the Department of Conservation and Recreation (DCR).

The islands provide hiking trails, beaches, bird watching, historic coastal fortifications, camping areas, and a lighthouse. Access within the national recreation area varies considerably: the portions of the park located on peninsulas are accessible by automobile, ferries travel between nine of the islands, and other areas are only accessible by private boat. The two primary islands—Georges Island and Spectacle Island—are two of the main attractions and major destinations for ferry riders. Georges Island is home of historic Fort Warren and includes a snack bar and picnic areas. Spectacle Island has a marina, the visitor center, a café restaurant, extensive walking trails, and a swimming beach.

Ferry Access to Boston Harbor Islands

Boston Harbor Islands are served by two mainland-to-islands routes, one departing from Boston and the other from Quincy on the southern shore of the Bay, and two inter-island routes, the Northern loop and the Southern loop. Visiting more than one or two islands in a single trip requires careful scheduling to ensure that a return route is available. DCR and NPS staffs meet the ferry at nearly every island stop and can help visitors plan their trips.

The Mainland service from Boston stops at two of the larger islands, Spectacle and Georges, and runs once an hour from 9:00 am until 5:00 pm and twice an hour during weekends during the summer. A roundtrip ticket from the mainland to these islands costs \$14 for adults and \$8 for children and seniors. This route runs on the hour during the spring and fall, from May 3rd until October 13th, while the other routes run only during the summer season, from June 21st until September 1st. The Mainland service from Quincy stops only at Georges, running four times a day, and nine times a day during the weekends.

The inter-island Northern Loop shuttle runs only on Friday, Saturday and Sunday, and runs between Spectacle and George’s Islands on an hour loop. The Southern Loop connects George’s Island to four other islands in the park in a loop that takes one hour and twenty minutes to complete. The Southern Loop runs daily, stopping on each island at least three times, and as many as seven times. To travel between islands, there is an additional charge to visitors of \$3.00.

Ferry Vessels

The operator of the ferries is Harbor Islands Express, which is an operating unit of Alternative Water Transportation, Inc. The company also operates whale watches and several high-speed water commuter services serving Boston Harbor.



Docking facilities at Grape Island in Boston Harbor Islands NRA

The mainland-to-island service uses 149-passenger catamarans although they typically operate at a 100-passenger limit so that there need be only one deckhand on board, in addition to the captain. There is a full snack bar that is also staffed. The boats provide open-air seating on the top deck and climate-controlled seating in the cabin area where the snack bar is located.

The inter-island shuttles use 64-passenger capacity canal boats with the captain and one deckhand on board. These boats are shipped from Florida for seasonal use in Boston. The boats have a roof canopy that provides shade. The canal boats have a very shallow draft and are front loading. They have a cruising speed of 7 mph. Designed for flat water operation, even small waves wash over the front of the boat.

Fire Island, New York

Fire Island is a thin barrier island stretching 32 miles along Long Island's south shore. Sandwiched between a state park and a county park, Fire Island National Seashore (FIIS) occupies 27 miles of the island. While the island is accessible by car at the state and county parks, no public roads exist within the Seashore. Seventeen communities lie within the Seashore's boundaries, consisting of 29 to 200 houses each. Visitors and residents enjoy the beaches, salt marshes, and holly forests.

The park hosts over 600,000 visitors each year, with over 50,000 overnight visitors staying predominantly in the marinas, with others staying at one of two campgrounds and a few camping with backcountry permits. The marinas and campgrounds are located at Watch Hill and Sailors Haven, which are both accessible by ferry. The campgrounds, marinas and related facilities are run by one of the ferry operators, Fire Island Concessions, LLC, under a concessionaire's contract with Fire Island National Seashore. Overnight accommodations are also available in the communities within the Seashore.

Ferry Service to Fire Island

The ride across the Great South Bay from Long Island to Fire Island takes between 20 and 30 minutes and covers approximately 4.5 miles. Two ferry companies provide service to Fire Island National Seashore, operating under concessionaire's contracts. Most landowners in the communities commute by ferry. Approximately 75,000 visitors travel to the Seashore annually by ferry.

Sayville Ferry Service runs from Sayville to Sailors Haven, as well as to two of the communities within the Seashore's boundaries. All three Fire Island destinations are served on different runs rather than a single looping route. A round-trip ticket costs \$12.00 for adults and \$7.00 for children. One-way tickets are available, allowing passengers to hike or taxi between points on the island returning on a different route or different ferry service, although this may result in returning to a different terminal on Long Island. The schedule frequency of this service varies by time of year. The Sayville Ferry Service also has the concessions contract for Fire Island National Seashore, and operates snack bars and shops, a weekend restaurant and bar, marinas, and campgrounds.

Davis Park Ferry Service operates between the Long Island village of Patchogue and Watch Hill on Fire Island. Davis Park Ferry operates another route from Patchogue to the Fire Island community of Davis Park. These two routes do not connect, and operate from different ferry terminals on the Long Island side. A round-trip ticket costs \$16.00 for adults and \$10.50 for children, with additional fees for dogs and bicycles. Discounts are available for purchases of 20- and 40-ticket books. Davis Park operates a 250-passenger boat with exposed upper deck seating and enclosed lower deck seating during peak season and an enclosed 49 passenger ferry during slow winter months. The schedule frequency for this service varies by time of year.



The 38'-long Rio Vista docked at George's Island in the Boston Harbor Islands NRA.



The Quaiapen is a 64'-long, 250-passenger ferry with a cruising speed of 15 knots. It operates between the Long Island town of Patchogue and Fire Island.

Vehicle Access to Fire Island

Two bridges connect to Fire Island. Visitors can drive to Robert Moses State Park where they can park for a fee and walk to the Fire Island Lighthouse and visitor center. From the east, visitors can drive to Smith Point County Park, and walk to the Fire Island Wilderness Visitor Center and access the Otis Pike Wilderness Area.

For residents of communities within the park boundaries, a small number of permits allowing driving within the Seashore are issued. Even with a permit, driving is restricted to the off-peak season. The Seashore employees also require a permit for driving on the island. Driving is further restricted from areas where endangered plovers nest.

Private Boat Access to Fire Island

Private boats can dock at Watch Hill or Sailors Haven marinas, or a community marina. However, vessel types that can access the Seashore are limited by the shallowness of the Great South Bay. Some boats moor offshore due to the shallow draft. Seashore employees access the island via park boats, not by ferry.

Access within Fire Island National Seashore

The most common form of transportation within the seashore is walking. Most park areas are within one mile of a community. Residents and visitors within communities use wagons and carts for supply trips. While bicycles are allowed on the off-road vehicle routes, they are restricted in many of the communities, on boardwalks, or in wilderness areas and are difficult to ride on the sand surface that covers much of the island. As a result, bicycles are not a prevalent mode of transportation. Water taxis run between designated communities for approximately \$12.00 roundtrip.

Park maintenance and law enforcement staffs drive on a dirt road or beaches when required for park operations. Staff and patrols also use horses and boats to minimize the amount of park traffic on the island.

Concessionaire Contract Issues

Fire Island National Seashore owns the ferry terminals at Watch Hill and Sailors Haven on Fire Island, and at the village of Patchogue. However, the maintenance of these terminals has been contracted to the ferry providers and concessionaires. Complications that have arisen from the arrangement are that contract provisions requiring levels of maintenance and hours of operation are not enforced. Additionally, the Seashore does not take an active role in prioritizing repairs. At the Patchogue terminal, the restrooms are only opened during the short period while the ferry is at the terminal.

New Patchogue Ferry Terminal

Fire Island National Seashore has received Alternative Transportation in Parks and Public Lands (ATPPL) and Federal Highways funds to replace the existing ferry terminal in Patchogue. The new terminal replaces an aging structure with inadequate shade for waiting visitors which was intended to be temporary. Passengers waiting for the ferry often stayed in their cars until the boat arrived at the terminal due to a lack of amenities. The new terminal will include restrooms, a ticketing area, and an enclosed multipurpose area for meetings and interpretation. The terminal shares a parking lot with Park headquarters. In addition to providing improved visitor amenities, a mainland terminal with year-round interpretive displays will serve as a more fitting gateway to Fire Island National Seashore; it ties the headquarters to the island, acts as a catalyst for revitalizing Patchogue's waterfront district, and connects to the Long Island Express train station located nearby.



NPS ferry terminal in Patchogue

Gulf Islands National Seashore: West Ship Island

Ship Island Excursions operates a ferry service between Gulfport, Mississippi, and West Ship Island, a Gulf Islands National Seashore Area in the Mississippi District. West Ship Island is located 11 miles south of the Mississippi coast and draws visitors to its beaches and historic Fort Massachusetts. The only access to the island is through the ferry service or by private boat.

Ferry Operations

Ship Island Excursions has been operating tours to Ship Island since 1926, and continued operations after the establishment of GUIS under a concessionaire's contract with NPS which is renewed at five year intervals. The company is family-owned and operated. Ship Island Excursions owns three passenger ferries: two 110', 350-passenger ferries and one 60-foot, 150-passenger ferry, all K-class vessels.

A one-way trip between Gulfport and Ship Island takes approximately one hour and runs once a day for five days per week in spring and fall, with two runs on Saturdays during spring season only, and twice daily throughout the summer. Tickets costs for the 2009 season are \$24.00 for adults and \$14.00 for children, with \$2.00 discounts for seniors and members of the military. Season passes are also available.

Ship Island Excursions operates from the Port of Gulfport on the mainland, where the city allows passengers to use a parking area that accommodates approximately 300 cars, and docks at the Park Service's 400-foot pier on West Ship Island. The West Ship Island pier also accommodates park service boats, private boats, and fishing.

Ship Island Excursions sells food and beverages on the island and onboard, and rents beach equipment on the island. According to Ship Island Excursions, the additional income from these concessions is key to the financial viability of them operating the ferry service.

5.2.3 Water-Based Alternative Transportation Matrix

Table 5.1 provides an overview of the key service characteristics of nine ferry services currently operating in the national park system. These ferry services represent a wide range of service characteristics, vessel types, and fares, reflecting the different needs of each NPS unit. Additionally, an overview of several different types of vessels that may be suitable for water-based transportation is provided in the appendix.



Visitors departing the ferry at West Ship Island. Fort Massachusetts is visible in the background.

TABLE 5.1
National Park System Ferry Services

Name	Alcatraz Island	Boston Harbor Islands	Cumberland Island	Dry Tortugas		Fire Island		Fort Matanza	Fort McHenry	Fort Sumter	Sandy Hook	West Ship Island
Location	California	Massachusetts	Georgia	Florida		New York		Florida	Maryland	South Carolina	New Jersey	Mississippi
Park Type	National Rec. Area	National Rec. Area	National Seashore	National Park		National Seashore		National Monument	National Monument	National Monument	National Rec. Area	National Seashore
2007 Visitation			72,449	63,475		616,233		830,672	575,644	716,180	1,964,043	
Entrance Fee	No	No	\$4.00	Included		No		No	\$7.00	No	No	\$3.00
Service				Yankee	Sunny	Sayville	Davis					
Adult Fare	\$26.00	\$14.00	\$17.00	\$159	\$135	\$12.00	\$16.00	Free	\$9.00	\$15.00	\$45.00	\$23.00
Child Fare	\$16.00	\$8.00	\$12.00	\$119	\$90	\$7.00	\$10.50	-	\$4.00	\$9.00	\$12.00	\$13.00
Senior Fare	\$24.50	\$10.00	\$15.00	\$149	\$90	-	-	-	-	13.5	-	\$21.00
Family Fare	\$79.00	\$42.00	-	-	-	-	-	-	-	-	-	-
Other Access	Boat only	Boat only	Boat only	Boat only		Yes		Boat only	Yes	Boat only	Yes	Boat only
Season	Year round	May-October	Year round	Year round	Year round	Year round	Year round	Year round	April-October	Year round	June-September	March-October
Annual Passengers	1.4 million	70,000	40,000	46,000		75,000		52,000	33,000	265,000		50,000
Days of week	Daily	Daily	Daily-peak Weekend-off-peak	Daily	Daily	Daily	Daily	Daily	Daily	Daily	Daily (Wkends in June)	Daily-peak Wed-Sun-off-peak
Hours (Peak Season)	9:00a - 6:50p	9:00a - 5:00p	9:45a - 5:30p	8:00a - 5:00p	8:00a - 5:00p	Varies	Varies	9:00a - 5:30p	10:00a - 8:00p	9:30a - 2:30p	Wkdy-9:30a -2:45p Wkend-8:50a-5:45p	9:00a - 5:00p
Daily Trips (Peak Season)	16	8 wkday 16 wkend	2-3	1	1	Varies	Varies	8 trips	Every 15-20 min.	6	2	2
Trip Time	8 min	Varies	45 min	2 hours	2 hours	20 min	20 min	15 min	Varies	30 min	65 min	1 hour
Interpretive Services	Video	No		Onboard naturalist	-	No	No	Park Staff	No	Fully narrated	Nonprofit	Park staff & volunteers
Contracting Arrangement	Concessionaire	Concessionaire	Concessionaire	Concessionaire		Concessionaire		Directly Operated	CUA	Concessionaire	Nonprofit	Concessionaire
Vessel Type	Monohulls	Catamaran & canal boat	Monohull	Monohull	Catamaran	Monohull		Catamaran	Monohull	Monohulls	Catamarans	Monohull
Vessel Capacity	400-700	100/70	146	100	100	250/49		35	26-84	311-423	400	150/300
Concessions	Yes	Yes	Yes	Yes	Yes	No		No	No	Yes	Yes	Yes
NPS Shuttle Service	ADA shuttle	No	No	No		No		No	No	No	Yes	No
Public Transportation	Yes	No	No	No		No		No	Yes	Yes	Yes	No

5.3 Shuttle/Bus Alternative Transportation Systems

Park systems also yield several examples of shuttle and bus services. Many NPS units have been attracted to shuttle and bus systems because of their ability to reduce the need for private automobile use within park boundaries, which helps to relieve impact on natural resources, need for parking facilities, and need for staff to manage traffic issues.

The majority of shuttle and bus systems are not mandatory, meaning visitors have an option to drive or use public transportation. Visitors often opt to use public transportation in the national park system to avoid parking hassles and to focus on scenery rather than driving. Many of the vehicles chosen for these services—vehicles with large windows and comfortable seating—help contribute to the experience of traveling in a park.

Many of these services are designed for NPS units that have inadequate transportation facilities for the amount of vehicle use they experience (contributing to resource damage and congestion) or remote parks (facilitating and more actively managing visitor access). The desire to rely on alternative transportation systems to reduce visitors' impact on the environment is evident in the prevalence of alternative fuel use in NPS shuttles and buses. The many variables associated with shuttle and bus service is evident in Table 5-2. The ability to choose the most appropriate type of service and vehicle has enabled shuttle and bus service to be successful in a variety of situations.

Below, brief overviews of several park units with shuttle or bus service are provided. These systems demonstrate the types of services that have been successfully integrated into other parks. They also help to highlight the types of service considerations that would have to go into the development of a shuttle or bus service operating to the Fort Pickens Area. Additionally, select services with unique characteristics are highlighted in greater detail in the case studies section. These descriptions are followed by a matrix comparing the key service characteristics of the different services.

5.3.1 Shuttle/Bus Operation Overviews

Acadia, Maine

Acadia National Park covers 30,300 acres in Maine, including much of Mount Desert Island, and nearby smaller islands along the Atlantic coast. People have been drawn to the rugged coast of Maine because of its beauty and diversity. The park is home to many plants and animals, and the tallest mountain on the U.S. Atlantic coast. Today visitors come to Acadia to hike granite peaks, bike historic carriage roads, or relax and enjoy the scenery.

To enable visitors to enjoy its vast park lands without the use of a private automobile, Acadia entered into a cooperative agreement with a nonprofit organization to bring bus service to the park. Through this agreement, the park provides operating assistance from transportation fees collected and capital funds from grant programs. Together with funding from the State and private sources, this agreement provides transit service within the park and to the surrounding communities.

The park bus system consists of eight routes operating primarily within the park, but also provides a connection to the gateway community. The service is in operation from June through October seven days per week. Although the schedules vary by route, routes typically operate on a 30-minute schedule between 7:00 a.m. and 12:00 a.m. This service



One of the 28-passenger buses at Acadia National Park

is offered free of charge to park visitors and attracts approximately 350,000 riders per year. The system requires a fleet of 29 propane-fueled buses, each with a 28-passenger capacity.

Devils Postpile, California

Devils Postpile National Monument protects and preserves the Devils Postpile lava formation, Rainbow Falls, and pristine mountain scenery. The rare geologic formation is one of the world's finest examples of columnar basalt. Its columns tower 60 feet high and display an unusual symmetry.

This national monument is located within the Reds Meadow Valley section of the Inyo National Forest. The limitations of the roads in the Forest led to the Forest Service establishing a mandatory shuttle service for most visitors. The service is in operation from mid June to mid September. It operates daily every 20 to 30 minutes from 7:00 a.m. until 7:00 p.m. The shuttle bus serves Devils Postpile among its many destinations within the Inyo National Forest.

The roads are closed due to seasonal weather much of the remainder of the year, but if open when the shuttle service is not in effect, visitors may drive to Devils Postpile and other destinations in the Inyo National Forest. The shuttle is not handicap accessible and those with proof of physical disability may drive to the Monument and other destinations.

The National Park Service collects no fees associated with visits to the Monument. However, the Forest Service charges a transportation fee for the use of the road to all campers and to all persons entering the park with a vehicle, regardless of whether they use the shuttle bus. The Forest Service does not charge an entry fee, only this expanded amenity fee. Bicyclists are not charged a fee unless they choose to use the shuttle bus. The fee is \$7.00 for adults and \$4.00 for children. Other fee options include buses (\$70-\$140 per bus), and season passes for \$35.00.

False Cape, Virginia

False Cape State Park is a mile-wide barrier spit located near Virginia Beach, Virginia. The park is extremely primitive and there is no vehicle access. Access is by boat or by one of two trails through the Back Bay National Wildlife Refuge.

From April to October access to the park is also provided via a tram. The tram is van-on-chassis vehicle with an open sided passenger compartment with seating for 20 people. The tram operates one trip per day. It operates daily between Memorial Day and Labor Day, and Fridays, Saturdays and Sundays during the spring and fall shoulder seasons. The fee is \$8.00 for adults and \$6.00 for children. In addition, there is a \$2.00 per person entrance fee for the National Wildlife Refuge.

The trail used by the tram is closed from November through March and the only access to False Cape is by boat or along the beach. A specialized beach crawler shuttle is used to transport visitors during those months. The beach crawler has large, pressure-controlled tires that allow it to travel over soft sand. The vehicle is a modification of a Terra Gator farm equipment tractor typically used for pesticide application in farm fields. The vehicle can hold 36 passengers in the custom compartment attached to the bed of the vehicle. The conversion was developed in conjunction with the Defense Advanced Research Projects Agency (DARPA), which also funded the majority of the vehicle purchase.



Mandatory busing to Devils Postpile is required due to the limited roadway access through the surrounding National Forest



A customized oversand tractor is used to transport visitors through Back Bay National Wildlife Refuge into False Cape State Park

The park owns the Terra Gator and directly operates the service. Two park employees are required to operate the vehicle: one to drive and one to ride in back with visitors. The noise associated with the vehicle makes interpretation difficult during the ride. With passengers, the Terra Gator travels at a speed of approximately 15 miles per hour and the typical trip time is 45 minutes. The service operates on weekends and provides one trip per day, subject to a minimum ridership of 10 people. The fees are the same as for the tram. Over the course of a winter season, the service typically attracts between 1,000 and 1,200 visitors.

Sandy Hook, New Jersey

As part of the ferry service discussed in the water-based transportation services section, the ferry operator provides a shuttle system in the park through a contractor. This shuttle system enables ferry riders to access all of the park destinations, including a light house, Fort Hancock, and several popular beaches. The shuttle operates only during the hours of ferry operation, daily June through the end of September. The shuttle service is free to ferry riders and costs \$1.00 for all other visitors.

This service also supplements transportation for all visitors. Although the park is accessible by car in addition to ferry, popular parking areas often reach capacity. The shuttle system enables visitors to park at remote locations and easily travel to popular destinations. The shuttle system consists of two loops operated by school buses: one 10-minute loop and one 20-minute loop. The shorter loop connects visitors to popular beaches and the longer loop stops at all major park destinations. The 10-minute loop is only operated on weekends.

Glacier, Montana

Glacier National Park in Montana is home to pristine forests, alpine meadows, rugged mountains, and spectacular lakes. With over 700 miles of trails, Glacier attracts hikers and visitors seeking wilderness and solitude. Other attractions include historic chalets and lodges and the Going-to-the-Sun Road, an engineering marvel spanning 50 miles through the park's wild interior.

In 2007 a shuttle service along Going-to-the-Sun Road was established to help alleviate traffic problems during road reconstruction and to provide visitors with a means to enjoy a car-free day in the park. Through a cooperative agreement with a local paratransit provider the park purchased 30 shuttle vehicles for shared use. The vehicles were to be used in the park during the summer months and then for public transportation throughout the county and state for the remainder of the year.

There are four shuttle routes operating within the park. The service operates daily from July through August and is free of charge to riders. The service frequency varies from route to route, but stops are typically served every 15 to 30 minutes between 7:00 a.m. and 7:00 p.m. Different sized vehicles are used on these routes, ranging from smaller 12-passenger vans to 20-passenger small buses. The transportation infrastructure in parts of the park requires the use of the smaller vehicles to transport visitors to certain locations. The buses are capable of operating on biodiesel fuel.



A 20-passenger vehicle is used for the shuttle service along the 50-mile Going-to-the-Sun Road.

Zion, Utah



Transportation fees are used to pay for the mandatory shuttle service in Zion National Park

Zion National Park, located in Utah, consists of 229 square miles of park land. One of the many attractions at this park is the 15-mile Zion Canyon created by the Virgin River cutting a half mile into sandstone. The park is located at the junction of the Colorado Plateau, Great Basin, and Mojave Desert regions. This unique geography and ecology allows for unusual degree of plant and animal diversity. Nearly 400 species of birds, mammals, and reptiles call this park home. Additionally, numerous plant species inhabit the desert, riparian, woodland, and coniferous forest regions of the park.

Zion established a shuttle system to alleviate parking and traffic problems within the park. Through a service contract, the park uses transportation fees it collects from all visitors to subsidize a shuttle system operated by a contractor. The service operates from March through October on a daily basis every seven minutes, typically running from 6:30 a.m. until 11:00 p.m. During this time, the Zion Canyon Scenic Drive is closed to private vehicle use and accessible only by shuttle.

The high frequency of service enables park visitors to rely on the shuttle system without planning to meet specific buses. The system consists of two loops, one in the park and one in the gateway community. This enables visitors to park in the gateway community and avoid bringing their vehicles into the park where parking is limited and quickly reaches capacity. Within the park the shuttle is free to park visitors. The 30 buses used in the system can have a trailer attached to expand passenger capacity and are powered by propane fuel.

5.3.2 Land-Based Alternative Transportation Case Studies

The following three examples illustrate some of the issues, considerations, and arrangements that have gone into shuttle and bus system operations in the national park system. These examples demonstrate that each park will have to identify the most appropriate arrangement to successfully meet its transportation needs.

Cape Cod National Seashore

Cape Cod National Seashore consists of 44,000 acres of beach, forest, and wetlands along a 40-mile section of coastline on Massachusetts' Outer Cape, stretching from Chatham to Provincetown. The National Seashore includes five National Park Service beaches that are supervised from late June through Labor Day. The park beaches are a major tourist destination on the Outer Cape. In 2007, the park reported over 4.3 million recreational visitors, with the majority of visits recorded at the beaches.

Coast Guard Beach, located just outside the Town of Eastham, is the only beach without direct vehicle access for visitors. Similar to the other beaches, the Coast Guard Beach once had a large parking lot located on the oceanfront. This parking facility was destroyed during a severe storm in 1978. After the storm, the majority of parking for the Coast Guard Beach was relocated to Little Creek, a new parking facility located approximately one mile inland. A small amount of parking was restored at the beach for handicap parking and Eastham residents. The vast majority of visitors must park at the Little Creek facility and take a park-operated shuttle to the beach or walk.

While the first shuttle service to Coast Guard Beach—operated with school buses—was born out of necessity, the park's shuttle service has evolved into an efficient service that meets the transportation needs of park visitors. As Cape Cod National Seashore plans for its future, it anticipates introducing inland parking facilities with shuttle services to other

beaches as oceanfront parking lots are lost or become unsafe. In preparation for visitors relying more on public transportation to access the National Seashore, the Park has partnered with the Regional Transit Agency (RTA) to initiate a flexible-route bus running the length of the Outer Cape. As connections between the RTA bus route and park shuttle service develop, more visitors and residents will be able to take advantage of park resources without using a personal automobile.

The increasing role of public transportation in the Cape Cod National Seashore will help guarantee the park can maintain its visitation even as it reacts to natural changes that impact existing facilities. Additionally, the use of public transportation will help reduce congestion in the vicinity of the park and reduce potential disruption of natural and cultural resources. Planning now for the increased role of public transportation is positioning Cape Cod National Seashore to continue to competitively pursue limited funding opportunities and proactively manage access to the park.

Park Shuttle Operations

Cape Cod National Seashore directly operates the shuttle service between the Little Creek parking lot and the Coast Guard Beach. The shuttle service is available on weekends from Memorial Day through September with daily service from late June through Labor Day. Shuttles do not follow any set schedule; they operate on-demand during slow periods and run continually during the busy summer weeks (the last two weeks in July and the first two weeks in August). During the peak summer weeks, the shuttles operate up to 20 trips per day per vehicle.

The park owns four gasoline-powered trams and six passenger trailers. The trams are converted from Ford 350 vans to a shuttle with a closed cab and a 27-passenger open-air seating area with limited room for personal belongings. Each park tram also pulls a 36-seat passenger trailer. During the summer, all four trams are employed on a daily basis to provide reasonable service frequency; no back up vehicles are available. The trams are fueled approximately every other day at a nearby gas station. Maintenance of the vehicles is handled by two staff mechanics at the park in the park's maintenance facility located at its headquarters near Marconi Beach.

Similar to the other park beaches, an entrance fee of \$15 per vehicle is collected at the Little Creek parking lot. There is no additional fee for using the shuttle. Once visitors have parked, they board a shuttle at the front of the parking lot. Waiting time for a shuttle departure is typically within five to seven minutes. The shuttle only stops at the parking lot and the Coast Guard Beach. During the peak summer weeks, the shuttle system transports approximately 2,000 to 3,000 passengers per day.

Public Transportation Partnerships

Cape Cod National Seashore has pursued a partnership with the Cape Cod Regional Transit Authority (CCRTA) to increase transit access in the vicinity of the park. Through this partnership, the CCRTA introduced a new flexible-route bus service, The Flex, operating the length of the Outer Cape, primarily along Route 6. This route operates seven days a week from 6:30 a.m. until 8:30 p.m. with hourly headways. Although The Flex follows a set route and makes scheduled stops, riders can request route deviations within three-quarters of a mile of the route with two hours advanced notice. Additionally, riders can flag the bus at unscheduled stops except when the bus is operating on Route 6. The cost of a one-way trip on The Flex is \$2.00.

Through an agreement with CCRTA, the Seashore provides funding for capital investment (such as buses and information technology) and planning and CCRTA pays for the cost of operating the service. The Park has purchased 12 29-foot Gillig buses and gave them over to the RTA. As a partner with CCRTA, the Park also participates in planning how the route will serve the Outer Cape.



One of the parking shuttle trams used in Cape Code National Seashore at Coast Guard Beach

In an effort to increase access to the National Seashore through public transportation, the Park has planned the construction of several bus shelters at existing bus stops. The community was involved in planning the location of the shelters and their design. Each shelter will have the same base design, but the exterior siding and roofing materials can be customized to mirror the architecture of the town where each one is located. Two of these shelters—one located at the Salt Pond Visitor Center and the other located near Marconi Beach—offer potential connection points to existing or future shuttle service. If the CCRTA markets the Flex as providing access to Coast Guard Beach, the Park is open to running the shuttle to the Salt Pond Visitor Center, providing the opportunity for visitors and residents to access a park beach exclusively with public transportation.

Funding

Cape Cod National Seashore has relied primarily on the Federal Highway Administration's (FHWA) Category 3 grant program to make investments in alternative transportation. This program is designed to provide national parks with funding for capital investment in alternative transportation projects.

The National Seashore has used Category 3 funds to construct a new maintenance facility at its headquarters near Marconi Beach. This maintenance facility provides an adequate space for park mechanics to work on the shuttle vehicles. This source of funding has also paid for the planning of the new bus shelters and will pay for their construction. The Seashore also used Category 3 funds to purchase its tram vehicles and the 12 buses it gave to the CCRTA.

Category 3 funds cannot be used for the cost of transportation operations, requiring the Seashore to identify other financial resources to sustain the shuttle system and bus route. To cover the cost of operations for the shuttle, the Seashore dedicates a portion of the entrance fees it collects to pay for the service. The Flex route operations are paid by CCRTA with a mix of federal, state, and local funds. Since the bus route also serves nine towns on the Outer Cape, the local share of the operation cost is distributed among many municipalities.

Hawaii Volcanoes National Park

Hawaii Volcanoes National Park (HAVO) has entered into a partnership with the Hawaii National Energy Institute (HNEI), the Department of Energy (DOE), the State of Hawaii, and Kilauea Military Camp (KMC) to introduce a hydrogen/electric hybrid shuttle system to the park. As host to over 2 million visitors a year, HAVO can provide the educational outreach to showcase alternative fuel-use in Hawaii. The state is about 90 percent petroleum dependent, all of which must be imported. The hydrogen technology components are being developed by HNEI and Hawaii Center for Advanced Transportation Technologies (HCATT). The alternative-fuel shuttle program will begin a two-year demonstration period in 2009.

Technology

Initially, fueling the shuttles by hydrogen fuel cells alone was explored, but the fuel cells would not function in the high quantities of sulfur dioxide found in HAVO. Purely electric shuttles would not be able to climb the steep hills at HAVO. The current shuttle being considered is primarily electric with a hydrogen range extender. The park will buy two traditional gas-powered shuttles and have them converted to hydrogen-electric powered shuttles, a process which takes six to nine months. The DOE will allocate a third vehicle to the project. The electricity used to produce the hydrogen will be taken off the existing grid at night, when the grid is less active and electricity would otherwise go to "waste". The existing grid is 20 percent geothermal, and solar power possibilities for hydrogen production are being explored.

Shuttle System

Due to poor air quality stemming from volcanic activity in the park, the shuttles used in the project will be enclosed. Each will be staffed by both a driver and an interpretive ranger. The first year goal is to have two staffed shuttles taking visitors on designated interpretive tours. Tour times are expected to last from one to two hours, including time spent at predetermined park attractions. A third shuttle will be used to relieve congestion in the park by linking the popular Thurston Lava Tube and available parking approximately one mile away. Future fixed-route service will be considered for subsequent years. The shuttles will also be employed in the event of an eruption within the park, which will attract many additional visitors. Visitors will park at underutilized locations within the park, and be shuttled to the appropriate viewpoints.

Funding

The HNEI is receiving financial support from the State of Hawaii to oversee and monitor the success of the technology. Kilauea Military Camp, a Department of Defense recreational facility located within the park, will provide operational support, including supplying and training drivers during the initial years of the shuttle, vehicle system checks, and a fueling site location. The fueling station production and design and fueling costs will be paid for by State of Hawaii and DOE funds. HAVO received FHWA Category 3 funds for two shuttles and will provide interpretive and project management personnel. The Park hopes to receive funds for three more shuttles through centennial funding in 2009. Long-term operational funding for the project is not yet determined.

Sequoia/Kings Canyon National Park

Sequoia/Kings Canyon National Park (SEKI) ran the second season of a three-year pilot shuttle system during the 2008 peak season. The shuttle system consists of three routes, one connecting Sequoia National Park with the nearby town of Visalia, which meets two routes connecting internal attractions. The purpose of the shuttle system is to enhance visitor experience, rather than to mitigate congestion within the park.

Cooperative Agreement

Through a cooperative agreement with SEKI, the City of Visalia operates both the internal and external shuttles through a transit company, MV Transportation. The City receives direct CMAQ and ATPPL funds for the vehicles and operating expenses for the external shuttle. In addition, the City charges a \$15 fare per person for the external shuttle and receives funds to operate the internal shuttle from SEKI, as set forth in a Cooperative Agreement and Task Agreement. The internal shuttle is free of charge. Although visitors entering the park are assessed an entrance fee, the fees collected on the shuttle are put towards shuttle operation expenses and are used to offset ticket prices. Therefore, shuttle riders pay a flat \$15 fare, out of which an entrance fee is deducted, but returned to MV Transportation via the City of Visalia for operational expenses.

Funding

SEKI paid for the 2008 leasing expenses of vehicles through ATPPL funds. Other operating costs were paid for by a transportation fee collected by SEKI. Transportation fees are collected as part of the entrance fee—to visitors it appears that they are paying just one fee—and is set aside to pay for transportation expenses at SEKI. NPS units need special permission to collect transportation fees. SEKI plans to fund the next year of the pilot program and following years should the shuttle system become permanent, through a transportation fee. The funds collected during the 2008 season are expected to be sufficient to cover the costs of 2009 shuttle operations. At the gate, SEKI charges \$10 in entrance fees and \$10 in transportation fees per vehicle for a portion of the year. Unlike the fee demo money, of which 20 percent is sent to the national level for distribution, 100 percent of the transportation fee stays within the park where it must be used on transportation projects.

Through this pilot program, SEKI has had the opportunity to experiment with the service and discover the service characteristics that will be sustainable and meet the transportation needs of the park. As part of this process, the park is evaluating its current service and is planning to make several service changes before the service begins operating again in 2009.

5.3.3 Shuttle/Bus Transportation Matrix

Table 5.2 provides an overview of the key service characteristics of the seven shuttle services. These shuttle and bus systems offer examples of a wide range of service characteristics and vehicle types reflecting the different needs of each location. Additionally, an overview of several different types of vehicles that may be suitable for land-based transportation is provided in the appendix.

Table 5.2
Park Shuttle/Bus Services

Name	Acadia	Cape Cod	Devils Postpile	False Cape	Sandy Hook	Glacier	Zion
Location	Maine	Massachusetts	California	Virginia	New Jersey	Montana	Utah
Park Type	National Park	National Seashore	National Monument	State Park	National Rec. Area	National Park	National Park
2007 Visitation	2,202,228	424,584	120,758	35,000	1,964,043	2,083,329	2,657,281
Entrance Fee	\$20/vehicle	\$15/vehicle	\$20/vehicle	-	-	\$25/vehicle	\$25/vehicle
Adult Fare	Free	Free	Free	\$8.00	Free	Free	Free
Child Fare	-	-	-	\$8.00	-	-	-
Senior Fare	-	-	-	\$8.00	-	-	-
Other Access	Yes	Yes	Mandatory shuttle	No	Yes	Yes	Yes
Season	June - October	Memorial Day - Labor Day	June 15 - September 15	November - March	June - September	July - August	March - October
Days	Daily	Daily		Weekends	Daily	Daily	Daily
Hours of Operation	7:00a - Midnight (varies by route)	9:00a - 4:30p	7:00a - 7:00p	9:00a - 1:00p	Weekday-9:30a -2:45p Weekend-8:50a-5:45p	7:00a - 7:00p	6:30a - 11:00p
Daily Trip Frequency	Approx. every 30 minutes	On-demand (up to 80 trips per day)	20-30 min	1 trip	10-20 min	15 - 30 min	7 minutes
Interpretive Services	No	No		Yes	No	No	
Contracting Arrangement	Contracted through a nonprofit	Directly operated	Cooperative with Reds Meadow (FS)	Directly Operated	Contracted through a nonprofit	Cooperative with Transit Agency	Service Contract
Internal	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Gateway Connection	Yes	No	Yes	No	No	No	Yes
VehicleType	Bus	Converted van with trailer	Bus	Converted tractor	School Bus	Small Bus	Bus with trailer
Vehicle Capacity	28	63		36	60	12 - 20	
ADA Accessible	Yes	No	No	No	Yes	Yes	Yes
Power	Propane	Gasoline		Diesel	Diesel	Biodiesel	Propane
NPS Ferry Service	No	No	No	No	Yes	No	-
Public Transport.	Yes	Yes	Yes	No	Yes	No	No
Other	-	-	Fare outside park	-	\$1 for non-ferry riders	-	-

5.4 Alternative Fuels Overview

The National Park Service has a longstanding commitment to environmental preservation and leadership. As a steward and champion of the environment the NPS has begun to integrate alternative fuels into national park system operations and transportation programs. The use of alternative fuels can support the NPS mission to protect resources by reducing the impact on the environment through reduced emissions and the use of renewable energy sources.

Exploring the potential for using alternative fuels in an alternative transportation system is consistent with the NPS policy guidelines set forth in *Management Policies 2006*. When alternative transportation solutions are implemented within the national park system, it is NPS policy that those solutions “should consider whether the project...will incorporate the principles of energy conservation and sustainability.”⁸ By setting a standard of achieving the highest environmental ethic, the NPS has signaled the importance of investigating the feasibility and benefits of turning to alternative fuels to power an alternative transportation system.

The environmental leadership role of the NPS is evident in the numerous examples of alternative fuel use found throughout the national park system. Many of the shuttle and bus systems operating in parks rely on alternative fuels, such as propane buses in Acadia National Park and biodiesel buses in Glacier National Park. These are just a few of the examples of alternative fuel use in the national park system and the list continues to grow each year.

There are numerous extant and emerging propulsion technologies that offer advantages—such as producing lower emissions and coming from renewable resources—over conventional gasoline and diesel fuels. Many alternative fuel options are relatively rare, making them more difficult to obtain and costly. As a variety of alternative fuel technology and infrastructure is advanced, alternative fuels will likely become more readily available and more affordable.

Below, a brief overview of several alternative fuel options is provided. Most of the transit vehicles discussed above can be designed or modified to accept a variety of these alternative fuels. Unfortunately, alternative fuel options for water vessels are currently much more limited. There are several publications and resources that provide in-depth information on alternative fuel options. More detailed information can be found in the NPS publication *Transit Vehicles for the National Parks: Factors and Technologies for Vehicle Selection* and at the Department of Energy website <http://www.afdc.doe.gov/>.

- **Biodiesel** – derived from renewable resources that are biodegradable and nontoxic; can be blended with diesel or used pure; can be used in diesel engines with few or no modifications
- **Ethanol** – derived from renewable resources that are biodegradable and nontoxic; typically blended with gasoline or diesel; comparable cost to gasoline
- **Natural Gas** – extracted from domestic underground reserves and is either compressed (to form CNG) or liquefied (to form LNG); lower cost and energy content than conventional fuels; comparable vehicle range to conventional vehicles requires carrying greater fuel supply

⁸ NPS Management Policies, 132.

- **Liquid Petroleum Gas/Propane** – product of natural gas processing and crude oil refining; lower cost and energy content than conventional fuels; comparable vehicle range to conventional vehicles requires carrying greater fuel supply
- **Methanol** – liquid alcohol fuel commonly made from natural gas or renewable resources containing carbon; can be blended with gasoline or used in a pure form; cost subject to volatility based on demand for its other uses
- **Hybrid-Electric** – combination of on-board electric storage with an on-board power unit fueled from either conventional or alternative fuels; allows for reduced fuel consumption and emissions; comparable range to conventional vehicles
- **Battery Electric** – energy provided from a battery rather than a fuel source; no tailpipe emissions, but emissions may occur at power plant; shorter range than conventional vehicles; cost depends on cost of electricity
- **Hydrogen** – derived from any material rich in hydrogen; currently use is limited to experimental or prototype vehicles; only emission from fuel cells is water vapor; lower energy content; comparable vehicle range to conventional vehicles requires carrying greater fuel supply

5.5 Conclusions

Within the national park system there are myriad examples of successful alternative transportation systems. Each year, millions of visitors travel to and within national parks, monuments, recreation areas, and seashores by shuttles, buses, and ferries. The integration of these alternative transportation modes into park operations has many potential benefits for park units, from protecting natural resources to reducing the need for expanding infrastructure to easing congestion. While there are many potential benefits gained from the implementation of an alternative transportation system, it is the specific needs of each park unit that determines exactly what configuration of alternative transportation services and operations will best suit each unique situation.

The above examination of several existing alternative transportation systems can provide valuable lessons to help guide GUIS as it considers implementing its own alternative transportation solutions. This review has provided the following insights about alternative transportation in the national park system:

5.5.1 Ferry Service

- Ferry service is frequently used to connect visitors to NPS sites that are accessible only by boat. In cases where other access is available, such as by private automobile, ferry service offers advantages such as providing a more direct and quicker route from certain destinations.
- Ferry service to NPS sites with other access, such as by private automobile, tend to be one component of a larger ferry system. Ridership from commuters and tourists traveling to other destinations helps support these services.
- The cost of a ferry trip tends to be more expensive than other transportation options. The ability of a ferry to attract riders despite higher costs, especially for a family, may in part be explained by the added experience visitors receive from a boat ride, making it more than just a means of transportation.
- Concessionaire's licenses appear to be the most popular means of providing ferry service within NPS units. These services are profitable, allowing private companies to adequately recover operating costs from fare collection.
- A wide range of ferry service parameters is employed around the national park system, which reflects the different needs of each park. Some parks provide frequent service multiple times a day whereas others provide as few as one trip

per day. These service parameters are likely determined by demand for the service once it has become established.

- When park units are served by multiple modes, the redundancy provides flexibility in maintaining or reestablishing access after natural or man-made service interruptions.
- There is little of the infrastructure required to support ferry service on park lands other than the docking facilities. Fueling, maintenance and berthing for the vessels occurs elsewhere. Parking for those departing from the park to other destinations is not provided. Parking for those destined to the park is usually provided among public parking facilities or those owned by the ferry operator.
- The onshore ferry departure point is often used to provide educational and administrative services for the park. Park entrance fees, if applicable, are collected by the ferry operator. Printed educational materials are provided at a minimum, and sometimes a full visitor education center is integrated into the ferry departure point.
- Ferry service provides an opportunity to offer interpretative services when staffing allows.

5.5.2 Shuttle/Bus Service

- Shuttle/bus service to a park is always used to supplement other transportation options, such as private automobile access, and is never the only means of access.
- Within a park shuttle/bus service is provided for many purposes, including as parking lot shuttles, for internal circulators, to enhance interpretive opportunities, and as a mandatory service to provide for visitor experience while protecting natural resources.
- Shuttle/bus services largely operate without charge to boarding visitors. In some cases, all visitors contribute to paying for the cost of shuttle/bus service through transportation fees, which is a fee collected as part of an entrance fee from all visitors and set aside for funding transportation within an NPS unit.
- One of the few services identified with a significant fee is an over-sand shuttle in False Cape State Park. This vehicle provides an excursion for visitors, not just basic transportation access.
- Shuttle/bus services tend to operate at a minimum of every 30 minutes. Longer service frequencies require significant trip planning for visitors.
- There are a wide range of agreements NPS units use to provide shuttle/bus service. While some NPS units directly operate service, it appears most parks try to avoid day-to-day management and operation. The most convenient arrangement appears to be cooperative agreements with states, local municipalities, nonprofits, and transit agencies, which allow NPS units to leverage funding to put towards a service, but another rely on entity to contribute and be responsible for operation.
- Shuttle/bus service provides an opportunity to offer interpretative services when staffing allows.
- Infrastructure provided for a shuttle service is largest for the mandatory operations. These need large parking areas and transportation centers, often provided inside the park. For smaller operations the infrastructure within the park is usually limited to signage, modest shelters, and bus stops. Garaging, maintenance and fueling is usually done outside of the park.

5.5.3 Vehicles

- There is no standard ferry vessel used in national parks or elsewhere. There are general parameters for flat-water versus open-water use, but the boat type (monohull, catamaran) and passenger capacity is often dictated by what the local operator has available. Only in larger NPS ferry operations are new boats typically used.
- There are many choices of standard shuttle buses and trams that can be used to meet the specific ridership demands and physical constraints at a park. Customized vehicles are readily available as well.
- During the off season ferries are used at other locations and for other purposes. This helps minimize the costs for the park operation. Standard buses can often be used elsewhere during the off season, but specialized vehicles such as many trams cannot be and their full capital costs are borne by the park shuttle operation.

5.5.4 Alternative Fuels

- Alternative fuels provide NPS units with the opportunity to advance the NPS mission of protecting natural resources and limiting environmental impacts.
- Alternative fuel options such as biodiesel, propane, and compressed natural gas are available for all standard buses and shuttles. Many are now available with hybrid-electric systems. Most specialty vehicles are available with at least one alternative fuel option.
- The lack of available fueling infrastructure, such as CNG fueling stations, or the complexity of maintenance, such as with all-electric buses, often dictates the choice of alternative fuel options.
- Ferry vessels and all marine vessels have lagged behind land vehicles regarding emissions control and alternative fuel options. Tier II engine controls and catalytic modifications are now in use and these result in considerably leaner emission and lower fuel use. Biodiesel mixes are used by a few ferries. The latest alternative fuel modification for a ferry is the *Hornblower Hybrid* owned by Alcatraz Cruises that uses solar and wind power to supplement the diesel power in a 64'-long, 149-passenger catamaran ferry with an operating speed of 10 knots.

Chapter 6: Service Options

This chapter describes potential alternative transportation services for visitors to Fort Pickens. These include options for access from both land and water. Each option is discussed with regards to service characteristics, operational requirements, capital requirements, and cost. This chapter also includes discussion of the advantages of the alternative transportation options with regards to temporary closures of Fort Pickens Road within the park.

6.1 Ferry Service

Fort Pickens is currently accessible by water via private boat and via several charter-boat operators licensed as CUAs. Ferry access to the park has long been discussed. Among the studies that have been conducted are the 1978 *Transportation Study for Gulf Island National Seashore* that looked at service between the Naval Live Oaks and Fort Pickens Areas and the update in 1989, *Ferry Service Feasibility Study*, which looked at service among Naval Live Oaks, Downtown Pensacola, Fort Pickens and the Naval Air Station.

The most recent evaluation was prepared in 2000 when Bourne Consulting Engineering authored the *Pensacola Bay Area Transportation System Study* (“the Bourne Study”) for the Metropolitan Planning Organization. The Bourne Study looked at ferry service in Pensacola Bay serving four locations: downtown Pensacola, Pensacola Beach (Quietwater), Fort Pickens, and the Naval Air Station (NAS).

This study focuses on ferry service to Downtown Pensacola, Quietwater and Fort Pickens. Service to NAS is excluded due to changes that have occurred since 2000. Not only are there increased security and staffing concerns, but the NAS landing area assumed in 2000 is now used for other purposes.

This study also takes into account the progress made by the City of Pensacola to invest in tourist amenities in the downtown and the City’s continued efforts to expand tourist experiences. Among the many recent investments by the City has been the development of the Plaza de Luna and the historic downtown area, and ongoing planning for the Maritime Marine Park. These waterfront developments strengthen the City’s continuing support for ferry service connecting destinations throughout Pensacola Bay.

6.2 Ferry Service General Characteristics

The Bourne Study evaluated ferry operations that would provide “discretionary” trip options for travelers between the four destinations within the bay – Downtown Pensacola, Quietwater, Fort Pickens, and the NAS. The focus was on frequent service between locations as an alternative to automobile travel.

This study, with its focus on Fort Pickens, expands on the advantages of ferry boat service to include the attractiveness of the “excursion” experience as part of the trip. This is an important element of many of the successful ferry operations noted in the State of the Practice chapter. A good example would be the ferry service that is operated in the Mississippi District of GUIIS, at West Ship Island. One of the features of the ferry service at West Ship Island is the boat trip itself where visitors can often view pods of dolphins playing in the ship’s wake. At Pensacola, there is also the experience of the bay

itself, with a ferry boat ride providing visitors a comfortable open-water experience they might not otherwise have access to.

Another difference between the Bourne Study and this study is that the Bourne Study prioritized vessel speed because it evaluated a one-way loop route whereby passengers might travel directly from downtown Pensacola to Fort Pickens but would return to downtown Pensacola via Quietwater. This study keeps open the option that potential ferry operators may have somewhat slower boats, but mitigates this by ensuring that the routing options are direct between all origin-destination pairs.

Two example ferry service options are evaluated. One connects all three locations. The second involves separate routes between downtown Pensacola and Fort Pickens and between downtown Pensacola and Quietwater. Both examples in this study focus on passenger ferry service rather than passenger and vehicle ferry service. This is in keeping with the findings of previous ferry studies, not the least of which is that the landside accommodation for vehicle ferry service (acres of vehicle parking and queuing areas) is not available at any of the destinations.

6.2.1 Ferry Service - Two Boat Operation

For this example of a two-boat ferry operation, each boat would travel a 3-stop loop in opposite directions (shown in Figure 6.1). One would make a loop from Downtown Pensacola to Fort Pickens to Quietwater Beach and back to Downtown Pensacola while the other would travel from Downtown Pensacola to Quietwater Beach to Fort Pickens and back to Downtown Pensacola.

Having one boat operate on each of two loops instead of having two boats operate on a single route ensures passenger convenience by minimizing travel time between any two destinations. For example, with a single circular route someone might be able to travel directly from Downtown Pensacola to Fort Pickens, but their return trip would require travel to Quietwater first and would take twice as long. For Fort Pickens visitor experience the direct travel between destinations (particularly on the return trip) is more important than the frequency of trips.

FIGURE 6.1
Two Boat Ferry Service Routes



Travel time between stops is shown below in Table 6.1. The travel time calculations take into account average cruising speed, as well as time for docking approach and slower speeds through restricted areas such as in GUIS waters and the approach towards Quietwater.

TABLE 6.1
Ferry Boat Travel Time between Destinations

Trip	Distance (nautical miles)	Trip Time at 12 knots cruising speed	Trip Time at 20 knots cruising speed
Downtown - Fort Pickens	6.5	34 minutes	23 minutes
Downtown - Quietwater	8.0	43 minutes	29 minutes
Quietwater - Fort Pickens	8.8	49 minutes	34 minutes

Note: Excludes passenger loading and unloading times

The travel time estimates show that a one-hour trip scheduling would be appropriate if a slower boat (such as used at West Ship Island) were used. A faster boat would be able to maintain a 45-minute schedule between stops, but would require rapid loading and unloading of passengers, particularly for the route between Quietwater and Fort Pickens. For the purposes of this evaluation, an example of a simple one-hour trip schedule is used, as noted below.

TABLE 6.2
Example Schedule: Two-Boat Service

Downtown to Fort Pickens	Downtown to Quietwater
9:00 am	9:00 am
12:00 noon	12:00 noon
3:00 pm	3:00 pm
Fort Pickens to Quietwater	Quietwater to Fort Pickens
10:00 am	10:00 am
1:00 pm	1:00 pm
4:00 pm	4:00 pm
Quietwater to Downtown	Fort Pickens to Downtown
11:00 am	11:00 am
2:00 pm	2:00 pm
5:00 pm	5:00 pm

The schedule provides three trips per day in each direction from each of the three dock locations. The schedule provides three trips per day for Fort Pickens visitors boarding downtown. Depending on the departure time, they could stay at Fort Pickens anywhere from 1 to 7 hours before their return trip. Visitors to Fort Pickens from Quietwater would have two trips per day and be able to stay 2 or 5 hours.

For the purposes of this example, the ferry operation is assumed to operate six days per week, Tuesday through Sunday. The day off is in part to provide time for heavy maintenance and to allow for better personnel scheduling, and in part to take advantage of cost efficiencies by increasing average daily ridership.

Cost - Two-Boat Ferry Service

The cost of the two-boat ferry operation is shown below. The costs are based on a two-boat service operating six days per week for a 15-week peak season, with three trips per day in each direction.

Direct costs for operating the two boats are \$685,000. Administrative costs increase the operating cost to \$900,000 for the season. Financing costs for the boats (debt service) increase the overall cost to \$1.1 million for the season.

TABLE 6.3
Cost Estimate: Two-Boat Ferry Service (15-Week Peak Season)

	Cost for 15-Week Peak Season
VESSEL OPERATING COSTS	
Wages and Benefits	\$133,000
Vessel Fuel and Lubricants	390,000
Vessel Maintenance	108,000
Docking and Mooring	0
Marine Hull Insurance	54,000
Subtotal	\$685,000
ADMINISTRATIVE COSTS	
Wages and Benefits	\$85,000
Advertising	75,000
Other	55,000
Subtotal	\$215,000
Subtotal OPERATING COSTS	\$900,000
DEBT SERVICE COSTS	
	\$237,000
TOTAL COSTS	\$1,137,000

The costs include direct operating expenses for the boats, such as wages for the captain and crew, fuel costs, fixed and variable maintenance costs, and hull insurance. No docking or mooring costs are included as these are assumed to be provided to the operator without cost, in keeping with the operation plan being advocated by the City of Pensacola. The cost estimates include a captain and three crew for each boat. Fuel is based on usage of 65 gallons per hour, with adjustments for lesser use while idling at the dock, and a cost of \$4.50 per gallon. Maintenance costs reflect a \$50,000 annual fixed cost for each boat plus \$45 per hour of operation. Hull insurance is calculated at 3 percent of a representative vessel cost of \$2,000,000.

Administrative costs include marketing costs for the ferry service, as well as a share of the operator's administrative overhead for office personnel, office rent, insurance, utilities, etc. It is assumed that the seasonal ferry service would be only one part of the boat operator's business. The boat operator may own and operate other boats, or would use the two ferry boats for charters and other uses when they are not being used to provide ferry service in Pensacola Bay. Although the 15-week peak season equates to 29% of the year, to be conservative the ferry service is allocated 45 percent of these overhead expenses to account for the ferry service being the primary purpose for the boats.

Debt service costs are estimated assuming a \$2,000,000 cost for the boat with 15-year financing at 10 percent. As with overhead costs, 45 percent of the debt service is allocated to the ferry operations.

Ridership Required for Cost Break Even - Two-Boat Ferry Service

Table 6.4 illustrates the roundtrip ridership and fee necessary for the two-boat ferry operation to break even during the 15-week peak season. Two sets of passengers/fares are shown – one for break even costs for just the operating costs and the other including debt service on the boat. It may be that a potential ferry operator would have a less-expensive or older boat that has low or no debt service costs.

The required break even for the two-boat option, running 6 days per week for 15 weeks, operating 10 hours per day, and including debt service, ranges from 44,600 passengers for the season at \$25.00 per roundtrip to 73,300 passengers per season at \$15.00 per roundtrip.

TABLE 6.4
Ridership Required for Break Even Operation:
Two-Boat Ferry Service (15-Week Peak Season)

	Covering Operating Costs Only	Covering Operating Costs and Debt Service
\$15.00 fare	58,000	73,300
\$20.00 fare	43,900	55,400
\$25.00 fare	35,300	44,600

Note: Calculations include profit of \$0.50 per passenger from on-board concessions.

6.2.2 Ferry Service - One Boat Operation

For an example of a one-boat ferry operation, the boat would travel between downtown Pensacola and Fort Pickens three days each week, and travel between downtown Pensacola and Quietwater three different days each week. By offering separate routes on separate days a convenient schedule on both routes can be offered to visitors.

With 12-knot travel times of 34 to 43 minutes for each route, respectively, it is not feasible to have a single boat make enough trips on both routes each day. Trying to would limit service to only two trips between destinations and this would give visitors only one option to travel to their destination and one option to return from their destination. If only one route is operated each day there can be four daily trips on the route and more options for visitors to travel.

Unlike a commuter ferry operation where it is critical to operate service every day, it is less important to do so with this excursion type service catered towards visitors. Overnight visitors stay for an average of 5 to 6 days and would be easily able to coordinate their activities with the ferry schedule. Similarly, many day-trip visitors from the region can coincide their visit with the desired ferry route.

For the purposes of this evaluation, an example of a simple one-hour trip schedule is used, as noted below. The schedule provides four daily trips for each route. Fort Pickens visitors boarding downtown, depending on the departure time, could stay at Fort Pickens anywhere from 3 to 6 hours before their return trip.

FIGURE 6.2
One-Boat Ferry Service Routes

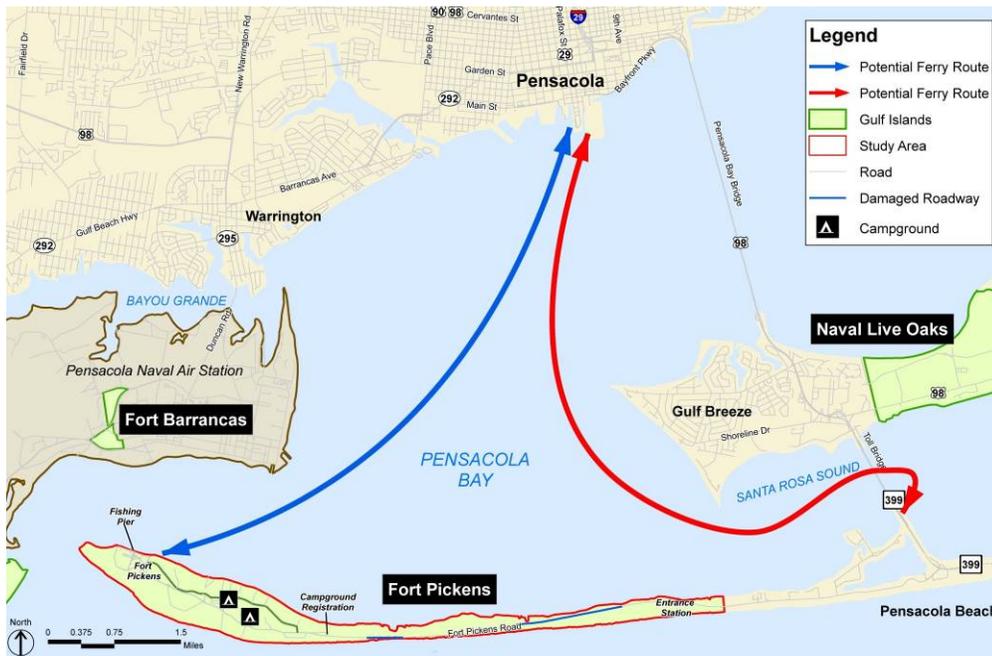


TABLE 6.5
Example Schedule: One-Boat Ferry Service

Downtown to Fort Pickens (Tuesday, Thursday, Saturday)	Fort Pickens to Downtown (Tuesday, Thursday, Saturday)
10:00 am	11:00 am
12:00 noon	1:00 pm
2:00 pm	3:00 pm
4:00 pm	5:00 pm

Downtown to Quietwater (Wednesday, Friday, Sunday)	Quietwater to Downtown (Wednesday, Friday, Sunday)
10:00 am	11:00 am
12:00 noon	1:00 pm
2:00 pm	3:00 pm
4:00 pm	5:00 pm

Cost - One-Boat Ferry Service

The cost of the one-boat ferry operation is shown below. The costs are based on each route being operated three days per week for a 15-week peak season. The cost assumptions and calculations are similar to those for the example two-boat ferry operation.

Direct costs for operating the service are \$256,000. Administrative costs increase the operating cost to \$458,000 for the season. Financing costs for the boats (debt service) increases the overall cost to \$576,000 for the season.

TABLE 6.6
Cost Estimate: One-Boat Ferry Service (15-Week Peak Season)

	Cost for 15-Week Peak Season
VESSEL OPERATING COSTS	
Wages and Benefits	\$67,000
Vessel Fuel and Lubricants	120,000
Vessel Maintenance	42,000
Docking and Mooring	0
Marine Hull Insurance	27,000
Subtotal	\$256,000
ADMINISTRATIVE COSTS	
Wages and Benefits	\$77,000
Advertising	75,000
Other	50,000
Subtotal	\$202,000
Subtotal OPERATING COSTS	\$458,000
DEBT SERVICE COSTS	\$118,000
TOTAL COSTS	\$576,000

Ridership Required for Cost Break Even: One Boat Ferry Service

Table 6.7 illustrates the roundtrip ridership and fee necessary for the one-boat ferry operation to break even during the 15-week peak season. Two sets of passengers/fares are shown – one for break even costs for just the operating costs and the other including debt service on the boat.

The required break even for the one-boat option, running each route 3 days per week for 15 weeks, operating 10 hours per day, and including debt service, ranges from 22,600 passengers for the season at \$25.00 per roundtrip to 37,200 passengers per season at \$15.00 per roundtrip.

TABLE 6.7
Ridership Required for Break Even Operation: One-Boat Ferry Service
(15-Week Peak Season)

	Covering Operating Costs Only	Covering Operating Costs and Debt Service
\$15.00 fare	29,600	37,200
\$20.00 fare	22,400	28,100
\$25.00 fare	18,000	22,600

Note: Calculations include profit of \$0.50 per passenger from on-board concessions.

6.2.3 Ferry Service Ridership Demand

Ferry service to Fort Pickens and elsewhere in Pensacola Bay is supported by the City of Pensacola, the Santa Rosa Island Authority, and many other stakeholders. Nonetheless, the ferry service would likely need to be financially self-sustaining. The following compares the required break even ridership for the two ferry service examples to ridership projections from past studies, with consideration of changes since those past studies were conducted.

Findings from Prior Studies

Ferry access to the park has long been discussed. Among the studies that have been conducted are the 1978 *Transportation Study for Gulf Island National Seashore* that looked at service between the Naval Live Oaks and Fort Pickens Areas and the update in 1989, *Ferry Service Feasibility Study*, which looked at service among Naval Live Oaks, Downtown Pensacola, Fort Pickens and the Naval Air Station. The 1978 study concluded that ferry service between Naval Live Oaks and Fort Pickens was viable using a 150-passenger boat and a \$4.00 fare. The 1989 update identified a viable ferry service to the four locations, with a potential ridership of 60,500 round-trip passengers at a fare of \$6.50.

The most recent evaluation was prepared in 2000 when Bourne Consulting Engineering authored the *Pensacola Bay Area Transportation System Study* (“the Bourne Study”). A detailed analysis of ridership projections for ferry service in Pensacola Bay was conducted as part of the Bourne Study. The study evaluated ferry service to downtown Pensacola, the Naval Air Station, the Fort Pickens area of GUIs, and Quietwater Beach

in Pensacola Beach. The study used survey data to estimate the potential ridership among area year-round residents and overnight visitors.

Submarkets of those two groups were evaluated. Separate ridership projections were made for those residing in (1) the City of Pensacola, (2) the Naval Air Station, (3) Pensacola Beach and (4) the Greater Pensacola Area. The overnight visitor submarket consisted of (1) guests in downtown Pensacola hotels, (2) guests in Gulf Breeze hotels, (3) guests in Pensacola Beach hotels, (4) short-term rental guests at Pensacola Beach, and (5) campers at Fort Pickens.

Ridership projections were made for four quarters – peak Summer season, Spring and Fall shoulder seasons, and Winter off-season. The study found that while there was no significant demand for a commuter-oriented ferry service, there was demand from the discretionary/leisure market for ferry service.

The Bourne Study established year 2018 projections of passenger ridership of 105,000 during the three-month Summer season, 88,000 during the six-month shoulder season, and 35,000 during the three-month winter season. All ridership projections are round-trips.

Updated Bourne Study Ridership Projections

The Bourne Study looked at ferry service in Pensacola Bay serving four locations, and operating both day and evenings. This study focuses on ferry service to three of the same locations (Downtown Pensacola, Quietwater and Fort Pickens), but service to NAS is excluded due to changes that have occurred since 2000. Also, the ferry service examples in this study focus only on daytime service.

Updated calculations of ridership are shown in Table 6.8. The potential ridership for the summer season, for all three destinations and for both day and evening, is 62,926. For travel between Downtown Pensacola and Fort Pickens the ridership is 19,729, and between Fort Pickens and Quietwater the ridership projection for the summer is 9,733.

TABLE 6.8
Updated Bourne Study Ridership Estimates: Ferry Service in Pensacola Bay

Trip Pairs	Peak Season Ridership
Fort Pickens & Pensacola	19,729
Fort Pickens & Quietwater	9,733
Fort Pickens subtotal	29,462
Quietwater & Pensacola	33,461
TOTAL	62,926

Note: 15-week Peak Season, mid-May to mid-August, similar to current operations at West Ship Island in GUIs Mississippi District.

Tables 6.9 through 6.12 show the details of the ridership calculations for the peak season. The tables are as developed for the Bourne Study, with the following updates.

- Year-round resident population and overnight visitor data have been updated to reflect 2008 conditions.
- Future-year projections have been adjusted to 2013 to account for rebuilding activity on Santa Rosa Island.
- The most recent data for average stays by visitors has been included.
- Ridership associated with service to the NAS has been excluded.
- The NAS student population has been excluded from ridership projections on all routes.
- Evening ridership is excluded.
- Columns have been added to the tables to clearly show the impact of the service adjustments compared to the original Bourne Study calculations. For example, as shown on Table 6.9 the Bourne Study determined that there was the potential for 1,628 monthly person-trips by City of Pensacola Residents during the peak season. However, the Bourne Study estimates assumed ferry connections to the Naval Air Station as well as some evening service to Quietwater. Excluding those service segments, the potential trip making by City of Pensacola Residents is only 90% of the amount assumed for the Bourne Study. The other 10% were either making trips in the evenings or to the NAS.

TABLE 6.9
Ridership Projections between Fort Pickens, Downtown Pensacola, and Quietwater (daytime)
15-week Peak Season

Market Area	Market	Occupancy Rates	Avg. Stay (days) (9)	Groups per unit per month	Persons per Group	Monthly Headcount	Average Monthly Trips (all 4 locations per Bourne Study)	Percent of Trips, excluding night and NAS	Trips Between Fort Pickens, Downtown Pensacola, and Quietwater					
									Avg Monthly Trips (one-way)	Avg Trips on a Weekday	Avg Trips on a Friday	Avg Trips on a Saturday	Avg Trips on a Sunday	
									12.8%	15%	19%	15%		
2008														
RESIDENTS	Population													
City of Pensacola (1)	54,283					54,283	1,628	90%	1,466	47	55	70	55	
NAS Residents	2,948					2,948	295	70%	206	7	8	10	8	
Pensacola Beach (2)	2,487					2,487	249	60%	149	5	6	7	6	
Greater Pensacola Area (3)	396,681					396,681	7,934	90%	7,140	228	268	339	268	
NAVAL AIR STATION														
Students (10)	5,900					5,900	5,352	0%	-	-	-	-	-	
VISITORS OVERNIGHT	Units													
Downtown (4)	529	82%	4.80	5.1	2.8	7,591	3,118	70%	2,183	70	82	104	82	
Gulf Breeze (5)	203	82%	4.80	5.1	2.8	2,913	1,197	60%	718	23	27	34	27	
Pensacola Beach Hotels (6)	927	90%	4.80	5.6	2.5	13,036	5,355	60%	3,213	102	120	153	120	
Pensacola Beach Rentals (2)	1,950	90%	4.80	5.6	2.5	27,422	3,249	60%	1,950	62	73	93	73	
Fort Pickens (8)	200	100%	6.10	4.9	3.1	3,049	1,253	30%	376	12	14	18	14	
									555	653	827	653		
2013														
RESIDENTS														
Downtown Pensacola	56,997					56,997	1,710	90%	1,539	49	58	73	58	
NAS Residents	2,948					2,948	295	70%	206	7	8	10	8	
Pensacola Beach	2,611					2,611	261	60%	157	5	6	7	6	
Greater Pensacola Area	416,515					416,515	8,330	90%	7,497	239	281	356	281	
NAVAL AIR STATION														
Students	5,200					5,200	4,717	0%	-	-	-	-	-	
VISITORS OVERNIGHT														
Downtown	529	82%	4.80	5.1	2.8	7,591	3,118	70%	2,183	70	82	104	82	
Gulf Breeze	203	82%	4.80	5.1	2.8	2,913	1,197	60%	718	23	27	34	27	
Pensacola Beach H/M	1,295	90%	4.80	5.6	2.5	18,211	7,481	60%	4,489	143	168	213	168	
Pensacola Beach DU	2,048	90%	4.80	5.6	2.5	28,793	3,412	60%	2,047	65	77	97	77	
Fort Pickens	200	100%	6.10	4.9	3.1	3,049	1,253	30%	376	12	14	18	14	
									612	720	913	720		
2008 Peak Season Totals									65,254	33,279	9,788	12,398	9,788	
2013 Peak Season Totals									72,044	36,742	10,807	13,688	10,807	

(1) American Community Survey 2007 population

(2) Assumed approximately half of dwelling units listed on assessor's website were rental units, same assumption as Bourne report but updated dwelling unit numbers; number of dwelling units was rounded down to 3,900 to account for commercial and vacant properties and provide a more conservative estimate

(3) American Community Survey 2007 population for Pensacola MSA population (Escambia and Santa Rosa counties)

(4) Pensacola Visitors Center

(5) Bourne Study

(6) Pensacola Beach Chamber of Commerce

(8) Bourne Study

(9) Average length of stay for all but Fort Pickens campground. Haas Center, "The Economic Impact of Tourism on the Escambia County Economy" August 6, 2007 and Bourne for Pickens camp stay length

TABLE 6.10
Ridership Projections between Fort Pickens and Quietwater
15-week Peak Season

Market Area	Market	Occupancy Rates	Avg. Stay (days) (9)	Groups per unit per month	Persons per Group	Monthly Headcount	Average Monthly Trips (all 4 locations per Bourne Study)	Percent of Trips Traveling between Fort Pickens and Quietwater	Trips Between Fort Pickens and Quietwater				
									Avg Monthly Trips (one-way)	Avg Trips on a Weekday	Avg Trips on a Friday	Avg Trips on a Saturday	Avg Trips on a Sunday
									12.8%	15%	19%	15%	
2008													
RESIDENTS	Population												
City of Pensacola (1)	54,283					54,283	1,628	0%	-	-	-	-	
NAS Residents	2,948					2,948	295	0%	-	-	-	-	
Pensacola Beach (2)	2,487					2,487	249	20%	50	2	2	2	
Greater Pensacola Area (3)	396,681					396,681	7,934	0%	-	-	-	-	
NAVAL AIR STATION													
Students (10)	5,900					5,900	5,352	0%	-	-	-	-	
VISITORS OVERNIGHT	Units												
Downtown (4)	529	82%	4.80	5.1	2.8	7,591	3,118	0%	-	-	-	-	
Gulf Breeze (5)	203	82%	4.80	5.1	2.8	2,913	1,197	20%	239	8	9	11	
Pensacola Beach Hotels (6)	927	90%	4.80	5.6	2.5	13,036	5,355	20%	1,071	34	40	51	
Pensacola Beach Rentals (2)	1,950	90%	4.80	5.6	2.5	27,422	3,249	20%	650	21	24	31	
Fort Pickens (8)	200	100%	6.10	4.9	3.1	3,049	1,253	10%	125	4	5	6	
										68	80	101	80
2013													
RESIDENTS													
Downtown Pensacola	56,997					56,997	1,710	0%	-	-	-	-	
NAS Residents	2,948					2,948	295	0%	-	-	-	-	
Pensacola Beach	2,611					2,611	261	20%	52	2	2	2	
Greater Pensacola Area	416,515					416,515	8,330	0%	-	-	-	-	
NAVAL AIR STATION													
Students	5,200					5,200	4,717	0%	-	-	-	-	
VISITORS OVERNIGHT													
Downtown	529	82%	4.80	5.1	2.8	7,591	3,118	0%	-	-	-	-	
Gulf Breeze	203	82%	4.80	5.1	2.8	2,913	1,197	20%	239	8	9	11	
Pensacola Beach H/M	1,295	90%	4.80	5.6	2.5	18,211	7,481	20%	1,496	48	56	71	
Pensacola Beach DU	2,048	90%	4.80	5.6	2.5	28,793	3,412	20%	682	22	26	32	
Fort Pickens	200	100%	6.10	4.9	3.1	3,049	1,253	10%	125	4	5	6	
										83	97	123	97
									8,007	4,084	1,201	1,521	1,201
2008 Peak Season Totals									8,007	4,084	1,201	1,521	1,201
2013 Peak Season Totals									9,733	4,964	1,460	1,849	1,460

(1) American Community Survey 2007 population
(2) Assumed approximately half of dwelling units listed on assessor's website were rental units, same assumption as Bourne report but updated dwelling unit numbers; number of dwelling units was rounded down to 3,900 to account for commercial and vacant properties and provide a more conservative estimate
(3) American Community Survey 2007 population for Pensacola MSA population (Escambia and Santa Rosa counties)
(4) Pensacola Visitors Center
(5) Bourne Study
(6) Pensacola Beach Chamber of Commerce
(8) Bourne Study
(9) Average length of stay for all but Fort Pickens campground. Haas Center, "The Economic Impact of Tourism on the Escambia County Economy" August 6, 2007 and Bourne for Pickens camp stay length

TABLE 6.11
Ridership Projections between Fort Pickens and Downtown Pensacola
15-week Peak Season

Market Area	Market	Occupancy Rates	Avg. Stay (days) (9)	Groups per unit per month	Persons per Group	Monthly Headcount	Average Monthly Trips (all 4 locations per Bourne Study)	Percent of Trips Traveling between Fort Pickens and Downtown Pensacola	Trips Between Fort Pickens and Downtown Pensacola				
									Avg Monthly Trips (one-way)	Avg Trips on a Weekday	Avg Trips on a Friday	Avg Trips on a Saturday	Avg Trips on a Sunday
									12.8%	15%	19%	15%	
2008													
RESIDENTS	Population												
City of Pensacola (1)	54,283					54,283	1,628	40%	651	21	24	31	24
NAS Residents	2,948					2,948	295	20%	59	2	2	3	2
Pensacola Beach (2)	2,487					2,487	249	0%	-	-	-	-	-
Greater Pensacola Area (3)	396,681					396,681	7,934	40%	3,173	101	119	151	119
NAVAL AIR STATION													
Students (10)	5,200					5,200	4,717	0%	-	-	-	-	-
VISITORS OVERNIGHT	Units												
Downtown (4)	529	82%	4.80	5.1	2.8	7,591	3,118	30%	936	30	35	44	35
Gulf Breeze (5)	203	82%	4.80	5.1	2.8	2,913	1,197	0%	-	-	-	-	-
Pensacola Beach Hotels (6)	927	90%	4.80	5.6	2.5	13,036	5,355	0%	-	-	-	-	-
Pensacola Beach Rentals (2)	1,950	90%	4.80	5.6	2.5	27,422	3,249	0%	-	-	-	-	-
Fort Pickens (8)	200	100%	6.10	4.9	3.1	3,049	1,253	20%	251	8	9	12	9
									162	190	241	190	
2013													
RESIDENTS													
Downtown Pensacola	56,997					56,997	1,710	40%	684	22	26	32	26
NAS Residents	2,948					2,948	295	20%	59	2	2	3	2
Pensacola Beach	2,611					2,611	261	0%	-	-	-	-	-
Greater Pensacola Area	416,515					416,515	8,330	40%	3,332	106	125	158	125
NAVAL AIR STATION													
Students	5,200					5,200	4,717	0%	-	-	-	-	-
VISITORS OVERNIGHT													
Downtown	529	82%	4.80	5.1	2.8	7,591	3,118	30%	936	30	35	44	35
Gulf Breeze	203	82%	4.80	5.1	2.8	2,913	1,197	0%	-	-	-	-	-
Pensacola Beach H/M	1,295	90%	4.80	5.6	2.5	18,211	7,481	0%	-	-	-	-	-
Pensacola Beach DU	2,048	90%	4.80	5.6	2.5	28,793	3,412	0%	-	-	-	-	-
Fort Pickens	200	100%	6.10	4.9	3.1	3,049	1,253	20%	251	8	9	12	9
									168	197	250	197	
2008	Peak Season Totals								19,012	9,696	2,852	3,612	2,852
2013	Peak Season Totals								19,729	10,062	2,959	3,749	2,959

(1) American Community Survey 2007 population

(2) Assumed approximately half of dwelling units listed on assessor's website were rental units, same assumption as Bourne report but updated dwelling unit numbers; number of dwelling units was rounded down to 3,900 to account for commercial and vacant properties and provide a more conservative estimate

(3) American Community Survey 2007 population for Pensacola MSA population (Escambia and Santa Rosa counties)

(4) Pensacola Visitors Center

(5) Bourne Study

(6) Pensacola Beach Chamber of Commerce

(8) Bourne Study

(9) Average length of stay for all but Fort Pickens campground. Haas Center, "The Economic Impact of Tourism on the Escambia County Economy" August 6, 2007 and Bourne for Pickens camp stay length

TABLE 6.12
Ridership Projections between Downtown Pensacola and Quietwater (daytime)
15-week Peak Season

Market Area	Market	Occupancy Rates	Avg. Stay (days) (9)	Groups per unit per month	Persons per Group	Monthly Headcount	Average Monthly Trips (all 4 locations per Bourne Study)	Percent of Trips Traveling between Downtown Pensacola and Quietwater	Trips Between Downtown Pensacola and Quietwater							
									Avg Monthly Trips (one-way)	Avg Trips on a Weekday	Avg Trips on a Friday	Avg Trips on a Saturday	Avg Trips on a Sunday			
2008										12.8%	15%	19%	15%			
RESIDENTS	Population															
City of Pensacola (1)	54,283					54,283	1,628	40%	651	21	24	31	24			
NAS Residents	2,948					2,948	295	25%	74	2	3	4	3			
Pensacola Beach (2)	2,487					2,487	249	35%	87	3	3	4	3			
Greater Pensacola Area (3)	396,681					396,681	7,934	40%	3,173	101	119	151	119			
NAVAL AIR STATION																
Students (10)	5,900					5,900	5,352	0%	-	-	-	-	-			
VISITORS OVERNIGHT	Units															
Downtown (4)	529	82%	4.80	5.1	2.8	7,591	3,118	28%	873	28	33	41	33			
Gulf Breeze (5)	203	82%	4.80	5.1	2.8	2,913	1,197	32%	383	12	14	18	14			
Pensacola Beach Hotels (6)	927	90%	4.80	5.6	2.5	13,036	5,355	32%	1,714	55	64	81	64			
Pensacola Beach Rentals (2)	1,950	90%	4.80	5.6	2.5	27,422	3,249	32%	1,040	33	39	49	39			
Fort Pickens (8)	200	100%	6.10	4.9	3.1	3,049	1,253	0%	-	-	-	-	-			
										255	300	380	300			
2013																
RESIDENTS																
Downtown Pensacola	56,997					56,997	1,710	40%	684	22	26	32	26			
NAS Residents	2,948					2,948	295	25%	74	2	3	4	3			
Pensacola Beach	2,611					2,611	261	35%	91	3	3	4	3			
Greater Pensacola Area	416,515					416,515	8,330	40%	3,332	106	125	158	125			
NAVAL AIR STATION																
Students	5,200					5,200	4,717	0%	-	-	-	-	-			
VISITORS OVERNIGHT																
Downtown	529	82%	4.80	5.1	2.8	7,591	3,118	28%	873	28	33	41	33			
Gulf Breeze	203	82%	4.80	5.1	2.8	2,913	1,197	32%	383	12	14	18	14			
Pensacola Beach H/M	1,295	90%	4.80	5.6	2.5	18,211	7,481	32%	2,394	76	90	114	90			
Pensacola Beach DU	2,048	90%	4.80	5.6	2.5	28,793	3,412	32%	1,092	35	41	52	41			
Fort Pickens	200	100%	6.10	4.9	3.1	3,049	1,253	0%	-	-	-	-	-			
										284	335	424	335			
										2008	Peak Season Totals	29,982	15,291	4,497	5,697	4,497
										2013	Peak Season Totals	33,461	17,065	5,019	6,358	5,019

(1) American Community Survey 2007 population

(2) Assumed approximately half of dwelling units listed on assessor's website were rental units, same assumption as Bourne report but updated dwelling unit numbers; number of dwelling units was rounded down to 3,900 to account for commercial and vacant properties and provide a more conservative estimate

(3) American Community Survey 2007 population for Pensacola MSA population (Escambia and Santa Rosa counties)

(4) Pensacola Visitors Center

(5) Bourne Study

(6) Pensacola Beach Chamber of Commerce

(8) Bourne Study

(9) Average length of stay for all but Fort Pickens campground. Haas Center, "The Economic Impact of Tourism on the Escambia County Economy" August 6, 2007 and Bourne for Pickens camp stay length

Evaluation of Ridership Projections

Table 6.13 presents a summary of the required ridership/fares for the two example ferry services, and compares these to the potential ridership demand based on the updated Bourne Study projections.

TABLE 6.13
Comparison of Updated Bourne Study Ridership Estimates and Ridership Required for Break Even Operations

Trip Pairs	Updated Bourne Study Ridership Projections Two-Boat Service	Updated Bourne Study Ridership Projections One-Boat Service
Fort Pickens & Pensacola	19,729	19,729
Fort Pickens & Quietwater	9,733	
Fort Pickens subtotal	29,462	19,729
Quietwater & Pensacola	33,461	33,461
TOTAL	62,926	53,190

RIDERSHIP REQUIRED FOR BREAK EVEN OPERATION		
Fare of \$15.00	58,000 - 73,300	29,600 - 37,200
Fare of \$20.00	43,900 - 55,400	22,400 - 28,100
Fare of \$25.00	35,300 - 44,600	18,000 - 22,600

Note: The low end of the range for Ridership Required for Break Even Operation includes operating costs only. The upper end of the range also includes debt service for financing of the boat(s).

The comparison shows that the break even operations for the one-boat ferry service example is well within the ridership projections from the Bourne Study, whereas the two-boat example is comfortably within the ridership projections if the higher fares can be realized. When comparing the potential ridership demand to the required ridership it is important to understand the assumptions of the ridership estimates. The most important one is that the potential ridership demand is based on the Bourne Study which determined that this level of ridership could be achieved if passenger fares were approximately \$6.00. Since 2000 transportation costs have about doubled (not counting the spike in prices during the summer of 2008) so only a \$15.00 fare is nearly comparable to that key assumption in the Bourne Study.

On the other hand, it should be noted that the Bourne Study focused on discretionary trips via ferry instead of by car. The ferry service evaluated for this study focuses on an “excursion” type of ferry service where the ferry trip is part of the experience. The most direct comparison is with the West Ship Island ferry service in the Mississippi District where the adult fare is \$24.00. Another example of similar ferry service would be at the Boston Harbor Islands where adult fares are \$14.00 to \$17.00, albeit the Boston ferry service does not include opportunities for dolphin watching, which is an important part of the West Ship Island ferry experience and would be part of the ferry experience in Pensacola Bay.

Another important consideration is the progress made by the City of Pensacola to invest in tourist amenities in the downtown and the City’s continued efforts to expand tourist experiences. Among the many recent investments by the City has been the development of the Plaza de Luna and the historic downtown area, and ongoing planning for the Maritime Museum Park. These waterfront developments strengthen the City’s continuing support for ferry service connecting destinations throughout Pensacola Bay.



Concept plan for Maritime Museum Park development

Considering the possible implications on potential ridership, it is apparent that a one-boat ferry operation is substantially more likely to be financially self-sufficient than a two-boat ferry operation.

6.2.4 Ferry Service Infrastructure

There are a variety of boats, dock locations and dock designs that could be used for ferry service in Pensacola Bay. As evidenced from ferry operations at other parks there is no standard ferry boat type in use. Dock design is in large part related to the type of boat(s) being used and must therefore be appropriate for many different types of boats.

Potential ferry dock locations have been identified by the City of Pensacola for Downtown Pensacola and for Quietwater. At Fort Pickens there are several potential locations for a ferry dock.

Boat Types

Ferry vessels for passenger-only service fall under 46 Code of Federal Regulations (CFR) Subchapter T or Subchapter K depending on the number of passengers onboard the vessel. In general, subchapter T and K of 46 CFR implement the requirements for inspection and certification of small passenger vessels.

The use of either a subchapter T or a subchapter K vessel depends largely on the anticipated ridership of the ferry service and the associated operational costs of the vessels. Both vessel alternatives are briefly discussed and summarized below.

46 CFR Subchapter T- Passenger Vessels Under 100 Gross Tons

46 CFR Subchapter T applies to each vessel of less than 100 gross tons that carries between 7 and 150 passengers, with at least one passenger for hire, or has overnight accommodations for 49 or fewer passengers. The ferry routes under consideration in this study do not include overnight accommodations or services, therefore vessel types considered are limited to passenger carrying vessels in operation during daytime and evening hours only.

In general, due to the operational nature for this type of a vessel (typically a smaller vessel with limitations to the number of passengers and more sheltered routes) the certification and inspection requirements are less stringent, and the crew size requirements less, than subchapter K vessels. This makes subchapter T vessels more desirable when the vessel meets other operational requirements of the ferry service.

Subchapter T vessels can vary significantly in size depending of the design style and operational needs. A subchapter T vessel will often typically fall in range of 40 feet to 70 feet in length. There are two types of vessels that may be suitable for the ferry service under consideration: a Catamaran or a monohull vessel.

Catamaran Vessel

A catamaran is a twin-hull vessel that has several beneficial features. They have a relatively wide beam (width) in relation to their length which provides ample deck space for passengers. A catamaran is stable and generally provides a more comfortable ride than a similar sized monohull. Catamarans are powered by two engines, one in each hull. Due to their width, catamarans are sometimes restricted in where they can berth (i.e., the vessel may be too wide for standard slips at some marinas).

Passenger loading is usually from the side, but can sometimes be accommodated at the stern or bow of the vessel. Because of the typical open deck configuration of the vessel, ADA accessibility and accommodations are generally easily provided.



A 149-passenger catamaran ferry used at Boston Harbor Islands National Recreation Area



A Subchapter T monohull ferry at Cumberland Island National Seashore

Monohull Vessel

Monohull vessels are most common and more readily available on the market. They are usually powered by twin diesel engines, although there are a few older single-engine vessels still in operation. Passenger loading is most often from the side and generally towards the stern where there is sufficient open deck area. ADA accessibility and accommodations can be provided, but are usually more restricted due to narrow walkways along the side of the vessel and in interior spaces and due to stairways to upper/lower decks.



A Subchapter K monohull ferry in use at West Ship Island in the Mississippi District of Gulf Islands National Seashore

46 CFR Subchapter K- Small Passenger Vessels Carrying More Than 150 Passengers Or With Overnight Accommodations for More Than 49 Passengers

46 CFR Subchapter T applies to each vessel of less than 100 gross tons that carries more than 150 passengers, with at least one passenger for hire, or has overnight accommodations for more than 49 passengers. As stated above, the ferry route under consideration does not include overnight accommodations or services, therefore vessels considered are limited to passenger carrying vessels in operation during daytime and evening hours only.

Subchapter K vessels can vary significantly in size but typically fall into a range of 70 feet to 110 feet in length. Even though both catamaran and monohull vessels exist, a large Subchapter K catamaran would far exceed the operational needs of a ferry service under consideration in the study and is therefore not discussed any further.

A monohull vessel is the most common type of vessel used for passenger ferry service and is commonly available on the market. The vessels are powered by twin diesel engines. Passenger loading is most often from the side and generally towards the stern where there is accessibility without major renovations.

Docks

The waterside infrastructure for a ferry service consists of the pier and docks necessary to accommodate the particular boat(s) and anticipated passenger activity. The following discusses the options for locations of docks for ferry service in Pensacola Bay, and typical design features and costs for a dock at the Fort Pickens Area.

Dock Locations: Pensacola and Quietwater

As part of the City of Pensacola's efforts to encourage ferry service in Pensacola Bay, dock locations for a ferry have been identified in Downtown Pensacola and in Quietwater.

Downtown Pensacola – Plaza de Luna

The Plaza de Luna is located on the downtown Pensacola waterfront at the end of Palafox Street and is owned by the City of Pensacola. Plaza de Luna is a two-acre park that is part of substantial redevelopment investments in the past few years which have enhanced the area and made the Plaza de Luna area a popular destination. The most recent project is the construction of a concession and restroom facility at the park.

The new concession building would provide visitor information and could serve as a ticketing area for a ferry service. There are two potential docking locations adjacent to the Plaza de Luna.

On the west side is the South Palafox Marina with available capacity for a ferry vessel slip. The marina is sheltered by a breakwater owned by the City of Pensacola and leased to the Marina Management Corporation under a 100-year lease. The marina provides



View of South Palafox Marina from Plaza de Luna

Chapter 6: Service Options

ADA accessible routes and can accommodate vessels with passenger embarking/debarking from the side.

On the east side of the plaza is a commercial pier which can accommodate larger ferry vessels (Type “K”) that carry 150 or more passengers. This bulkhead location with its existing infrastructure is ideally suited for a ferry operation.

Overnight mooring and vessel fueling operations are currently allowed at the Marina and all other utilities infrastructure (water, sanitary and electrical) is currently in service so there is no need for new utility services to be provided to the site. Fueling of a vessel at the bulkhead location would be possible from a fuel truck.

The location is an active deep water pier and therefore dredging would not be required. Maintenance dredging will be performed as required to maintain the existing channels, marina and port facilities. The site is located at the terminus of the East Channel which leads directly to Pensacola Bay.

The area within the marina is well sheltered and protected due to the breakwater structure; however, the commercial pier on the east side of the plaza is exposed to the 5 nautical mile (nm) fetch (the distance in a given direction across exposed open water) to the south. There is also ship traffic from ships entering the port area which generates some additional wave action. The average tide range at this location in Pensacola Bay is approximately 15 inches. During severe weather and storm events, the water elevation range has exceeded six feet.

Quietwater Beach- Hemingway’s Restaurant Dock

The Quietwater dock location identified by the City is the privately owned dock at Hemingway’s Restaurant located at Quietwater Beach. The dock is well sheltered and an ADA accessible route is possible. The dock can accommodate vessels with passenger embarking/debarking from the side. The Portofino shuttle boat (a 65’ Subchapter T catamaran) currently uses this dock for overnight mooring and shuttling residents of the Portofino condominiums to and from Hemmingway’s Restaurant/Quietwater Beach area.

The location is a very active tourist and small pleasure-craft destination. Although the water depths may be sufficient for small vessels, dredging would likely be required for larger ferry vessels.

There is a fetch of approximately 1.5 nm directly to the north and approximately 4 nm to the east northeast. Also, as this location is directly off of the Intracoastal Waterway, there is no heavy ship traffic in this area. As with all potential dock locations, the average tide range at this location is approximately 15 inches. During severe weather and storm events, the water elevation range is much greater and flooding periodically occurs in the upland areas.

Overnight mooring is currently allowed at the facility and water and electrical is currently provided. There are no fueling operations or sanitary service at this location.

Dock Locations: Fort Pickens

Four potential dock locations were evaluated at the Fort Pickens Area. Three are in the Historic Area near the fort, one of which is the existing Fishing Pier and the other two of which were previous locations of piers. The fourth location is an existing dock location at the Ranger Station.

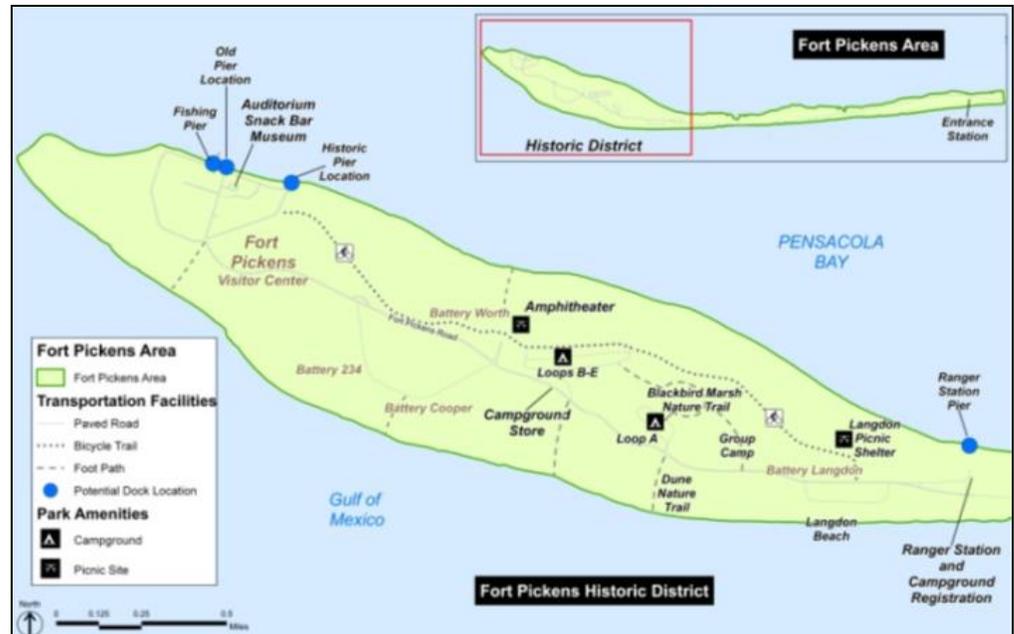
All four potential dock locations at the Fort Pickens Area are on the north side of Santa Rosa Island and are therefore protected from direct wind and wave exposure from the



*Hemingway Dock and
Portofino Ferry*

Gulf of Mexico. The primary fetch from the west all the way to the northeast, is only about 1 to 2 nautical miles. The maximum fetch distance is approximately 12 nm to the east northeast towards Escambia Bay. The locations are generally moderately sheltered due to the relatively short fetch across the bay and only moderate wave heights of less than 3 feet are anticipated. Periodically, some larger wave heights may be experienced due to ship traffic passing within ¼ nm of the dock. The average tide range in Pensacola Bay is approximately 15 inches. During severe weather and storm events, the water elevation range has exceeded six feet.

FIGURE 6.3
Potential Dock Locations at Fort Pickens



Fort Pickens: Ranger Station

The Fort Pickens Ranger Station is located near the eastern edge of the Historic District and is approximately two miles from the fort and the visitor center. There is an existing pier that is used for administrative purposes.

This potential dock location differs from the other three not only due to its distance from the fort and visitor center, but also because of water depth, shelter from wind and wave, and the presence of seagrass beds. The water depths are shallower than at the other locations and would likely need to be dredged to accommodate larger boats. Dredging, as well as even the engine wash from ferry boats, would adversely affect the seagrass beds. In addition, the section of the island is narrower and lower at the Ranger Station that near the fort and thus the Ranger Station pier location is more adversely impacted by winds than locations near the fort.



Administrative dock, located at Ranger Station

Fort Pickens: Fishing Pier

The existing Fort Pickens Fishing Pier is made of wood pile and timber construction and is a very popular fishing destination for local fishermen. Renovations to the pier are possible that would enable it to be used as a ferry dock. For larger Subchapter K vessels, the deck elevation may need to be adjusted to facilitate a gangway from the dock to the ferry without excessive slope. Also, the installation of dolphin piles may be required to protect the fishing pier structure from vessel impacts.

For some Subchapter T vessels, a ramp from the fishing pier deck down to a floating dock made be necessary for loading and unloading passengers from a smaller vessel. This type of renovation would require a ramp and connection to the existing fishing pier, floating dock section and mooring piles for the floating dock.



Fishing Pier, located near fort

As with all three of the locations in the historic district initial dredging and maintenance dredging at the site is not likely to be a significant factor at the site as the existing water depths appear to provide greater than 8 feet of depth. Also, there is a direct route of only approximately 0.1 nm to the Pensacola Bay channel. As this location is adjacent to the fairway of ships using the Caucus Channel to enter Pensacola Bay, there is commercial ship, military ship, and pleasure craft traffic in the vicinity. It is not anticipated that the vessel traffic would negatively impact a ferry service, other than wake effects on the ferry boat and the ferry boat’s requirement to reduce speed to minimize wake while passing smaller boats.

The use of this location for a ferry dock does create a conflict between the primary visitor experience use for fishing and the proposed use as a ferry landing. Fishing lines from the pier create a navigational hazard and reeling in lines for an arriving ferry is a tremendous inconvenience to fishermen. Casting of lines also creates a potential hazard to ferry patrons that may be in the vicinity waiting for the ferry.



Remnant of old pier. End of Fishing Pier visible at left.

Fort Pickens: Near Old Pier Location

The potential ferry dock location is to the east of the existing fishing pier in the vicinity of the old pier where concrete piles extend above the water surface. The location is similar to the other three fort locations with regard to design and operational considerations due to water depth, wind and wave action, proximity to ship channels and natural resource impacts.

The old piles would not be incorporated into the dock, but a new pier would be built adjacent to it. The pier could be constructed to accommodate a variety of boats and passenger activity. On the beach the pier could connect with the ramps from the fishing pier to provide an accessible route through the seawall and into the fort area.

Fort Pickens: Historic Pier Location

The Fort Pickens Historic Pier location is approximately 1,200 feet east of Fort Pickens Old Pier location. The general marine site conditions for this site are similar to those discussed above for the other two locations near the fort.

This location was reportedly the location of the original fort pier with its shore landing made at the fort wall. There are several buildings adjacent to the ramp leading down from the wall into the fort and the buildings could serve as concession space for the ferry operation.

Summary of Fort Pickens Dock Locations

The best location for ferry docking would be near the fort from which it is most convenient for visitors to access the park's facilities and primary destinations. Of the three potential locations near the fort the two that do not interfere with the fishing pier visitation are both excellent sites. They provide locations with minimal wind and wave impacts, adequate depth, and a likely low impact on natural resources.

In fact, the entire 1,200' of beach area between the old pier location and the historic pier location is a good candidate for a docking location. A survey of water and land conditions and analysis of adjacent natural and historic resources would provide the data necessary to determine the precise location of the most cost-effective construction of docking facilities.

Dock Design and Cost

The key criteria for the design of the docking facilities include the boats types, hurricane design, expected passenger loads, handicap accessibility, and accommodation of park administrative uses.

As evidenced with ferry services at other parks, the type of ferry boat varies widely. The only consistent difference is where the service is provided over flat water where smaller boats are used, versus open water where larger boats are used. At Fort Pickens, the design of the pier and docks should be able to accommodate large and small boats. Freeboard (i.e. height of dock elevation above water level) of docks for smaller water taxi type boats should be approximately 2'-0". Larger ferry freeboard requirements vary from approximately 3'-6" to 4'-6" with 4'-0" being a good average estimate. Vessels load and off load passengers from the side. The docks must have sufficient bollards and cleats for vessel tie-ups and fendering for protection of the dock and vessel. In addition, dolphin piles (a cluster of two or more individual piles) may be required for protection of the dock facility and maneuvering of the vessel as it enters/departs the berth.

It is important that the pier and dock be able to withstand storm damage and designed with "sacrificial" components so that any repairs would be simple and could be made quickly. The design of the pier in an area such as Pensacola Bay would normally be to handle a Category 1 hurricane.

The ferry service at Fort Pickens might at times have over a hundred people disembarking the ferry while a similar number wait to board. Any pier and associated ramps, gangways etc., would need to be sized to handle the passenger activity. In addition, there should be shelter for passengers waiting to board.

The docks and ramps should have good lighting for night or limited visibility operations and be provided with non-skid surfaces. In addition, safety equipment will be needed as required by codes such as life preservers, fire extinguishers, railings and ladders from the water to the dock. Adequate signage is also needed for providing safety and vessel operation information to passengers, ferry service schedules and wayfinding.



View along ramp leading up to seawall at Historic Pier Location

All of the components of the docking facilities would need to be handicap accessible. This includes the landside connections as well as the gangways, piers and docks. Some of the important design considerations are the following.

- A gangway is a variable-sloped pedestrian walkway connecting a fixed structure to a floating structure. Gangways should be designed for the least possible slope with a maximum 1:12 (8.33%) up to a maximum length of 80 feet. A typical ramp length for the locations considered may range from 25 to 50 feet. Transition plates are sloping pedestrian walking surfaces located at the end of a gangway. Gangways are not required to have landings at the end, if a transition plate is provided. If the transition plate slope is greater than 1:20 (5 percent) then a landing area must be provided at the end of the transition plate. The minimum width of the gangway is 36" clear with hand rails.
- Docks from land to the gangway must adhere to all requirements slopes, ramps, width and rails etc. for an ADA accessible route. Slopes are generally kept to less than 1:20 (5 percent). In some cases where necessary, a sloped ramp of 1:12 may be used with the required hand rails and maximum vertical elevation change of 6".

Lastly, the pier should be able to accommodate administrative activities. This would include a hoist for park boats to supplement the boat access at the ranger station and to provide better coverage for this section of the long, linear park. Other administrative uses might be to carry materials and supplies for construction projects and during times when the road is temporarily closed due to storm damage.

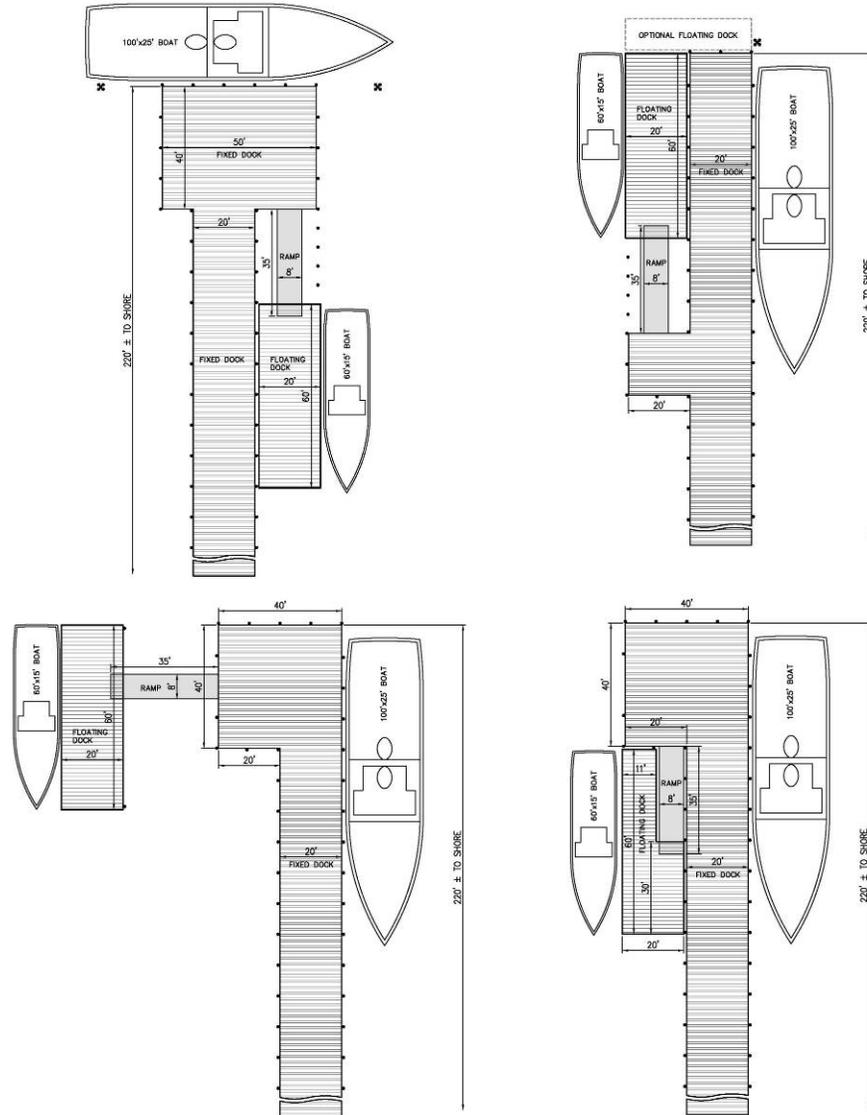
Dock Concepts

The type of docking facility appropriate for Fort Pickens is similar to the one at West Ship Island, with the addition of floating docks to accommodate small boats and with shelter for passengers waiting for the ferry to arrive. The pier would be approximately 260 feet long and at least 20 feet wide. Figure 6.4 illustrates various configurations of piers and floating docks that could be suitable.



Pier at West Ship Island. The pier at Fort Pickens should include shelter passenger waiting areas and a floating dock for small boats.

FIGURE 6.4
Dock Concepts for Fort Pickens



The cost of the pier and dock is estimated to be \$3,513,000, as shown in Table 6.14. Further details of the cost estimate are included in the appendix.

TABLE 6.14
Class C Cost Estimate for Fort Pickens Pier

DIRECT CONSTRUCTION COSTS	
260' x 20' Wooden Pier	\$188,000
14" x 14" Piles (67)	780,000
8' x 40' Aluminum Gangway	50,000
20' x 60' Floating Dock	125,000
Utilities	46,000
Passenger Shelter	85,000
Boat Hoist and Shelter	70,000
Landside Connections	100,000
Subtotal Direct Construction Costs	\$1,444,000
Direct Construction Cost Markups ¹	\$253,000
Indirect Construction Cost Markups ²	\$848,000
Subtotal NET Construction Costs	\$2,545,000
Contraction Supervision & Contingencies	\$458,000
Subtotal GROSS CONSTRUCTION COSTS	\$3,003,000
DESIGN COSTS	\$510,000
TOTAL COSTS	\$3,513,000

1: Direct construction cost markups include Location/Remoteness Factor, Federal Wage Rate Factor, and Design Contingency

2: Indirect construction cost markups include General Conditions, Historic Preservation Factor, and Contractor Overhead and Profit.



*Boat Hoist and Shelter at
West Ship Island*

6.3 Commercial Use Authorization Services

There are three private services currently permitted under commercial use authorizations (CUA) to bring visitors to the Fort Pickens Area via boat. These services have been one of the few ways visitors have been able to access the Fort Pickens Area since the closure of Fort Pickens Road inside GUIS. Unfortunately, the small capacities of the boats and relatively high fare necessary to adequately recoup their costs limit the number of visitors using these services. Additionally, the lack of a formal docking facility limits the attractiveness of the services to individuals comfortable with disembarking into the water or directly onto the sand.

Despite some of the limitations of these boat operations, they have provided an important connection to the historic district of the Fort Pickens Area when few other transportation options were available. Depending on the introduction of ferry service and the configuration of that service, CUA boat operators may still have an opportunity to enhance alternative transportation options for visitors to the Fort Pickens Area.

6.3.1 CUA Service Characteristics

There are two potential scenarios under which CUA boat services may provide an important link in the transportation network to the Fort Pickens Area: (1) when there is no ferry operation at all or (2) when there is no ferry link between Pensacola Beach (Quietwater) and Fort Pickens. In either of these cases, CUA boat operators would provide an important transportation choice and visitor experience to those visiting the Fort Pickens Area.

Under a CUA, GUIS would not be directly planning or operating any service and would have no direct control over the characteristics of service offered by these operators. Instead, GUIS would continue to facilitate visitation by allowing these services to operate into the Seashore. Each service would set its own service characteristics. The availability of these services is largely determined by the ridership demand experienced by each individual operator. Currently, all of the services operate on an on-demand basis, only traveling to the Fort when there is a large enough group to justify the trip. The cost of a roundtrip for an adult passenger ranges from \$25 to \$50.

Although GUIS will have no control over the exact service parameters of these boat operators, it can support these services, which may increase their attractiveness and frequency of service to the Fort Pickens Area. For instance, the existing CUA boat operators cited the lack of a dock as inhibiting use of the service to the Seashore. By constructing a dock that could accommodate a variety of smaller vessels, GUIS would improve the chances of success of these services and the number of visitors using them to access the Fort. It may also enable these services to establish a set schedule for trips to the Fort Pickens Area, increasing the usefulness of the services to visitors.

If there is no ferry in operation, these services would continue to allow public visitation via the water. If a ferry is in operation, but not serving the leg between Pensacola Beach and Fort Pickens, these services can supplement the ferry service by offering a route that would otherwise go unserved.

CUA services also have the advantage of being relatively flexible in the service they provide. This flexibility, both in the service and the ability of GUIS to issue a CUA, makes this type of service especially valuable in the case of another road closure. These



Key Sailing boat at their Pensacola Beach dock. CUA operators indicate that access to a dock at the fort would attract more patrons to the tour charters to Fort Pickens.

services can quickly supplement transportation to the Fort Pickens Area as demand for water-based service increases.

6.3.2 CUA Ridership Demand

Ridership demand for this style of service would likely remain stable at the current levels, fewer than 3,000 riders per year for all services. Since there are no alternatives under which a CUA would operate the same route as a ferry service and the two services offer distinctly different experiences, there would likely not be much overlap in ridership markets.

6.3.3 CUA Costs

The cost of operating the service would be covered exclusively by the CUA operators. GUIS collects a fee from CUA applicants to cover administrative costs. The additional cost of constructing and maintaining a dock that would accommodate CUA charters as well as ferry boats would be negligible. There is a capital cost for building a floating dock to accommodate the small CUA boats (about \$300,000), but the dock would benefit many other boats than just the CUAs.

6.3.4 CUA Conclusions

CUA boat services provide a flexible option to enhance other transportation services as needed. GUIS can quickly and easily employ this type of service to ensure water access between Pensacola Beach and the Fort Pickens Area at no additional cost to the Seashore. Since these are private businesses, they can also be very responsive to ridership markets, accommodating ridership demand as it increases. According to the current operators, visitation via these boats would increase if there was a dock available near the fort.

6.4 Improved Bicycle Facilities

Bicycles are a popular way for residents and vacationers to travel around Santa Rosa Island, especially in the vicinity of Pensacola Beach. This mode of transportation is attractive because it enables riders to experience the beach setting while traveling to their destination. Additionally, the Pensacola Beach area has essentially one road and limited parking, making the use of bicycles a quick and easy way to get around compared to driving. The convenience of bicycle travel is further enhanced by the 8½ mile multi-use trail running the length of the relatively flat terrain of Pensacola Beach. There are also several bike rental businesses in Pensacola Beach, facilitating bike use on the island for visitors.

The Fort Pickens Area was a natural attraction for bike riders from Pensacola Beach. The campgrounds at the Fort Pickens Area also generated bicycle trips within the Seashore and to Pensacola Beach. Historically, bicycle riders were accommodated within the road in the Fort Pickens Area and on the oyster shell path connecting the campgrounds to Fort Pickens. This arrangement required bike riders to transfer between a multi-use trail and the road when entering or leaving the Seashore. The current reconstruction of Fort Pickens Road in the Seashore will include dedicated bicycle lanes along the shoulders of the road up to the ranger station.

Improving the ability of visitors to access the Fort Pickens Area by bicycle will reduce the need for car trips. The inclusion of bike lanes in the road reconstruction is an important first step to encouraging increased bike usage. GUIS can support this bike facility by further enhancing bicycle accommodations in the Fort Pickens Area.

Enhancements such as the installation of bike racks at major GUIS destinations and arranging for greater availability of bike rentals through the GUIS concessionaire will increase the likelihood of visitors using bicycles rather than cars to travel to and around the Fort Pickens Area.

6.4.1 Service Characteristics: Bicycle Facilities

There are two primary actions GUIS can take to improve bicycle facilities within the Fort Pickens Area now that bike lanes will connect the historic district to Pensacola Beach: (1) install bike racks at major destinations and (2) expand bicycle rentals through the concessionaire.

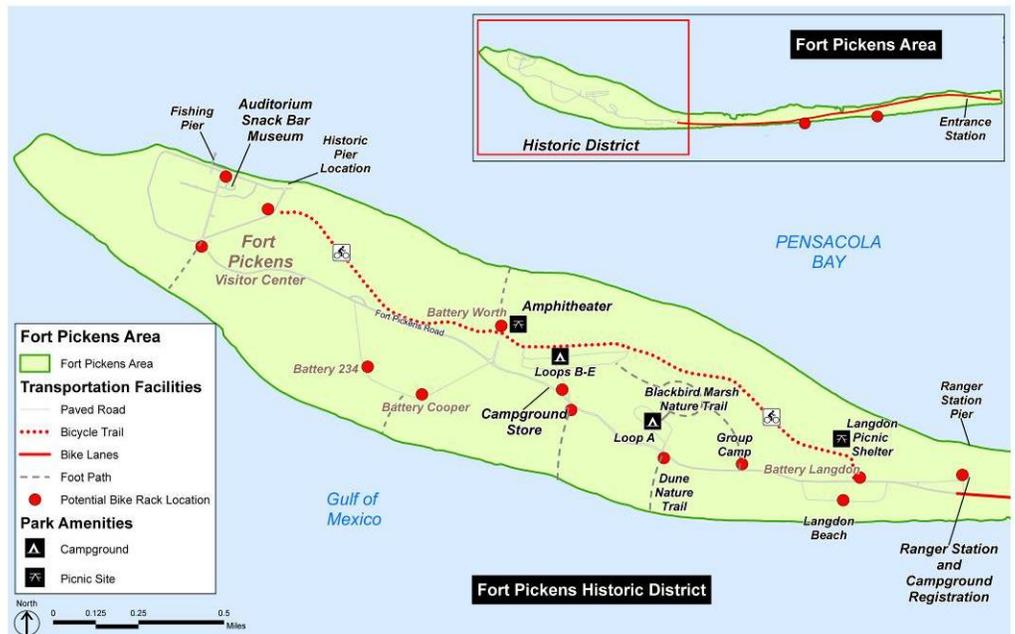
Installation of Bicycle Racks

The installation of bike racks at major destinations within the Fort Pickens Area can serve several purposes. Bike racks provide riders with the confidence that they will be able to securely lock their bicycles, providing them with the ability to enjoy the many attractions within the park. They also serve as an advertisement for biking and clearly signal to riders, pedestrians, and drivers that bike riding is supported and expected in the Fort Pickens Area. Furthermore, bike racks attract bicycle riders to appropriate places within the park, keeping them away from sensitive natural resources. They also provide an appropriate alternative to locking bikes to cultural resources. Instead, a uniquely designed bike rack — such as a bike rack designed as a cannon — could enhance the cultural experience by reinforcing the history of the site. Bike racks will support both trips to the park and within the park by bike, which could help assuage negative impacts from private automobile trips by relieving congestion, reducing demand for parking, and limiting threats to natural resources.



Bicycle racks help protect natural and cultural resources by providing appropriate locations to store and lock bicycles

FIGURE 6.5
Proposed Bicycle Rack Locations



Bicycle Rentals

GUIs can also encourage bike riding within the Fort Pickens Area by working with the concessionaire to expand bicycle rental opportunities. Historically, the concessionaire has had a few bicycles available for rental at the campgrounds. Expanding the rental options may attract more use through a larger, well-maintained bicycle fleet, particularly if alternative transportation access options were implemented and visitors required a means to travel within the park. GUIs would have the ability to include this expanded service in the current concessionaire's license and in all future concessionaire agreements.

Accommodating access to bike rental through the concessionaire has several distinct advantages for GUIs. The concessionaire would take on all responsibility for operating and maintaining the service. Additionally, there would be no direct costs associated with the operation for GUIs. Although there will be no operating costs for the park, expanding the concessionaire agreement to include additional bike rental may require providing some additional space within the Fort Pickens Area for bicycle storage and maintenance.

6.4.2 Ridership Demand: Bicycle Facilities

GUIs has not historically tracked bicycle ridership to or within the Fort Pickens Area. The introduction of bike lanes combined with appropriate bike parking within the Fort Pickens Area will likely induce a higher rate of bicycle transportation into the park. GUIs can begin enhancing bicycle facilities by installing at least one secure bike rack at each major destination. Monitoring use of these facilities, even informally, will provide GUIs with valuable information on the need to expand bike parking at certain destinations. By incrementally adding bike racks as needed, the park can slowly increase its facilities to match ridership demand.

An expanded bike rental service operated by the concessionaire is anticipated primarily to attract campers staying at the Fort Pickens Area. During the peak season, the campground is estimated to have a population of approximately 620 people. A bike rental service that captured three percent, a relatively small percentage, of this population at any given time would require between 20 and 25 bikes for operation. A similar number of bicycles would be appropriate at the fort if ferry service or some other alternative transportation service brought visitors without their cars. An important advantage of bicycle accommodation is that the bicycle fleet could be expanded as demand for the service grows.

6.4.3 Cost: Bicycle Facilities

The purchase and installation of a bicycle rack would cost approximately \$2,000. Installing one of these racks at each destination identified in Figure 6.4, plus two racks at Fort Pickens and Langdon Beach (a total of 14 racks) would cost approximately \$28,000. Customized bike racks would increase this cost. The total cost could be reduced by initiating installation at the most popular destinations and then adding bike racks throughout the Fort Pickens Area over time.

There are no direct operating costs associated with expanding bike rental through the GUIs concessionaire. The fee charge to visitors would likely be about \$20.00 per day. Any increase to administrative costs incurred through such a program could be offset through the fee paid to GUIs by the concessionaire. Expanding bicycle rental may require GUIs to provide some capital investment in providing an appropriate space for bike storage and maintenance.

6.4.4 Conclusions: Bicycle Facilities

Improving the ability of visitors to the Fort Pickens Area to travel by bicycle is a relatively low-cost way to enhance alternative transportation in the Seashore. The installation of bicycle racks and expansion of a bicycle rental service through a concessionaire also has the advantage of allowing for incremental increases as demand grows for bicycle facilities and services.

A more comprehensive accommodation of bicycle travel in the Fort Pickens area will allow for increased access to and improved circulation within this GUIS area. Furthermore, bike transportation is compatible with and can supplement all of the other modes of alternative transportation discussed in this study. For instance, bicycle rental could grant ferry riders mobility once they reach the Fort Pickens Area or bicycle racks could allow people to carry their bikes on a trolley service into the park, but then use bikes to visit each destination.

6.5 ECAT Bus Service

Escambia County Area Transit provides fixed-route bus service in Pensacola and Escambia County. There is currently very limited ECAT service to Pensacola Beach. Pensacola Beach is served by a single commuter bus trip in the morning and in the evening. This is a newly-established (May 2008) Route 61 travels between the Rosa Parks ECAT Transfer Station and Pensacola Beach. The bus makes stops at the Park-n-Ride lot near the Coliseum and makes several stops in Gulf Breeze before reaching Pensacola Beach. At Pensacola Beach it stops at the visitor center, then travels along Fort Pickens Road to the Palm Beach Club (near the Fort Pickens gate) and then back eastward past Casino Beach about 1.8 miles down Via deLuna (to Avenida 11), and then back towards Casino Beach. The scheduled round-trip time is 90 minutes.

Service to Pensacola Beach comparable to that provided elsewhere by ECAT would benefit residents of Gulf Breeze and Pensacola Beach year-round and would provide residents and visitors with an alternative transportation connection to Fort Pickens.

6.5.1 Service Characteristics

There are several service options that would be beneficial. Some primarily benefit residents of Gulf Breeze and Pensacola Beach by providing transit service equivalent to that of other areas served by ECAT. Some options provide direct access into the Fort Pickens area while others would connect to services that enter the park.

Year-Round Service to Pensacola Beach

ECAT bus service operates year-round, Monday through Saturday, typically with 60-minute headways from about 5:00 am to 6:00 pm weekdays and two-hour headways 6:00 am to 6:00 pm on Saturdays.

At a minimum ECAT service to Gulf Breeze and Pensacola should operate all day, rather than the two-trip, weekday only schedule currently operated. An example schedule with six trips per day is shown in Table 6.15.

TABLE 6.15
Example Schedule: Year-Round ECAT Service to Pensacola Beach

ECAT Transfer Station	Arrive Pensacola Beach	Depart Pensacola Beach	ECAT Transfer Station
Weekday			
7:55	8:19	8:40	9:25
9:30	9:54	10:15	11:00
11:00	11:24	11:45	12:30
12:30	12:54	1:45	2:00
2:00	2:24	2:45	3:30
4:30	4:54	5:15	6:00
Saturday			
7:00	8:24	8:45	9:30
9:30	9:54	10:15	11:00
11:00	11:24	11:45	12:30
12:30	12:54	1:45	2:00
2:00	2:24	2:45	3:30
3:30	3:54	4:15	5:00

Notes:

7:55am and 4:30pm weekday trips are currently operated

Schedule is for planning purposes only. In order to maximize transfer opportunities and ridership, actual schedule would need to be coordinated with other route schedules then in effect.

The primary benefit of this service modification would be to provide additional transit service to those who live and work in Gulf Breeze and Pensacola Beach. Although the service would not enter the park, it would stop near the Fort Pickens gate and would operate on Saturdays. This would benefit Fort Pickens visitors who want to use their bicycles to explore the park but who do not want to ride over the bay bridges. Enhanced ECAT service would also provide a critical transportation connection with other potential services such as a Pensacola Beach trolley bus service.

ECAT Service into Fort Pickens

Extending year-round ECAT service into Fort Pickens would add approximately 15 minutes each way to the bus travel times. The current 90-minute roundtrip would be extended to 120 minutes, which better fits with ECAT’s typical scheduling. This would provide the opportunity to provide the typical two-hour Saturday service and, if two buses are operated, provide the typical one-hour weekday service. An example schedule would be as shown in Table 6.16.

TABLE 6.16
Example Schedule: ECAT Service into Fort Pickens

ECAT Transfer Station	Arrive Pensacola Beach	Fort Pickens	Depart Pensacola Beach	ECAT Transfer Station
Weekday				
7:00	7:24	7:40	8:10	9:00
8:00	8:24	8:40	9:10	10:00
9:00	9:24	9:40	10:10	11:00
10:00	10:24	10:40	11:10	12:00
11:00	11:24	11:40	12:10	1:00
12:00	12:24	12:40	1:10	2:00
1:00	1:24	1:40	2:10	3:00
2:00	2:24	2:40	3:10	4:00
3:00	3:24	3:40	4:10	5:00
4:00	4:24	4:40	5:10	6:00
5:00	5:24	5:40	6:10	7:00
Saturday				
7:00	7:24	7:40	8:10	9:00
9:00	9:24	9:40	10:10	11:00
11:00	11:24	11:40	12:10	1:00
1:00	1:24	1:40	2:10	3:00
3:00	3:24	3:40	4:10	5:00
5:00	5:24	5:40	6:10	7:00

Notes:

Schedule is for planning purposes only. In order to maximize transfer opportunities and ridership, actual schedule would need to be coordinated with other route schedules then in effect.

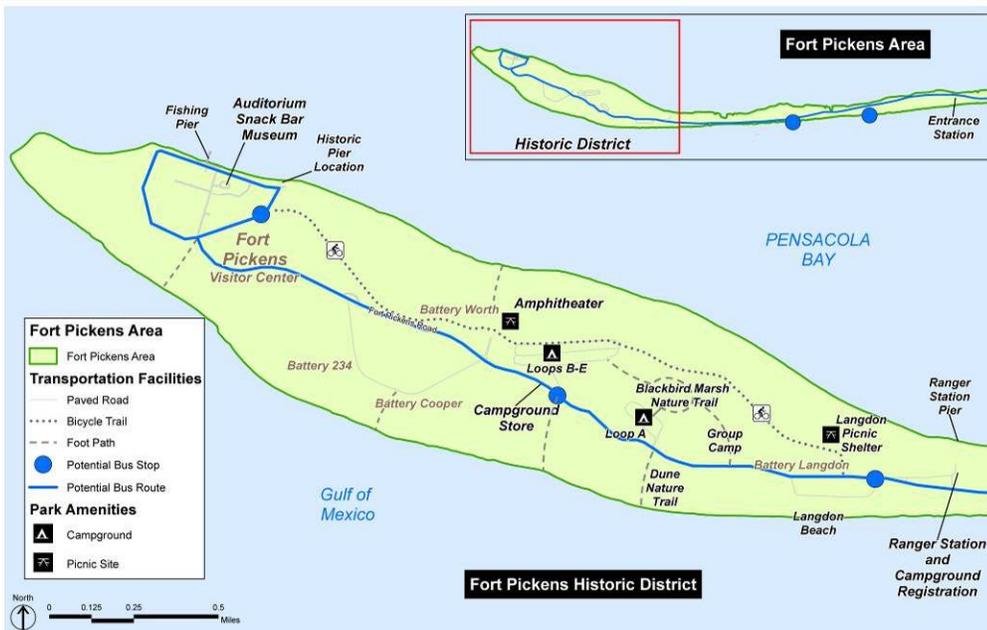
This concept for ECAT service provides substantial benefits for those who live and work in Gulf Breeze and Pensacola Beach. They would now have access to transit on par with other area residents.

The ECAT service would also improve access to Fort Pickens. There are 300,000 people in the ECAT service area and those without access to cars would be able to conveniently visit the park. The service area would not only include all areas served by ECAT buses through connections at transfer stations, but also those in Gulf Breeze or Pensacola Beach who may not wish to drive.

It is anticipated that the bus service would make stops in the park along Fort Pickens Road near major locations such as the beach parking lots, the batteries, campgrounds and the fort itself (see Figure 6.6). Although the ECAT service would not be frequent enough to function as a point-to-point circulator within the park, it would serve those who choose to walk or bicycle in the park. Other opportunities for circulating within the park are evaluated later in this report.

The park's entrance fee is an issue that would need to be resolved. At parks with dedicated ferry or bus shuttle services the entrance fee is typically collected at the time of boarding along with the ticket charge. For a public bus service that has riders boarding and alighting outside of the park as well, it is not practicable to collect the fee when the passenger is boarding. Fees could be collected at the entrance station but this would often delay the public transit service. An option of honor system self-registration stations at the bus stops is a possibility.

FIGURE 6.6
ECAT Service within Fort Pickens Area



6.5.2 Ridership Demand: ECAT Service

The largest component of the ridership demand for the ECAT service would come from area residents using the service for their routine transportation needs, rather than for leisure trips to Fort Pickens. Historic ridership data for ECAT shows ridership of 11 to 12 persons per hour. Given the relatively long travel times and modest population centers on Gulf Breeze and Pensacola Beach, and the seasonal nature of employment on Pensacola Beach, it is likely that ridership would be somewhat less. A ridership of 8 persons per hour equates to an annual ridership of between 24,000 and 53,000 for the two versions of year-round service discussed above.

Ridership directly to Fort Pickens can be expected to be relatively modest, although there is a strong likelihood that those riders would be new visitors to the park since bus riders typically have less access to automobiles than the regional average. Ridership to Fort Pickens from transit-dependent people in the ECAT service area would likely be a few thousand annually. Additional ridership may come from discretionary riders living in Gulf Breeze or Pensacola Beach, but overall ridership to Fort Pickens is estimated to be no more than 5,000 and 10,000 annually (17 to 35 per day). This is comparable to one or two percent transit share among visitors experienced at other parks, like Fort McHenry NHS or Gateway NRA, that have similar mixes of land-based transportation access.

6.5.3 Cost: ECAT Service

The cost of the potential ECAT service ranges from \$240,000 to \$530,000 annually. The costs are calculated using per-hour data for ECAT. An \$80.00 per revenue-hour cost was used. This represents an approximately 5 percent increase over the \$75.55 costs published for 2007.

For the enhanced ECAT service using one bus weekdays and Saturdays, operating on a 90-minute headway, the annual cost would be \$240,000. This bus service would not enter the park. With the expanded route into Fort Pickens, which requires a second bus on weekdays and provides hourly service to area residents on those days, the annual cost would be \$530,000.

Approximately half of ECAT's service costs are covered by Federal and State transit subsidies. The share of costs from fares is 16 percent and the local share (primarily Escambia County) is 35 percent.

Excluding the Federal and State subsidies, the cost for the new ECAT service options would range from \$120,000 to \$270,000, of which \$40,000 to \$85,000, respectively, would be expected to come from fares. The required local subsidy would be approximately \$85,000 to \$185,000. Ridership is assumed to be 85 to 155 passengers (roundtrip) per day to achieve the typical fare capture of 16 percent of costs. In order to cover the local subsidy the ridership would need to average 270 to 490 passengers (roundtrip) per day.

The cost of the service into Fort Pickens is effectively the extra 30 minutes per roundtrip the bus would make. With year-round service six days a week this would amount to 340 hours and a cost of \$120,000. Excluding State and Federal transit subsidies the net cost for fare capture and local subsidy would be approximately \$60,000. Some 115 passengers (roundtrip) per day would be required to cover that cost.

6.5.4 Conclusions: ECAT Service

ECAT service to Gulf Breeze and Pensacola Beach would benefit residents and workers. They would have the same access to transit that residents of the area have. ECAT service would also provide transit access to Fort Pickens for the 300,000 people in ECAT's service area. It could offer access to the park for those who do not have access to automobiles.

All of the break even points for ridership are higher than the expected 17 to 35 visitors per day that might arrive via ECAT bus. However, since travel to the park is discretionary, it could be possible to serve the majority of those who wish to visit via transit if only Saturday service into the park were provided. Under this option, the additional cost to serve the park would be only \$12,000 and the expected ridership would be able to cover the additional cost.

The park should work with partners to facilitate expanded ECAT service to Gulf Breeze and Pensacola Beach year-round, with Saturday service into the park.

6.6 Seasonal Trolley Service

There is currently a Beach Trolley service operating in Pensacola Beach on Friday and Sunday evenings, and all day on Saturdays, from mid-May to Labor Day. The Santa Rosa Island Authority contracts with ECAT for the service. The trolley service operates fare-free.

The trolley runs along Fort Pickens Road and Via de Luna Drive from the Fort Pickens gate to Portofino. The trolley service connects hotels and private residences to the dining and entertainment areas at Casino Beach and the Boardwalk. Two trolley buses are in use, providing 30-minute headways. The service is primarily oriented to evening entertainment, but it is well used, with ridership for the 2008 season exceeding 20,000 passengers. This averages over 30 (one-way) passengers per hour.

A similar service during the day would provide an attractive transportation alternative for overnight visitors on Santa Rosa Island who wish to visit the park or commercial destinations on the island. A trolley service would also provide Fort Pickens campers a means of visiting dining and entertainment areas on the island.

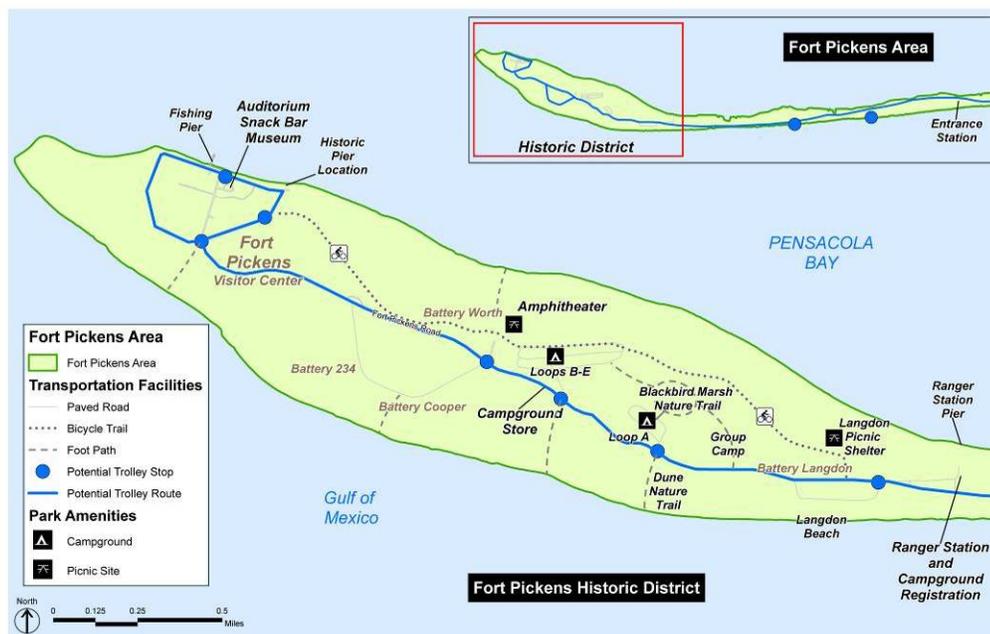


The Beach Trolley operates during the summer, on Friday and Sunday nights, and all day on Saturdays.

6.6.1 Service Characteristics

The concept for a seasonal trolley operation to Fort Pickens is to operate during the peak season of Memorial Day to Labor Day. The trolley would cover the entire route and all of the stops currently made by the weekend trolley. The route would be extended into the park, traveling along Fort Pickens Road with stops near the beach areas, the ranger station, the campgrounds and the fort (see Figure 6.7).

Figure 6.7
Seasonal Trolley Service into Fort Pickens Area



A single trolley vehicle would be able to provide two-hour headways between Fort Pickens and the length of Pensacola Beach now served by the ECAT trolley. This would provide five roundtrips each day. Under the example schedule below, visitors would arrive at the park at 10:00 am, noon, 2:00 pm, and 4:00 pm. The last shuttle leaving Fort Pickens would be at 6:00 pm.

TABLE 6.17
Example Schedule: Seasonal Trolley Service

Portofino	Casino Beach	Fort Pickens Gate	Langdon Beach	Fort Pickens	Langdon Beach	Fort Pickens Gate	Casino Beach	Portofino
9:00	9:15	9:30	9:45	10:00	10:15	10:30	10:45	11:00
11:00	11:15	11:30	11:45	12:00	12:15	12:30	12:45	13:00
13:00	13:15	13:30	13:45	14:00	14:15	14:30	14:45	15:00
15:00	15:15	15:30	15:45	16:00	16:15	16:30	16:45	17:00
17:00	17:15	17:30	17:45	18:00	18:15	18:30	18:45	19:00

The issue with the collection of the park entrance fee would be the same as for ECAT service. It would not be practicable to collect the fee when passengers board the trolley since the trolley route serves more than just the park and some riders may never enter the park. Collection at the vehicle entrance might slow delay the scheduled service. An honor system self-registration station at each trolley stop would avoid those problems.

6.6.2 Cost

The weekend Beach Trolley is paid for by the Santa Rosa Island Authority, which contracts with ECAT for service. There is also the private company in the area that has similar trolleys and for the purposes of this analysis it is assumed that the private company is contracted for the service.

The current (2008) cost for renting trolleys is approximately \$70.00 per hour. Assuming the Fort Pickens trolley service was operated seven days per week, ten hours per day, for the same 15 weeks that the Beach Trolley operates, the annual operating cost would be approximately \$75,000.

Capital costs would be limited to seasonal signage and shelters in key locations within the park. The cost for these is estimated to be approximately \$25,000.

If the trolley service were to be self-supporting from fares, ridership would need to be sufficient to cover the \$700.00 per day operating cost. Assuming a \$3.00 per roundtrip cost (similar to ECAT fares), the minimum ridership for break even operations would be 235 roundtrip passengers per day. This equates to approximately 25 roundtrip passengers per hour and 24,500 for the season.

6.6.3 Ridership Demand

A trolley bus connection could provide visitors with more options for accessing the park conveniently. Virtually all of the visitors renting hotel rooms and private accommodations have only one vehicle and a transit connection would provide the families with options of not using their car or having different family members visit different destinations at the same time. Whether a visitor or a permanent resident, a transit connection would provide the thousands of people residing at Pensacola Beach the means of accessing the park’s beaches and historic sites even when parking lots are full. A transit connection would also provide a park-and-ride opportunity for day visitors

when the park's limited parking areas are full, but some public parking areas are available.

During the peak season, the Fort Pickens area of the park has averaged over 900 automobiles, carrying 3.1 visitors, each day. The proposed trolley service would need to capture about eight percent of these in order to break even with a full-charge fare recovery.

The existing Beach Trolley service averages more than 15 (roundtrip) passengers per hour, which is higher than the average ridership on ECAT buses, but which is less than the 25 passengers per hour required to break even on costs. The existing Beach Trolley has the advantage of operating only on peak days and, most importantly, being fare-free.

6.6.4 Conclusion

A seasonal trolley service would provide an attractive means of travel for overnight visitors and residents of Pensacola Beach going to the park, and for campers at the park going to Pensacola Beach businesses.

It is unlikely that an operation requiring passengers to pay a full fare (in addition to the park entrance fee) would be self-sustaining. The best alternative would be to operate the trolley as the Beach Trolley is now – with a subsidy so that passengers ride free. This would make the service useful for people traveling to locations within Pensacola Beach, as well as those traveling to and from Fort Pickens.

The annual cost for operating the season trolley 15 weeks a year is approximately \$75,000. As with all alternative transportation options to Fort Pickens, the majority of potential visitation could be retained even if the service were not operated daily. The trips to Fort Pickens are discretionary and given the typical multi-day stay for overnight visitors even a peak-day (Friday, Saturday, Sunday) trolley service could be used by most park visitors. A three-day service operating 15 weeks per year would cost approximately \$30,000.

6.7 Internal Circulation Service

The Fort Pickens Area is over 7 miles long, with most attractions located in a 2.5 mile stretch between the fort and the ranger station. Destinations within this area include Langdon Beach, batteries in two areas, two campgrounds, and nature trails. Circulation within the park is currently accommodated via automobile, on foot, or by bicycle. Automobile circulation is sometimes constrained by parking and it is not always possible for visitors to park near their preferred destinations.

Increased options for circulation within the park becomes more important as visitors use alternative transportation to access the park. These options range from rental of personal transport, such as bicycles, to fixed route multi-passenger shuttle service using trams.

6.7.1 Personal Transport

A concessionaire operation is well suited to providing visitors with rentals of bicycles or even Segways and golf carts.

Bicycles

The rental of bicycles is easily established. Bicycles can be used by most visitors, are low-cost, easy to transport, and do not require significant infrastructure for maintained

and storage. Typical bicycle rental charges are about \$20 per day, including equipment such as helmets and locks.

Prior to the closure of Fort Pickens Road in 2004 the concessionaire running the campground store had a few bicycles available for rent. The campground store is located adjacent to Fort Pickens Road and as such can be accessed by those arriving by bus or trolley. However, the store is located about 1 mile from the fort and would not be convenient for those arriving by water.

A secondary rental stand would be necessary to serve visitors arriving by boat. This stand could be a seasonal set up using removable shelters, but a more permanent set-up would be preferred. Room for 25 to 50 bicycles should be provided, using a target of 10 to 20 percent of ferry passengers.

Segways

Segways provide an enhanced recreational experience when used for self- or guided-tours. In Florida, use of Segways do not require the operator to be licensed and they can be used on roads with posted limits of 25 mph or less. National Park Service regulations, which supercede state traffic laws in federal jurisdictions, allow use of Segways only on roads except for off-road use by those who are mobility impaired. The top speed of a Segway is 12.5 mph although if operated at full speed the battery charge would last only 1 hour. Typical use of a Segway provides about 20-25 miles between charges.

When Segways are rented to customers the cost is in the range of \$40 to \$50 per hour, often with a two-hour minimum. There are usually age limits (typically 12) and health restrictions. All customers are required to watch a 15 minute video and then at least another 15 minutes of supervised practice.

Once riders are trained, operation of the Segways on the roads is effectively the same as for bicycles. The speed, visibility, and space used is similar. Most Segways do not operate in sand and using only these types of Segways protects against the possibility of damage to natural resources. There would need to be some parking for Segways at destinations within the park, but this could be a simple seasonal shelter with areas to lock the Segways.

A Segway concession would require charging stations for each vehicle, secure storage facilities, a practice area, and a video room. If no building is available, a double trailer set-up could be used.

The rental of Segways to visitors would provide them with an enjoyable method of experiencing many areas within the park. The cost of the rentals, and the time required for renting them (about 45 minutes), would likely limit their use to a small segment of the visitor base. Segways are relatively inexpensive (\$5,000) and can be leased for half that amount for a season, so a concessionaire could expand the fleet as needed.

Golf Carts

Golf carts are used in many communities and are often used to shuttle people at events. In Florida communities are allowed to permit the use of golf carts on roads with speed limits of 30 mph or less. National Park Service regulations can accommodate golf carts on roads.

Weekly and monthly rentals are sometimes available in communities where golf carts are commonly used, although it is not known if anyone rents them hourly for tours. The cost of a golf cart ranges from \$7,000 for a standard two-seat cart, to \$10,000 for a four-

seat cart, to \$15,000 or more for custom golf “cars”. An appropriate rental fee would be in the \$30 to \$50 range, for half a day (4 hours).

Like Segways, golf carts are electric powered. Golf carts have a better range and can be expected to make it through the day before recharging. Operationally, golf carts used by individuals are less desirable than Segways. A golf cart is more likely to be driven off road, a golf cart takes up more roadway than does a Segway, and a golf cart requires more parking area than a Segway.

Concessionaire issues for renting golf carts are somewhat less complex than with renting Segways since there is no need for a video room. The other elements of the concession space are similar – charging stations, secure storage space, and office space.

Another option would be to use golf carts for transporting those who are mobility impaired. Rental to individuals might be restricted to such persons, or golf carts with a trained driver could be used to shuttle people among the destinations within the Fort Pickens Area.

6.7.2 Trams

Trams are routinely used for parking lot shuttles and for other passenger transport at amusement parks and special events. Trams are used at several National Park Service properties for parking lot transportation and for tours.

There are many types of trams. There are single-vehicles trams that carry 8 to 20 passengers. Multi-unit trams include those with tractors and tugs and those with power units and trailers. Power units can carry 10 to 20 passengers and they can pull two or three trailers that carry 25-30 passengers. Many of the larger power units are an E350 chassis with conventional gasoline or diesel engines. Some of the smaller trams are electric powered, which limits the range to about 30 miles. The costs of trams range from \$20,000 for a small 8-passenger electric unit to over \$200,000 for a power unit and three trailers capable of carrying 100 passengers.

Service Characteristics - Trams

For the purposes of this study a tram service operating only Friday, Saturday and Sunday during the peak season is evaluated. The service would operate every 15 minutes from 10:00 am to 6:00 pm. It would make stops at the Fort, the Fishing Pier, the batteries and campgrounds along Fort Pickens Road, and Langdon Beach, etc. (see Figure 6.8).

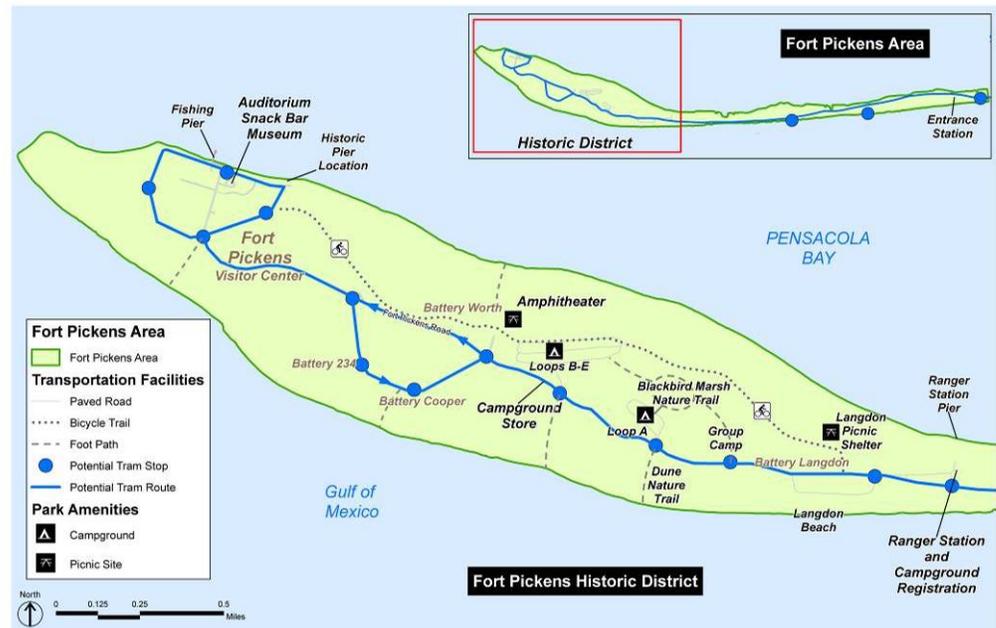


A tram power unit and trailer, using a standard E350 chassis as the power unit.



An eight-passenger self-powered tram.

FIGURE 6.8
Tram Service in Fort Pickens Area



Two trams would be required to maintain the minimum 15-minute frequency. The trams would be open-air on the sides, allowing passengers to easily board and alight. It is anticipated that trams would have a power unit and one trailer. Using the larger tram rather than a tractor-type tram is preferred because the power unit can be driven off-site each day for fueling and maintenance. The trailers could remain overnight in the park.

Costs - Trams

If a tram service were initiated at Fort Pickens there would be several contractors that could provide the vehicles and drivers, and handle maintenance and other operations. It would be similar to contracting for a seasonal trolley service.

The most significant difference would be because of the specialized nature of the tram. Unlike trolley buses, that can be used throughout the year for charters, a contractor would likely purchase a tram specifically for the Fort Pickens service and thus all of the vehicle costs would be included in the hourly rental fee. For the example service of two trams operating 8 hours per day, three days a week for 15 weeks, the cost would be approximately \$100,000.

Ridership -Trams

The trams would have a minimum carrying capacity of 200 seats per hour between destinations. Daily visitation to the park is less than 2,000 people per day so the trams could accommodate any likely ridership. Smaller trams might be usable for most instances, but the larger trams are preferred to handle surges of passengers that occur when parking areas fill or a ferry boat arrives or departs.

The acceptance of the tram service would depend on frequency and price. Trams are typically operated at a minimum frequency of 15 minutes. There is rarely a charge for

passengers for tram services. In fact, it is impractical to try to collect fees for tram services that operate on a route with multiple stops. The cost of the tram would need to be recovered through indirect transportation fees. If the tram operation were paid for by a ferry operator, a surcharge of roughly \$3.00 to \$5.00 on Fort Pickens ferry riders would be required. A transportation fee of about \$3.00 would be required if applied to cars entering the park on days the tram is in operation. If a transportation fee were assessed to cars every day the required transportation fee would be less than \$1.00.

6.8 Road Closures - Impacts/Options

Barrier islands are routinely affected by storm winds and currents that cause shifting of beach sands. Roadway access to the Fort Pickens area of GUIS has been affected by storms in the past and temporary road closures will undoubtedly occur in the future. It is important to consider how these closures might impact alternative transportation options.

6.8.1 Short-term Road Closures

Over the past season overwashes of water flow over the narrowest section of the park has occurred several times. Once the road is in place similar breaches will likely occur and they may result in the road being closed for one to several days.

The direct impact of any short-term road closure would be to preclude access via automobiles, bicycles, ECAT bus service, and seasonal trolley service. However, visitors would still be able to access the park via water services. Visitors could choose water access via ferry, private boat, or one of chartered CUA services. In addition, internal circulation, such as concession rentals, would not be impacted.

Access via private boat would not be affected substantially since this type of visit is independent of road access, but ridership via CUA charters or ferry service could increase substantially. These water-based alternative transportation options are well-suited to accommodate temporary increases in ridership.

Projections for ferry boat ridership on the busiest days average about 250 visitors per day for the three trips between downtown Pensacola and Fort Pickens. With a 149-passenger boat, the ferry service could accommodate close to a doubling of ridership even before adding extra trips.

Many who wish to visit the park may choose simply to wait until Fort Pickens Road re-opens. Overnight visitors to the area stay an average of about five days and many short-term road closures would not last that long. But the availability of ferry boat access would be important for day visitors, campers, and park staff. Day visitors would be assured access to the park via the ferry. Campers in the park, who would be trapped by any breach of the road, would be able to use the ferry as necessary. Park staff would be able to use the ferry to travel to Fort Pickens and all park programs could be maintained during any short-term temporary road closures.

6.8.2 Long-term Road Closures

Fort Pickens Road is scheduled to reopen in the spring of 2009, after being closed for 4½ years. After being damaged by Hurricane Ivan in September 2004 the road was to be rebuilt and put back in service in 9 months, but Tropical Storm Arlene caused further damage and the road reconstruction was delayed three months. Hurricanes Cindy and Dennis then destroyed sections of the newly-built road.

Storms such as those experienced the past few years have the potential to close Fort Pickens Road for at least one summer season and back-to-back storms have closed the road for as many as four seasons. The result has been the loss of access for millions of potential park visitors.

Long-term road closures present a different set of issues and opportunities than do short-term road closures. Among these are that ferry boat access could become the principal means for visitors to travel to the park and that over-sand options could replace on-road options.

Ferry Service

Ferry service is the most advantageous transportation option for accommodating visitors during temporary road closures. Road closures due to small storms would likely not damage the dock and thus have no impact on the ferry service. Larger storms would have a lesser and shorter-lived impact than for the road.

The typical ferry dock design criteria would in most cases cover the requirements for a minimal Category 1 hurricane. With the additional protection provided by the bayside pier location, damages from many storms would be limited to non-structural dock elements above the decking such as railings and lights. In the case of a catastrophic storm resulting in structural damage to the dock, the repair effort may be significant but still relatively less than the damage suffered by the road and park elements and amenities along the road.

A ferry service could accommodate substantial increases in ridership. With the road in place ridership on the ferry is expected to average less than half the available capacity if 149-seat ferries are used for three or four trips per day. Additional trips could be scheduled if necessary. If the service was operating only on weekends it could be extended to week days.

For closures that last several seasons larger boats would be required to accommodate visitors. Operating a 149-passenger ship on four trips per day would be able to accommodate upwards of 15,000 visitors a month, but visitation to Fort Pickens by automobile exceeds 50,000 from March through August.

One possible constraint on the ability to accommodate visitors during road closures is the amount of parking available at the departure point. On peak days the West Ship Island ferry operation parks upwards of 300 cars. The ferry service request for proposal advertised by Pensacola noted only 125 spaces readily available at the Plaza de Luna site. There would need to be a coordinated effort to identify available parking at the Plaza de Luna and Quietwater sites, combined with enhanced transit connections to those docks.

Over-Sand Service - Small Vehicles

During the 2008 season a private operator established a reservation-type over-sand operation using a six-passenger ATV. Even with minimal advertising, this first-year service often carried 30 and sometimes as many as 50 visitors per day. The flexibility of the ATV over-sand operation would allow it to be used during any long-term road closure – regardless whether it was for one season or several.

ATVs are relatively inexpensive, are readily obtained, and can be trailered back and forth as necessary for maintenance and fueling. If Fort Pickens Road were damaged by a storm, an ATV service could be implemented almost as soon as the damage cleared away and the over-sand route made safe.

It may also be that any road reconstruction that took less than a year may not provide potential CUA operators with sufficient time to run the over-sand service. The over-sand service could not operate while construction was going on, and if the storm damage occurred after the summer peak season, it may not be profitable to run an over-sand service only during the winter months. However, this option should be encouraged since, if an operator were available, then the service would provide many people with the opportunity to visit the park.

A road closure that extends over at least one peak season creates the opportunity for increasing over-sand ridership well above that experienced during the original service in 2008. The potential ridership will depend in part on competition from ferry service and other water access, but the convenience for those already on Santa Rosa Island and the lesser cost compared to ferry service would provide a strong demand for the service. The biggest constraint may be the availability of parking and the ability to maintain the over-sand route.

Patrons of the current ATV operation use the SRIA parking lot at the Fort Pickens gate. During 2008, with daily ridership typically about 30 visitors, the parking needs were relatively modest and did not cause any problems with access for beach visitors. However, it is conceivable that ridership could triple and this could increase the need for visitor parking to 30 or 35 spaces (with additional parking if visitors were multi-day campers). The parking lot is approximately 300 spaces and the SRIA would need to review any plan for the over-sand service to determine whether the parking could be provided.

The over-sand route is limited to the extents of the paved roadway in order to preserve natural resources. Because the ATVs have relatively narrow tires they can rut the over-sand route. The over-sand route would likely need to be groomed if there was activity from multiple ATVs. Tractors could be trucked in occasionally to do the grooming.

Use of ATVs for a reservation-type over-sand service would provide an opportunity to serve many park visitors during times when Fort Pickens Road is closed. During the peak season each ATV in service could easily accommodate 200 visitors per week and 3000 over the course of the season. If three ATVs were in use the peak season ridership could be close to 10,000 visitors. There might only be a single ATV in use during shoulder seasons and the winter months, but per-vehicle daily ridership should remain strong due to the limited capacity per trip. A 15-week shoulder season could add another 3,000 visitors.

Over-Sand Service - Large Vehicles

There are many local, state, federal and foreign parks that have over-sand transportation by vehicles, including buses. However, almost all entail travel over hard-packed sand near the water line and not the soft sand like in the Fort Pickens Area. One example of a park using large vehicles to transport visitors over soft sand is at False Cape Park in Virginia. The park uses a Terra Gator tractor to transport visitors. Terra Gators are off-road agricultural tractors with standard chassis options for fertilizer or pesticide application. False Cape Park uses a unit with the standard Terra Gator tractor and a custom passenger box on the chassis in place of the typical farm equipment. Terra Gators have large tires, the pressure to which can be controlled from the cab, and this allows them to operate over farm fields and soft sand.

Other examples of a modified commercial vehicle are the Terra Buses and Tundra Buggies used in Canada. The Terra Bus is a 56-passenger off-road bus used to carry visitors to the glaciers in Jasper National Park. They are made by a company



A six-passenger ATV. It can carry large items such as scuba gear, and can transport persons with wheelchairs.



Terra Gator tractor with custom passenger box carries visitors over sand through a national wildlife refuge into a state park

specializing in mining and drilling equipment used in harsh climates and the bus was originally developed to carry employees to mining camps. Tundra Buggies are custom-made buses used for arctic tours and viewing polar bears near Churchill Manitoba. The large, low-pressure tires enable the buses to travel on the tundra without damaging it.



These large off-road shuttles are available and could provide an exciting experience for visitors at Fort Pickens. However, because they are for off-road use only, accommodating these vehicles would require the construction of facilities for garaging, fueling and maintenance within or near the east boundary of the park.

If the opportunity were to arise for an over-sand concession at Fort Pickens, it may well be that someone could adapt other vehicles to over-sand passenger use and they could either be road-legal or could be trucked to and from Fort Pickens. This is less likely, though, for temporary road closures due to the high vehicle cost and potential short time to recoup the cost. The cost of a Terra Gator, which is commercially produced in relatively large quantities, exceeds \$150,000. The cost of customizing the chassis to carry passengers would likely be considerably higher. Without knowing that the road would be closed for several years it would not be feasible for someone to initiate the service.

Parking is another issue pointing towards use of large over-sand vehicles only if Fort Pickens Road were closed for many years, or permanently. A service that carried 200 visitors per day would require about 65 parking spaces, exclusive of overnight campers. Even with a multi-year closure of Fort Pickens Road it would not be reasonable to permit and construct this parking within the park. The parking would need to be obtained from the Santa Rosa Island Authority.

Overall, it appears that use of off-road buses for an over-sand service into the park would be attractive to visitors but is likely not feasible during temporary road closures, even those that last for several years.

Terra Buses and similar vehicles carry visitors over tundra and glaciers at Canadian parks.

Chapter 7: Conclusions and Next Steps

The study found that there were several viable alternative transportation options that would benefit park visitors and the residents and business owners in the surrounding community. Some options are appropriate for immediate implementation, perhaps as a trial basis initially and then expanding to full potential as demand increases. Other options are viable once other initiatives are realized.

This chapter summarizes the findings about the recommended alternative transportation service options, and highlights the necessary next steps to achieve their successful implementation.

7.1 Ferry Service to Fort Pickens

There is widespread support for ferry service in Pensacola Bay and establishing Fort Pickens as one of the destinations is key to the success of that ferry service. The City of Pensacola is leading efforts to establish the service, has identified docking facilities that could be used in Pensacola and Pensacola Beach, and has constructed suitable concession facilities at its Plaza de Luna waterfront park. There is currently no suitable docking facility available at Fort Pickens although this study has confirmed there are good locations for such facilities.

Support for ferry service in the bay is long-standing, with studies conducted since the 1970s. Current efforts are energized by the expansion of hotel space on Pensacola Beach and by projects such as the Maritime Museum and the Maritime Park development. The Santa Rosa Island Authority, the regional metropolitan planning organization, and the local transit authority are among those who support the current efforts to establish ferry service in the bay.

Ferry service to Fort Pickens is not practicable without being part of a ferry system serving multiple destinations within Pensacola Bay, and ferry service within Pensacola Bay would suffer without including Fort Pickens as a primary destination. Providing ferry service to the Seashore would increase visitation and enhance the visitor experience.

- Ferry service in Pensacola Bay offers a recreational experience that visitors to the area do not currently have. The unique experience of the ferry service, a comfortable means of exploring the open water and the potential of dolphin watching, can attract new visitors to the area and to the Seashore.
- Ferry service to Fort Pickens will provide visitors with alternatives to driving to the Seashore. This is of benefit both to residents of the area who lack access to automobiles and to overnight visitors to the area who wish to experience the Seashore without reliance on their automobile.
- Water access provides critical redundancy and sustains park mission even when the road is out of service. The closure of the storm-damaged Fort Pickens Road since 2004 has meant the loss of more than 600,000 annual visits and has severely limited park operations.
- Docking facilities in the Historic District of the Fort Pickens Area can be used not only for ferry service but also for administrative uses in that section of the long linear park, including reconstruction activities after storm events.

The study evaluated two examples of ferry service during the peak season. One example used two boats that provided daily service to several destinations, including Fort Pickens, six days per week. The other used a single boat to provide access on three days per week. The study found that the two-boat service could be financially self-sustaining under some conditions, and that all indications were that the one-boat ferry service would be financially self-sustaining under all reasonable conditions.

The finding of viability with the one-boat service was in large part because the market for the ferry service does not require daily service at high frequency. A service with three or four trips per day is typical for ferry services at other parks. Because overnight visitors to the area stay an average of 5 to 6 days during the peak season even a ferry service operated three days per week would provide all visitors with the opportunity to ride the ferry to their preferred destinations.

The primary roadblock to establishing ferry service to Fort Pickens is the lack of pier and docking facilities. There would need to be a concessioner agreement developed that covered operations, including collection of visitor fees, but other infrastructure issues such as overnight berthing locations and fueling facilities would not directly involve the Seashore.

The cost for the pier, docks and landside connections into the fort area is approximately \$3.5 million. This would provide a handicap-accessible facility that would accommodate both large and small ferry boats and would provide shelter for waiting passengers. The docking facility would be able to accommodate the existing CUA charter operators so that they would no longer have to land only on the beach. The docking facility would also accommodate administrative uses including a shelter and hoist for park boats.

The location of the pier should be near the fort and a 1,200-foot stretch between the old pier location and the historic pier location appears to be suitable. Underwater and land survey will be required to assist with the value engineering for the design process to determine the specific location.

The next steps for achieving ferry service to Fort Pickens are as follows.

1. Continue to work with partners to further the implementation of ferry service in Pensacola Bay. These include the City of Pensacola, the Santa Rosa Island Authority, ECAT, the MPO and the Florida DOT, among others. In particular, the Seashore should work closely with the City of Pensacola in its current initiatives to establish ferry service.
2. The Seashore and the FHWA have contracted with the University of West Florida to conduct a study that will provide bathymetric mapping and information on aquatic plant and animal communities that can be used to determine the optimal location and design of pier and docking facilities. The findings are provided in the University of West Florida technical report *Resource Survey and Investigation of Bathymetry and Currents in the Area of Fort Pickens*.
3. Submit the pier and docking facilities proposal to the Paul S. Sarbanes Transit in Parks Program for funding. The grant program is administered by the Federal Transit Administration and supports alternative transportation systems in national parks and other federal public lands.

7.2 Commercial Use Authorization Services

The three existing CUA charter boat services have been one of the few ways that visitors have been able to access the Fort Pickens Area while Fort Pickens Road was closed. Even when the road reopens encouraging use of these CUA boat services is beneficial for the park and park visitors.

The best way to support access via the CUA boat services is to provide suitable docking facilities as part of the dock and pier needed to implement ferry service to Fort Pickens. Currently the CUAs can only land on one designated beach area near the fort, and at the pier behind the Ranger Station, some four miles from the fort. CUA operators have indicated that dock access near the fort would increase ridership by providing a more comfortable and convenient means for visitors to tour the areas near the fort. Some of the CUA boats are handicap accessible and moving the landings from the beach to a dock would make the visit to the park fully accessible.

7.3 Seasonal Trolley Service to Fort Pickens

There is a free trolley service operating on Pensacola Beach on weekend nights during the summer. The service is well received, with approximately 20,000 riders each season (over 30 passengers per hour). A daytime trolley service to Fort Pickens could build upon the current marketing of the beach trolley to provide increased transportation options for those staying at Pensacola Beach hotels who wish to visit the park, as well as those at the park campgrounds who wish to make trips to Pensacola Beach businesses.

The new trolley service would cover the entire route and all of the stops currently made by the weekend beach trolley. Within the Fort Pickens Area the trolley would have stops near the beach areas, the ranger station, the campgrounds and the fort.

The study found that the service was not viable unless the operating costs were subsidized and the service was free to passengers. Not only would the fare required to cover all costs be too high, but charging any fare at all would severely curtail ridership and sponsorship. One of the reasons the existing beach shuttle is so popular is that no fare is charged.

The example service evaluated in the study entailed a single trolley making trips every two hours (five trips each day), seven days a week. The operating cost for this service was \$75,000. If two trolley vehicles were used the frequency could be every hour, at a cost of \$150,000. As with all alternative transportation options to Fort Pickens, the majority of potential visitation could be retained even if the service were not operated daily. A Friday/Saturday/Sunday service could be used by most park visitors and would cost \$30,000-\$60,000 per season for one or two vehicles, respectively.

The weekend trolley service is operated by ECAT and the operating costs are paid for by the Santa Rosa Island Authority. ECAT owns three trolley vehicles. A similar arrangement of contracting with ECAT is appropriate for a new daytime route that includes Fort Pickens. As a scheduled fixed-route service, ECAT could also apply for operating funds and for capital funds. Capital funds for the trolley buses, shelters and signs, could also potentially be funded by grants obtained by the Seashore.

The next steps for achieving seasonal trolley service to Fort Pickens are as follows.

1. Identify partnerships for operating funds. This will determine whether the service could be operated with one or two vehicles, and whether the service should be operated seven days a week or only on weekends.
 - a. Work with ECAT and FDOT District 3 to secure operating funds under the state's Public Transit Service Development Program. This could provide 50% of operating monies for three years of service.
 - b. Work with the SRIA to determine the availability of matching funds.
2. Work with ECAT to determine whether they have sufficient trolley buses to provide the service, or if more will be needed. If additional trolleys are needed then the Seashore and ECAT should work with FDOT to determine which of them should procure the vehicles through a FTA capital funding request.
3. Seek partnerships for shelters and signs at the park. The potential cost is upwards of \$25,000.
4. Determine the best method for collecting park entrance fees from riders. This might be done as a payment from a sponsoring partnership organization, or via a self-registration system at trolley stops within Fort Pickens.

7.4 Intra-park Circulation

The Fort Pickens Area is a linear park over seven miles long. Even the Historic District is about three miles long and has dozens of visitor destinations scattered throughout, including beaches, trails, campgrounds, fishing areas, several gun batteries, and the fort itself. There are no transportation options for those who are mobility-impaired other than private automobile, no option other than walking for those who would rather not drive from place to place, and no option other than walking for those who might arrive by alternative transportation services.

There are several service options that would improve visitor mobility within the park. These range from concession rentals of bicycles and other personal transport vehicles, to full-fledged tram services operating on a fixed route. Some service options are appropriate for the type of visitation experience that the Fort Pickens Area accommodated prior to the closing of the storm-damaged road in 2004. For other service options the appropriate level of service depends in large part on the success of alternative transportation systems bringing visitors to the park.

- Improved bicycle access within the park can be achieved relatively easily. Roads and paths are being restored and once park operations are restored to pre-storm levels the campground concession can again provide bicycle rentals. Once alternative transportation service options to Fort Pickens are established, whether they be a ferry service or a shuttle bus/trolley service, the Seashore should also work with the concessionaire to provide bicycle rental facilities near the fort.

Separately, the Seashore should work with partners to determine ways to fund the installation of bicycle racks at key locations in the Historic District. There are as many as 15 locations where bicycle racks would be useful to protect natural resources and provide bicyclists with a means of securing their bicycles.

- The Seashore can work with the campground concessionaire should the concessionaire wish to offer Segway rentals. There would need to be facilities

made available for the storage and charging of the Segways, and the training of the riders. Although individual rentals may be difficult to accommodate and monitor, the use of Segways for group tours or for those who are mobility impaired is a viable option.

- A tram service could provide handicap-accessible access between points of interest within the park, could help address parking problems at popular locations, and could provide transportation for those who arrive by water or by bus/trolley.

The next step for implementing a tram service includes the development of a detailed implementation plan to determine the preferred days of operation, vehicle type, vehicle operator, and funding options. One good option would be for a tram service to be operated by a ferry operator. Regardless of who operates the tram, the service would need to operate frequently and a service operating in the Historic District with a frequency of 15 minutes is recommended. The study concluded that any tram service would need to be fare-free and thus a reliable funding source must be identified. A transportation fee of about \$1.00 per vehicle entering the park would be sufficient to support a tram operation. The Seashore should seek permission to implement such as fee.

7.5 ECAT Service to Fort Pickens

There is only very limited ECAT service to Gulf Breeze and Pensacola Beach. Route 61 provides two trips per day between Pensacola and Pensacola Beach. Expanding that service to that typical of other areas in the ECAT system would benefit residents and workers in those communities and would provide access to the Fort Pickens gate for bicyclists and those who do not have access to automobiles.

Route modifications and expansions are a routine part of the annual and multi-year planning by the local transit agency, the communities it serves, and the regional planning agency. The existing Route 61 service was implemented in 2008, but there are no immediate plans to expand that service. Although not the primary benefactor of enhanced transit service to Pensacola Beach, the Seashore should be supportive of efforts by ECAT and others to provide the service.

Once effective transit service is provided to Pensacola Beach there is the opportunity to expand that service to include the Fort Pickens Area. The most realistic option would be to initiate service in stages, starting with Saturday service. This option should be included in ECAT service plan and MPO multi-year planning efforts.