

National Park Service  
U.S. Department of the Interior

Hopewell Furnace National Historic Site  
Elverson, Pennsylvania



# Hopewell Furnace NHS

## *Alternative Transportation Study*



PMIS No. 133169  
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John A. Volpe National Transportation Systems Center  
Research and Innovative Technology Administration  
U.S. Department of Transportation





# Table of Contents

Introduction.....	I
Study Purpose and Goals.....	I
Methodology.....	I
Background.....	I
Regional Setting.....	4
Existing Conditions.....	10
Current Patterns of Visitation.....	10
Transportation.....	14
Anticipated Growth and Development.....	23
Transportation patterns and improvements.....	23
Growth and development.....	23
Partnership Assessment.....	25
Methodology.....	25
Findings.....	25
Partner Summaries.....	25
Analysis of Alternative Transportation Scenarios.....	31
Findings and Recommendations.....	39
Wayfinding and marketing improvements are needed.....	39
Continued improvements in bicycle and pedestrian access are important.....	39
Internal circulation problems are limiting visitor access.....	40
Pilot shuttle could offer opportunity to test internal and external ATS options.....	40
APPENDIX: Stakeholder Interview Protocol.....	43



## Report notes

This report was prepared by the U.S. Department of Transportation John A. Volpe National Transportation Systems Center in Cambridge, Massachusetts. The project team was led by Elizabeth Machek and Frances Fisher of the Service and Operations Assessment Division.

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## Introduction

### *Study Purpose and Goals*

This study will assess the potential for an alternative transportation system (ATS) at Hopewell Furnace National Historic Site (NHS), in Elverson, Pennsylvania. Concerned about internal circulation and interested in taking advantage of local interest in partnering for historic, cultural, and natural resources, the National Park Service (NPS) asked the Volpe National Transportation Systems Center (Volpe Center) to investigate existing conditions and make recommendations for future transportation improvements at Hopewell Furnace NHS.

NPS staff defined the goal for this study as creating strategies for resolving existing localized transportation issues as well as concepts for a broader system. The ultimate goal of the latter is to increase visitation. Further, the desired role of transportation for Hopewell Furnace NHS was defined as follows: *to provide a visitor service that has minimal or beneficial impacts on natural and cultural resources*. Secondary goals were defined as reducing the need for visitors to drive, staying ahead of development in the area, and creating an identity for Hopewell Furnace NHS.

Based on an analysis of existing conditions, likely future trends, and analysis of alternative transportation opportunities, the study team ultimately recommends improvements in wayfinding and marketing, continued improvements in bicycle and pedestrian access, internal circulation improvements, and a two-year pilot shuttle service through which Hopewell Furnace NHS can test a number of different transportation options to determine the feasibility of each before committing to a permanent service.

### *Methodology*

To prepare this report, Volpe Center staff conducted telephone and in-person interviews, reviewed regional plans and reports, and performed two site visits to Hopewell Furnace NHS and the surrounding area. Findings were used to assess the potential for various types of transportation services at and to Hopewell Furnace NHS.

### *Background*

Hopewell Furnace NHS encompasses 848.06 acres in the Schuylkill River Valley watershed in Chester and Berks Counties in Pennsylvania. The nearest major city is Reading, 15 miles to the northwest, and Philadelphia is 52 miles to the southeast.

Hopewell Furnace NHS preserves and interprets one of the finest examples of an early American iron plantation. Founded in 1771 by Ironmaster Mark Bird, the company operated until 1883. The surrounding forested lands were historically mostly owned by Hopewell Furnace to provide the natural resources—iron ore, limestone, timber for charcoal, and water power—needed to produce the iron. Today, much of the area is preserved by the Pennsylvania Department of Conservation and Natural Resources as a part of French Creek State Park and the Pennsylvania Game Commission.

Hopewell Furnace NHS is currently drafting a revised General Management Plan (GMP). The GMP will consider several changes in management and infrastructure, including a new visitor center in a new location, but as decisions have not yet been finalized, this study will be based on current conditions. The park has also undergone a Core Operations evaluation. In that process the park purpose was redefined as “Hopewell Furnace National Historic Site preserves the

charcoal fueled furnace, ironmaster's house and other resources that define the natural and cultural landscapes known as Hopewell, interprets and shares the history of Hopewell and its people, and provides for the public enjoyment through a range of learning and recreational opportunities.

Hopewell Furnace NHS provides a broad array of opportunities to experience this history. Visitors come to explore the preserved buildings, participate in charcoal and iron production demonstrations, interact with historic interpreters, watch a theater program presenting the history of the community, pick apples from the orchard that supported the community, and enjoy the natural setting. In addition to supporting these public activities, Hopewell Furnace NHS staff spend their time preserving and documenting the history of the Hopewell Furnace community. Major facilities at the NHS are described below.

### **Visitor Center and Apple Orchard**

Visitors enter from Route 345 and proceed to the parking area, adjacent to the visitor center and apple orchard. The visitor center includes museum exhibits and audio-visual programs to orient the visitor. From early September through October, visitors can pick their own apples from the park's orchard of historic varieties for a nominal fee.

### **Village**

From the visitor center, visitors walk down a short but steep hill to visit a collection of historic buildings, including the ironmaster's mansion, a blacksmith shop, tenant houses, and the infrastructure of the iron-making industry. During the summer season, living history programs are available. Visitors are asked to pay a fee at the visitor center if they choose to enter the historic buildings.

### **Baptism Creek**

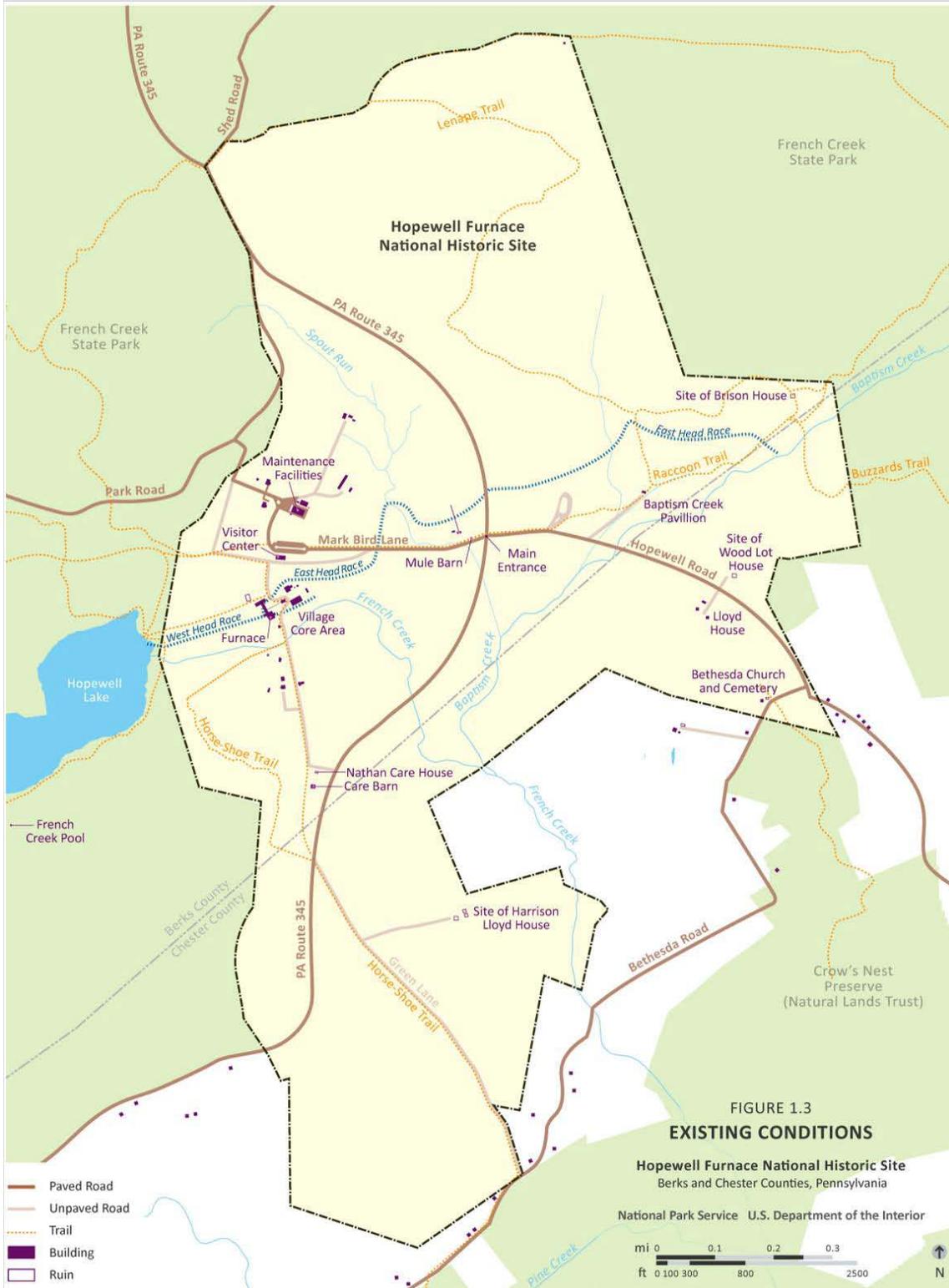
From the visitor center, visitors drive or walk .5 miles to the entrance of the Baptism Creek Area which features historic iron-era ruins, a CCC picnic shelter, an 0.8 mile National Recreation Trail and links to trails throughout Hopewell Furnace and French Creek State Park. There is a self-guided trail map available at the visitor center and parking for four vehicles. Additional parking is opened up for special events including the regular meetings of the Delaware Valley Orienteering Association and other activities through prior arrangement with the park.

### **Bethesda Church and Cemetery**

During the most productive period of operations at Hopewell Furnace, Bethesda Church served as a meeting place for religious services of many of its residents. The church is sited in the southeast corner of Hopewell Furnace NHS, less than a mile and a half from the visitor center.

**Figure 1: Map of Hopewell Furnace National Historic Site**

Source: National Park Service.



## Regional Setting

The area immediately around Hopewell Furnace NHS is relatively rural, with the small towns of Elverson and Birdsboro closest by. However, although surrounded by protected land, the NHS is located in a rapidly growing region outside of Philadelphia. Information on this growth and its possible impact on Hopewell Furnace NHS will be described in more detail later in this report. The region is rich in natural, cultural, and historic resources, many of which have ties to the iron and steel industry, and there are several regional designations and nearby attractions that are important to note. Hopewell Furnace is part of a large conservation area, Hopewell Big Woods, as well as a focal point of a nationally-designated region, the Highlands, and a destination within both the Schuylkill River National and State Heritage Area and the Iron and Steel Heritage Region. Some of these major regional designations, as well as individual sites, are described below.

### The Highlands

Hopewell Furnace NHS lies within the Highlands, a region stretching from western Connecticut across New York's Lower Hudson Valley, northern New Jersey, and into east-central Pennsylvania. The Highlands is a geological formation and consists primarily of valleys and hills covered in forest and farmland, adjacent to urban coastal centers. The region has been recognized for the national and regional significance of its natural resources by Congress, which has directed the USDA Forest Service to complete several studies of the impact of land use patterns on the Highlands' natural resources and provided funding for land conservation and management of the region in 2004 through the Highlands Conservation Act. The Act authorizes \$10 million a year for 10 years to help the four Highlands states buy land for conservation and authorizes an additional \$1 million a year for 10 years for USDA Forest Service programs in the Highlands Region. The region is also overseen by the Highlands Coalition, a four-state alliance of nearly 200 nonprofit, municipal, state and federal organizations.

**Figure 2: Map of the Highlands Region**

Source: USFS Highlands website.

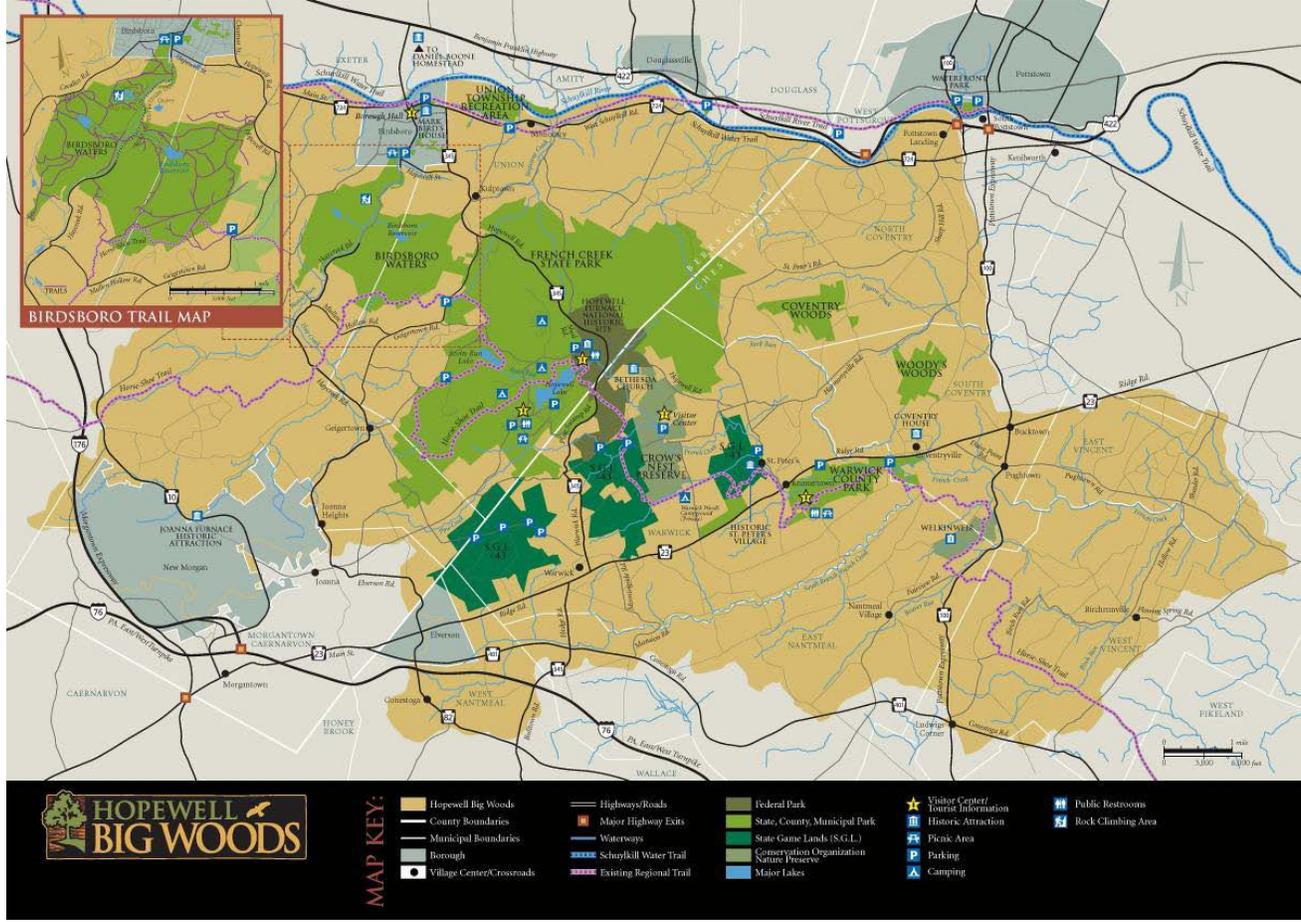


### Hopewell Big Woods

Hopewell Big Woods is a conservation area consisting of over 73,000 acres, or 110 square miles, making it the largest contiguous forest in Southeastern Pennsylvania and a highly-valued regional asset for public recreation. The Woods are supported by the Hopewell Big Woods Partnership, a group of over 40 government agencies, private non-profits, and municipal entities that is seeking to conserve at least 4,000 acres of old growth, 15,000 acres of unbroken forest, and the watersheds supported by this forest. The partners work together to protect the area and to provide a seamless visitor experience.

**Figure 3: Hopewell Big Woods**

Source: Hopewell Big Woods Brochure.



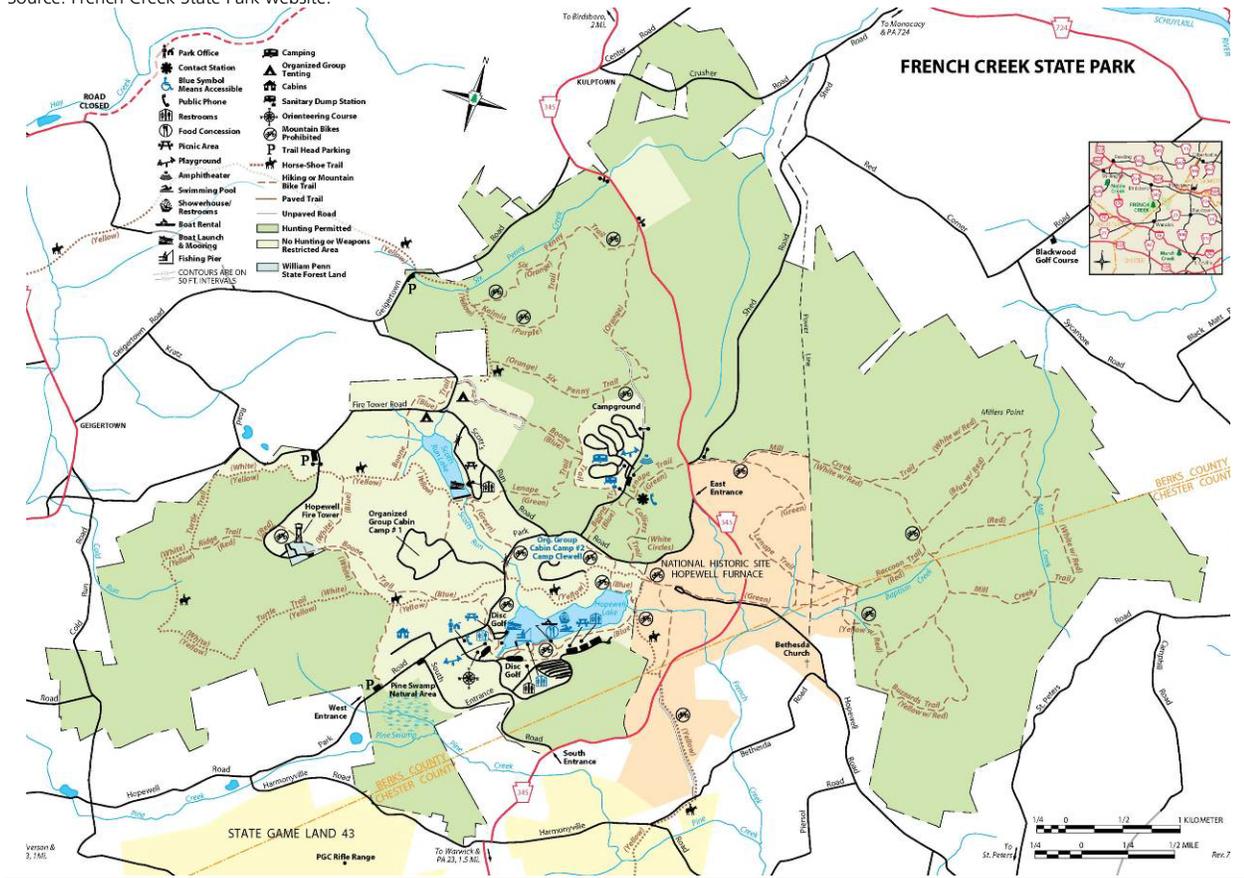
Hopewell Big Woods encompasses several historic, cultural, and natural sites, including the following:

*French Creek State Park*

French Creek State Park (FCSP) conserves 7,526-acres of natural environment adjacent to Hopewell Furnace NHS while providing outdoor recreation opportunities, which include boating, fishing, swimming, hiking, biking, and camping. With approximately 800,000 visitors annually, FCSP is one of the most popular recreational destinations in Pennsylvania. The swimming pool and associated parking area are located less than three-quarters of a mile from Hopewell Furnace NHS via unpaved roads, and many trails connect the two parks.

**Figure 4: French Creek State Park**

Source: French Creek State Park website.



*St. Peters Village / Warwick County Park*

St. Peters Village was added to the National Register of Historic Places in 2003 for its significance as a company town supporting iron mining and later a black granite quarry. Today, much of St. Peters Village has been redeveloped, with new housing, an inn, restaurants, and other shops and services. A five-mile walk via the Horse-Shoe Trail connects St. Peters Village to Hopewell Furnace NHS. The trail continues east through Warwick County Park to additional recreational facilities.

*Birdsboro Waters*

An abandoned quarry in Birdsboro Waters is known regionally for its rock climbing routes for all levels. Flooding of Hay Creek in 2004 caused a washout of State Route 82 just south of Birdsboro. In 2006, Natural Lands Trust was granted \$1.1 million by the State and \$0.8 million by the US

Forest Service to purchase a Forest Legacy Easement from the Birdsboro Water Authority in order to prevent future development of the area.

*Joanna Furnace Iron Plantation*

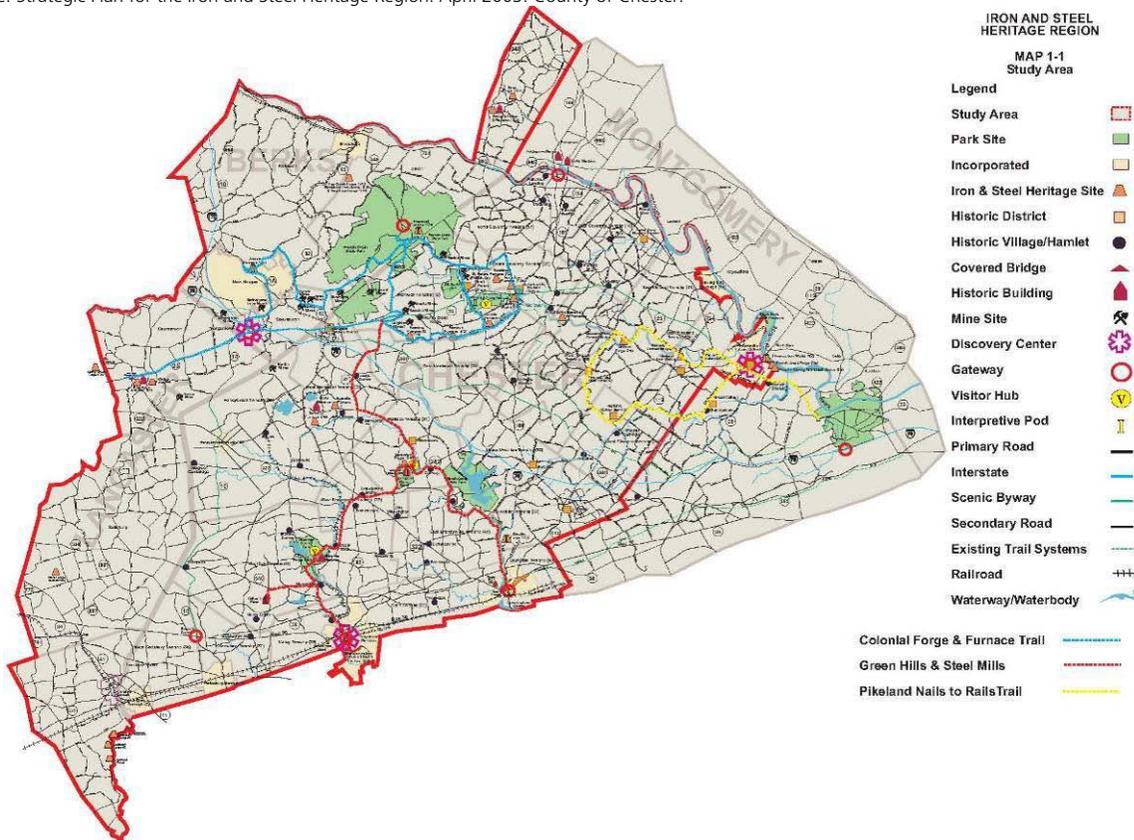
Joanna Furnace, a cold-blast furnace dating to 1791, is preserved and maintained by the Hay Creek Valley Historical Association (HCVHA). HCVHA holds three major events each year: the Fall Festival, the Apple Festival, and Christmas at Joanna. As a non-profit, Joanna Furnace is staffed on a limited basis, with general access on Thursdays and Sundays. Joanna Furnace reaches out to local school groups and has a number of groups visit throughout the year. Joanna Furnace is approximately nine miles west of Hopewell Furnace NHS via State Route 10. The site is connected directly to Hopewell Furnace NHS via the Colonial Forge & Furnace Trail, described below.

**Iron and Steel Heritage Region**

Chester County identified and created an Iron and Steel Heritage Region modeled on state and federal Heritage Park programs that are designed to protect heritage resources and support economic development. The Iron and Steel Heritage Region focuses on the concentration of iron and steel industry sites located in Chester, Berks, Montgomery, and Lancaster counties, including Hopewell Furnace National Historic Site and Valley Forge National Historic Park.

**Figure 5: Iron and Steel Heritage Region**

Source: Strategic Plan for the Iron and Steel Heritage Region. April 2003. County of Chester.

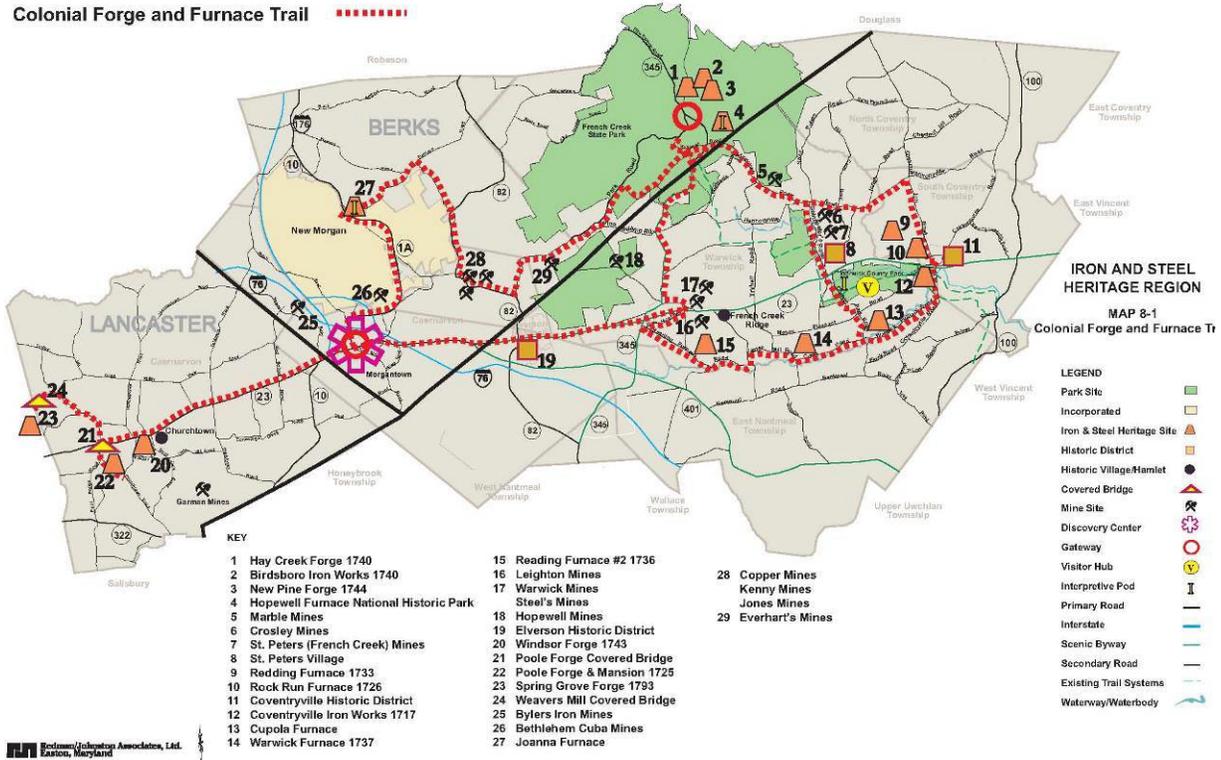


In 2003, Chester County completed a strategic plan for the region with the support of Peter Johnston & Associates, LLC. The management plan presents a history of the local industry, identifies key heritage resources and linkages, and makes recommendations on strategies to achieve the region’s goals of heritage protection and economic development. The plan

recommends the creation of a non-profit corporation, or the “Iron and Steel Heritage Area Consortium;” the development of three initial driving tours that feature visitor access to scenic areas; and a set of goals, objectives, and strategies including ones for infrastructure, linkages, and facility development. The plan not only includes Hopewell Furnace NHS as a key heritage site but also lists it as both a potential gateway, to provide orientation, and an interpretive pod, designed to tell the stories of the iron and steel industry. In addition, one of the three driving tours, the Colonial Forge & Furnace Trail, includes Hopewell Furnace NHS.

**Figure 6: Colonial Forge & Furnace Trail**

Source: Strategic Plan for the Iron and Steel Heritage Region. April 2003. County of Chester.



### Schuylkill River National and State Heritage Area.

The Schuylkill River National and State Heritage Area covers the Schuylkill River watershed in Schuylkill, Berks, Chester, Montgomery, and Philadelphia Counties. This region was designated a National Heritage Area for its national distinctive natural, cultural, historic, and recreational resources by the U.S. Congress in 2000. Prior to that, in 1995, the Pennsylvania Department of Conservation and Natural Resources designated the area as a Pennsylvania Heritage Area.

The Heritage Area’s website includes an extensive trip planner which visitors can use to enter their geographic destination, interests, and desired activities and be matched with destinations.

Hopewell Furnace NHS is located in the Heritage Area’s French and Pickering Valleys region.

**Figure 7: Schuylkill River National and State Heritage Area**

Source: Schuylkill River National and State Heritage Area website.



## Existing Conditions

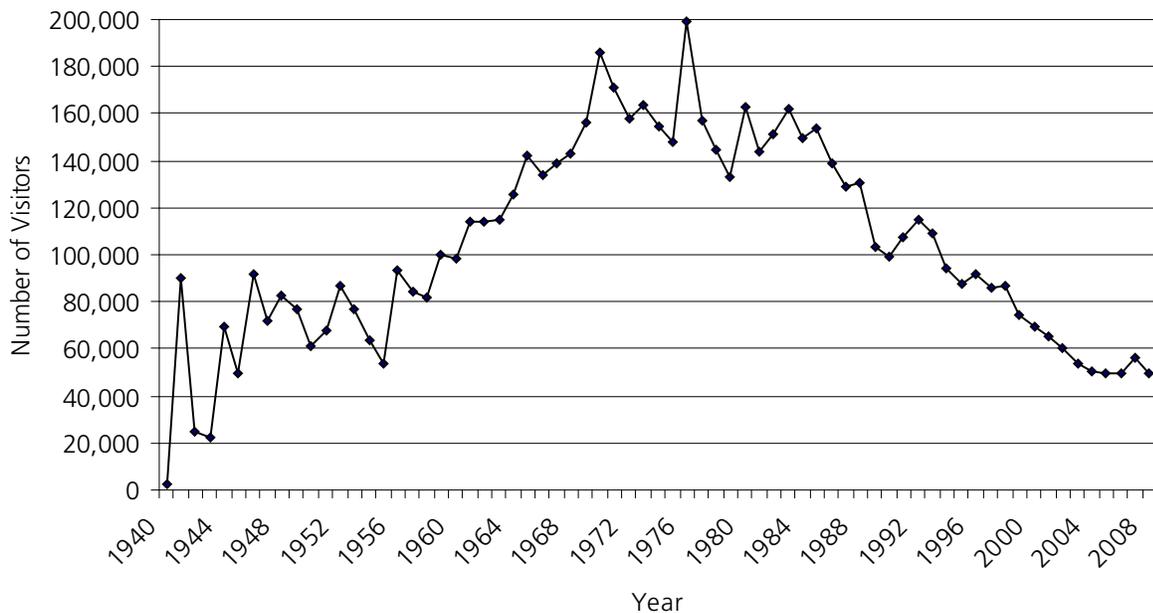
### *Current Patterns of Visitation*

Annual visitation is important in looking at demand for various transportation options and visitation fluctuations and trends throughout the year are important in considering if and when to offer various transportation options. The National Park Service Public Use Statistics Office provides current and historical data on visitation for all national parks. For Hopewell Furnace NHS, visitation is calculated from vehicle counts entering the parking area, several adjustments, and a person-per-vehicle multiplier of 3.4 from March to September and 2.7 from October to February.

Visitation has fluctuated greatly since Hopewell Furnace's inception as a National Historic Site in 1938. Visitation peaked in the late 1970s as Hopewell Furnace NHS welcomed almost 200,000 visitors annually. The number of visitors dropped to one-quarter of that amount in subsequent decades. The decline in visitation has been identified as a problem and increasing visitation is viewed as vital to the success of the park's mission. In recent years, visitation has stabilized and in 2007 saw a 15 percent increase in visitation, with over 56,000 visitors. This can be attributed in some part to a new superintendent who has focused on increasing visitation and improving relationships with local communities and organizations. In addition, as shown in Figure 2, there seems to have been a spike in visitation in May of 2007. In 2008, visitation returned to 2006 levels.

**Figure 8: Annual Visitation to Hopewell Furnace, 1940 – 2008**

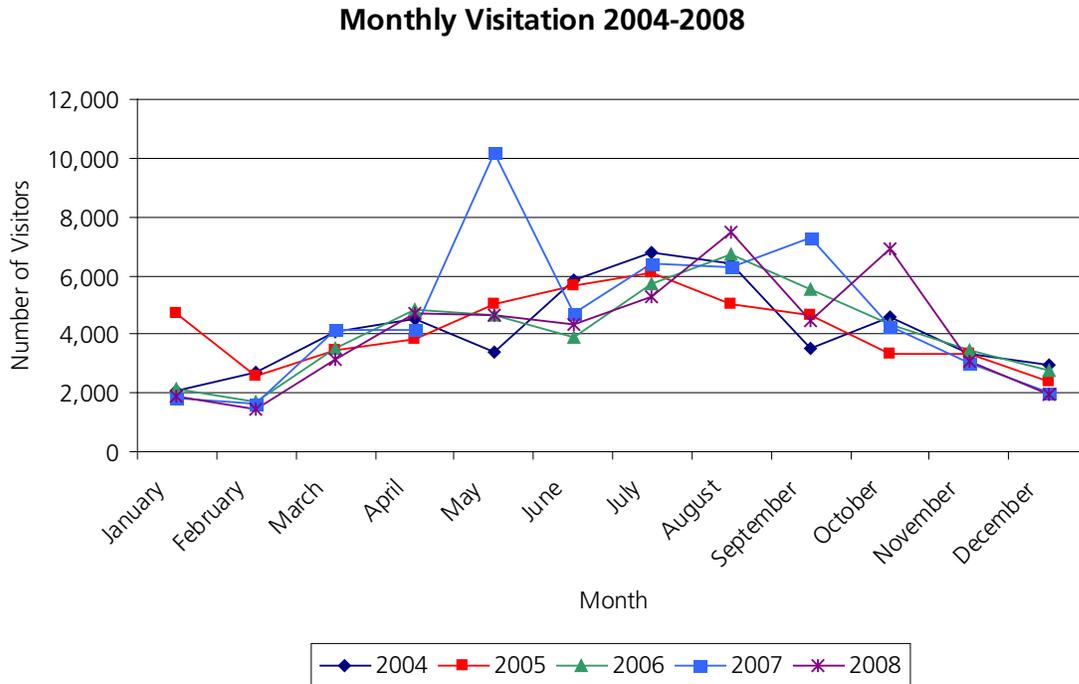
Source: National Park Service Public Use Statistics Office.



Visitation is highest during the summer and fall months (June through October) but does not experience much fluctuation overall.

**Figure 9: Monthly Visitation to Hopewell Furnace, 2004-2008**

Source: National Park Service Public Use Statistics Office.



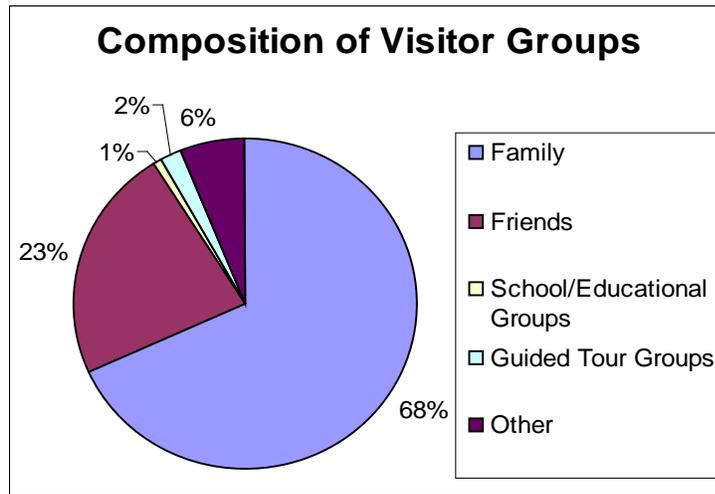
Understanding visitor demographics and how they structure their visits today provides insight into transportation patterns, issues, and opportunities for improvement. The 2002 *Hopewell Furnace National Historic Site Visitor Study*<sup>1</sup> is a valuable source of information on this subject. Major findings are summarized below.

<sup>1</sup> University of Idaho Park Studies Unit. Hopewell Furnace National Historic Site Visitor Study: Report 139. Summer 2002.

*Most visitors come in small groups of family or friends.* The survey showed that 75 percent of visitor groups have between two and four members. 68 percent of these groups were comprised of families, while another 23 percent included friends or groups of friends and family. School/educational groups and guided tour groups were less common, comprising one percent and two percent of visitor groups, respectively.

**Figure 10: Composition of Visitor Groups**

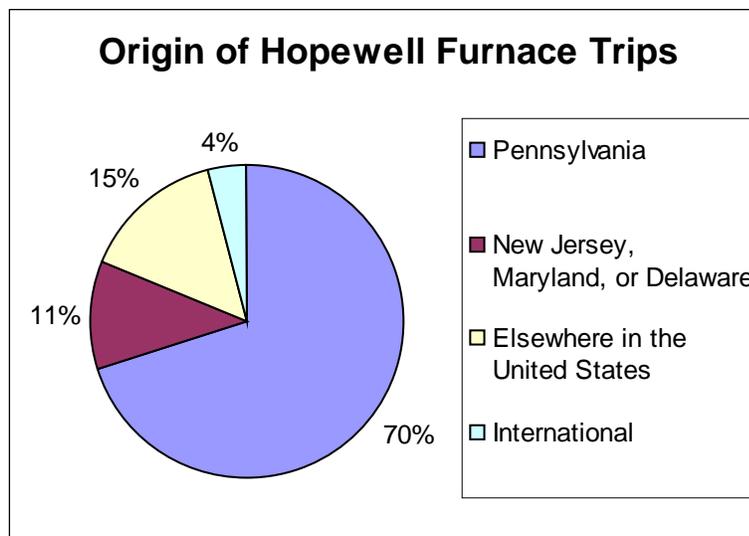
Source: 2002 Hopewell Furnace National Historic Site Visitor Study.



*Most visitors live nearby.* Most visitors (60 percent) make a day trip of visiting Hopewell Furnace and the local area. In total 70 percent of visitors reside in Pennsylvania and an additional 11 percent live in the neighboring states of New Jersey, Maryland or Delaware. Only four percent of visitors live outside the United States.

**Figure 11: Origin of Hopewell Furnace Trips**

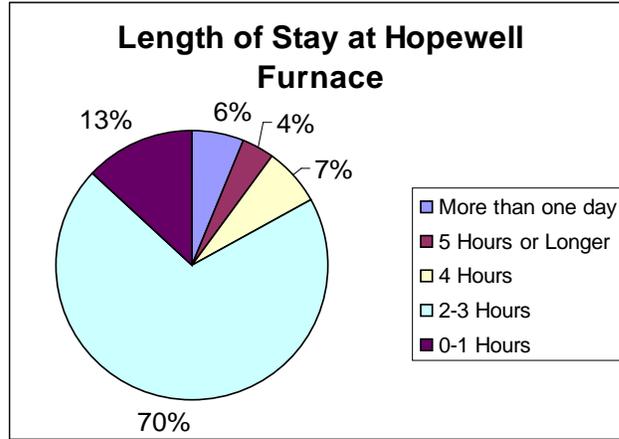
Source: 2002 Hopewell Furnace National Historic Site Visitor Study.



Visitors typically visit Hopewell Furnace for a short time. Only six percent of respondents visited on more than one day and only four percent stayed for five hours or longer. The majority of visitors, over 70 percent, stayed for two to three hours while 13 percent visited for one hour or less. For purposes of data reporting, the NPS Public Use Statistics Office assumes each visitor spends 1.2 hours at Hopewell Furnace NHS.

**Figure 12: Length of Stay at Hopewell Furnace**

Source: 2002 Hopewell Furnace National Historic Site Visitor Study.



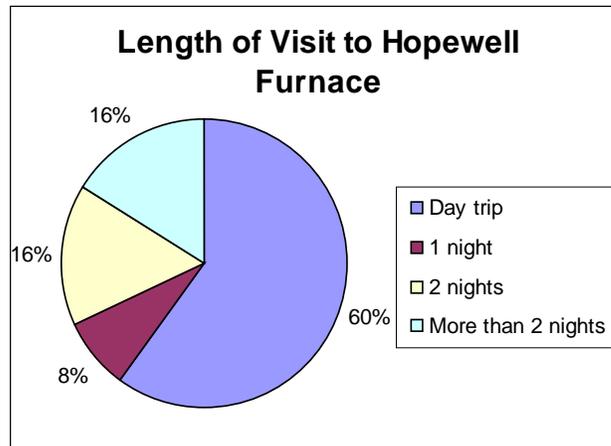
Hopewell Furnace receives a small number of return visitors. Of those surveyed, 60 percent were first time visitors, while only 22 percent had visited more than twice.

Many visitors included Hopewell Furnace as a part of a multi-destination trip. Approximately half of surveyed visitors indicated that Hopewell Furnace was the primary destination of their visit. One-quarter indicated that French Creek State Park was their primary reason for visiting the area and the other quarter stated that Hopewell Furnace was one of multiple reasons/destinations for visiting the area.

Of the 40 percent of visitors who visited Hopewell Furnace NHS as part of a multi-day trip, 20 percent stayed one night and 40 percent stayed two nights.

**Figure 13: Length of Visit to Hopewell Furnace**

Source: 2002 Hopewell Furnace National Historic Site Visitor Study.



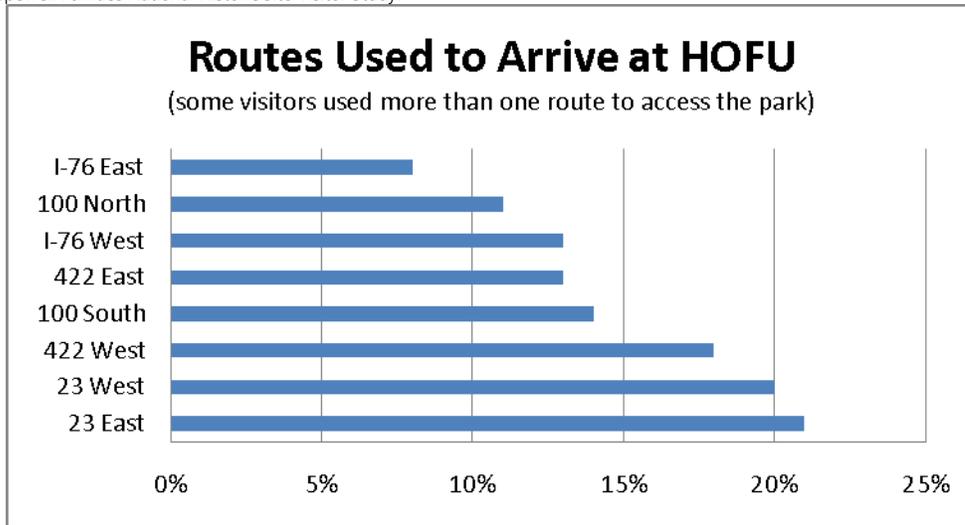


Most visitors arrive via U.S. 422 or I-76. However, there are many intermediary turns to make before arriving at Hopewell Furnace. The existing roadways in the area are winding, narrow, two-lane roads, some of which narrow to a single lane at crossings.

With development occurring in both Berks and Chester counties, there is concern regarding increased traffic levels and the need for higher volume roads in the future. Many locals cherish the rural character of the roadways.

**Figure 15: Visitors access Hopewell Furnace NHS from all directions**

Source: 2002 Hopewell Furnace National Historic Site Visitor Study.



### Parking

There are approximately 60 paved parking spaces adjacent to the visitor center. An additional approximately 60 spaces are marked but unpaved on an upper parking loop. These parking spaces are fully utilized during special events and peak apple picking weekends, but otherwise provide an excess of capacity. If the visitor center is relocated, it is assumed new parking will be provided adjacent to the new site and thus the current parking would be eliminated or available for other uses.

### Wayfinding and Signage

The 2002 Visitor Survey suggests that improvements are needed to help visitors reach Hopewell Furnace NHS. Seven percent of visitors had difficulty locating the park, citing the small size or lack of signs. The Visitor Survey notes a lack of signage on State Routes 23, 82, 100, and 345. Visitors deemed the roads “poorly marked” and “difficult to follow.” When asked to rate the importance and quality of various services, visitors rated directional signage to the park as important but poor in quality. In the open-ended section of the survey, four visitors stated that the park needed to provide better directional signage. Directional signage is particularly important as the majority of visitors are visiting for the first time, as noted above.

### Public Transportation

There is currently no scheduled public transportation service provided near Hopewell Furnace NHS. The Coventry Mall in Pottstown, about 10 miles away, is the closest location to Hopewell Furnace NHS with fixed-route transit service. It is served by Pottstown Area Rapid Transit, which runs six bus routes in the region. Chester and Berks County provide limited door-to-door on-demand service to special populations such as the elderly and those with disabilities; Chester County's service can also be used by the general population.

**Figure 16: Pottstown Area Rapid Transit Day Lines Bus Routes (green line serves Coventry Mall).**

Source: Pottstown Area Rapid Transit. <http://www.pottstownarearapidtransit.com>.

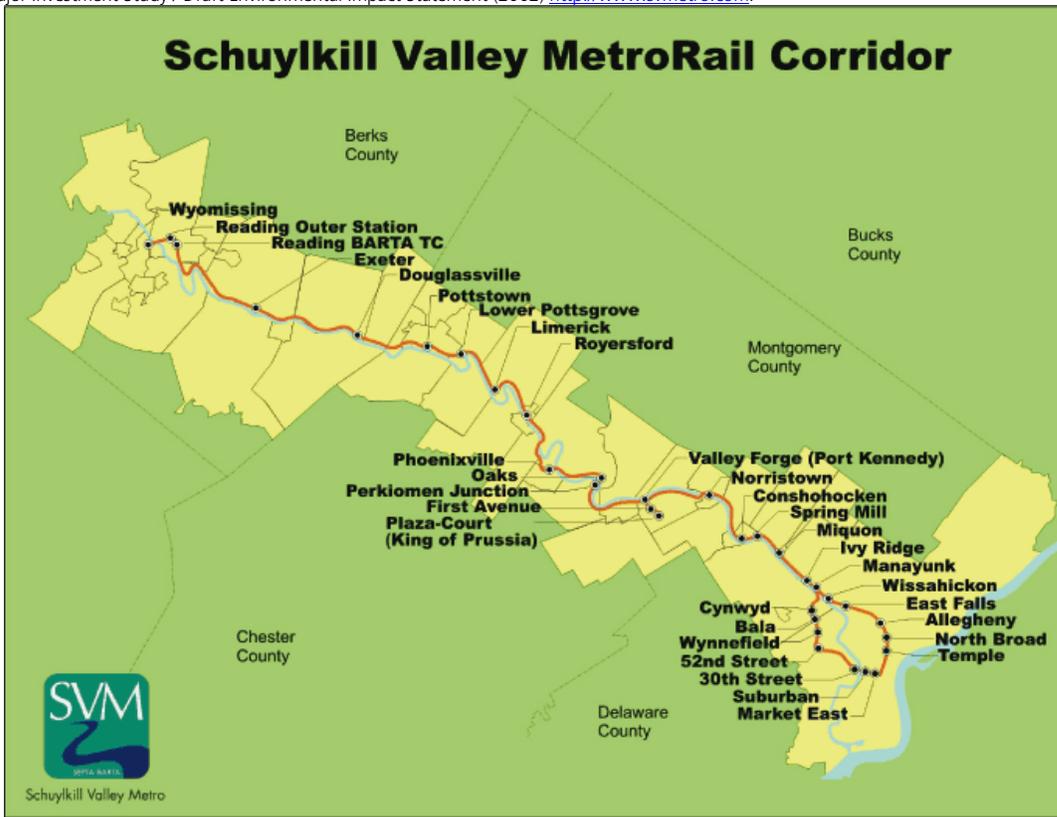


There is regional interest in building a rail line, primarily to reduce chronic congestion on Route 422, and several proposals have been and continue to be considered.

Beginning in the late-1990s, the Southeastern Pennsylvania Transportation Authority (SEPTA) proposed a new commuter rail line, the Schuylkill Valley Metro, to run from Philadelphia to Wyomissing, just south of Reading. The 62-mile proposed corridor would have used some sections of existing right-of-way and connects with the R-6 Line in Norristown to serve Philadelphia. Proposed stations included Valley Forge, Phoenixville, Royersford-Spring City, Limerick, Lower Pottsgrove, Pottstown, Douglassville, Exeter, Reading, and Wyomissing. Stations at Douglassville and Pottstown would have been the closest to Hopewell Furnace (8 miles and 10 miles, respectively). In 2002, the proposal received a “Not Recommended” rating from the Federal Transit Administration. Although there has since been periodic state government activity on the topic, it appears that SEPTA has no current plans to move forward with the concept.

**Figure 17: Schuylkill Valley Metro**

Source: Major Investment Study / Draft Environmental Impact Statement (2002) <http://www.svmetro.com>.

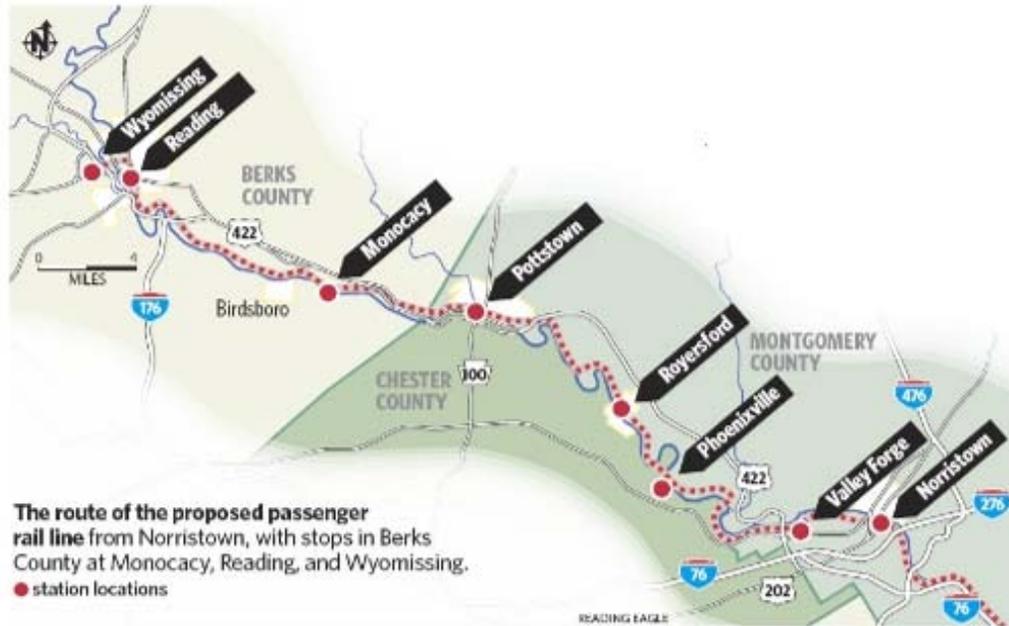


Recently, in 2008 and 2009, Montgomery County, in partnership with Berks County, began studying an alternative to the Schuylkill Valley Metro, called the R-6 extension. The proposed extension would provide service from Norristown, where SEPTA's R-6 regional rail line currently ends, to Wyomissing, with stops at Valley Forge, Phoenixville, Roversford, Pottstown, Monocacy, and Reading. The station at Monocacy would be the closest to Hopewell Furnace (4.7 miles). To fund the proposed extension, officials are exploring the option of tolling Route 422 between Douglassville and King of Prussia, or tolling the bridge over the Schuylkill River at Valley Forge.

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**Figure 18: Proposed R-6 Extension**

Source: Youker, Darrin. Tolls on Route 422 could put rail line into Berks on track. February 20, 2009. Reading Eagle.



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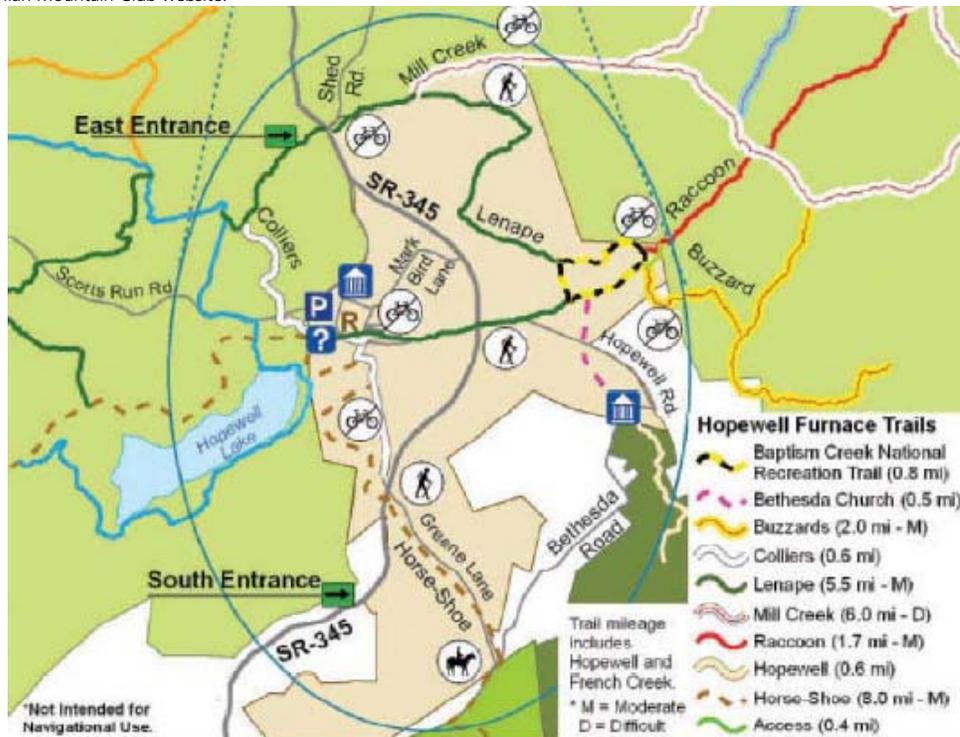
**Recreational Access**

Bicycle and pedestrian access are not a major means of transportation to Hopewell Furnace NHS, although local recreational networks including the Horse-Shoe Trail, Schuylkill River Trail, and state road networks circumnavigate or run directly through the park. Adjacent French Creek State Park is known as one of the premiere off-road bicycling destinations in the region.

The Appalachian Mountain Club (AMC) is collaboratively planning a Pennsylvania Highlands Trail Network, which will extend the Highlands Trail (130 miles in New York and New Jersey) across the Pennsylvania Highland and link existing trails such as the Horse-Shoe Trail, Mason-Dixon Trail System, and Appalachian National Scenic Trail with new trail segments including loops and spur trails. To promote the Trail Network and other recreational opportunities, AMC and the Wildlands Conservancy have created a series of 22 pocket-sized hiking cards highlighting scenic trails in the Pennsylvania Highlands. Cards include directions, descriptions, maps, and contact information. The series includes a card on Hopewell Furnace NHS that lists nine trails.

**Figure 19: Excerpt from AMC Hopewell Furnace NHS Card**

Source: Appalachian Mountain Club website.



The Horse-Shoe Trail is a 140-mile equestrian and hiking trail that runs from Valley Forge to the Appalachian Trail. It runs through French Creek State Park and Hopewell Furnace NHS and continues to St. Peters Village and through Warwick County Park. Five-mile guided walks along the Trail between Hopewell Furnace NHS and St. Peters Village are organized periodically throughout the year. In addition, the development company active in St. Peters Village, is working in partnership with the Warwick County Park and Chester County to develop a trailhead and new building to house a ranger station and museum. The development company is currently pursuing acquisition of the land, with the expectation that it will be a turn key operation, with Chester County owning the land but leasing it to the development company, which will be responsible for maintenance and operations. Warwick County Park plans on staffing the station with full and part-time park rangers to provide interpretative services and to patrol the trail for safety. In addition, the Warwick County Park offices are less than a mile away from the proposed new facility so interaction between the two will be convenient.

An ongoing off-road trail project in the area is the Schuylkill River Trail, which is proposed to run from Philadelphia to the headwaters of the Schuylkill River in Pottsville; a span of approximately 140 miles. Several sections of the trail are open today. The trail does not currently directly connect to Hopewell Furnace NHS but the National Lands Trust is working with the State to develop a

bicycle trail from the State Route 345/Shed Road parking area, within French Creek State Park, to the Schuylkill River Trail between Birdsboro and Pottstown.

Pennsylvania has designated nine state bike routes. Three travel east-west, four travel north-south and one each cross the northwest and southeast borders of the state. It should be noted that the audience for these routes is experienced cyclists as they are not necessarily striped or otherwise enhanced for bicycling. These on-road bike routes are designed to support regional transportation and recreation by bicycle.

Hopewell Furnace NHS has seen increased bicycle use recently and is continuing to work with the state and partners to improve bicycle access within the park and the region. This mainly consists of off-road trails. Currently, bicycles are able to travel on administrative roads within the park and are able to travel through the park, from one end to the other, on one continuous path, but other opportunities are limited. The park has participated in the French Creek Iron Tour, a fund-raising event for the French and Pickering Creeks Conservation Trust, for the past three years. The revised GMP is expected to recommend that a formal study be conducted to assess bicycle access needs and determine future practices in Hopewell Furnace NHS.

The International Mountain Bicycling Association (IMBA) has been working with local partners to improve trail riding in the area. A survey of volunteers conducted at an IMBA trail building workshop identified that 10 of 22 participants who had biked through Hopewell Furnace did so for convenience's sake. A study by IMBA<sup>3</sup> also found signage to be a major issue. IMBA notes that neither French Creek SP nor Hopewell Furnace NHS has maps that clearly specify which trails are closed to cyclists. Cyclists often ride through both parks, unaware that cycling is prohibited in most areas. Additionally, trail intersections were poorly signed.

The NPS Rivers, Trails, and Conservation Assistance Program has been working with the Hopewell Big Woods Partnership to help improve trail connections throughout the area.

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<sup>3</sup> International Mountain Biking Association. *Trails Assessment: French Creek State Park and Hopewell Furnace National Historic Site*. Elverson, PA. June 2007.

### Transportation within Hopewell Furnace NHS

While Hopewell Furnace NHS is spread over more than 800 acres, most of the activity occurs in a much smaller area. Trails provide opportunities for hiking and horse-back riding throughout the park, including a trail connecting to the historic Bethesda Church. The rest of the park's main sites are clustered near the visitor center. Apple orchards line the road into the visitor center, and the furnace and historic village lie just down the hill.

The major transportation issue within the park is one of internal circulation. The trail from the visitor center and parking area to the historic village drops over 50 feet, which is too steep for many visitors to traverse comfortably or at all. The trail is unpaved and is not wheelchair-accessible. In particular, the switchbacks on the trail have steep grades. Historic stairways are steep and narrow and are similarly difficult for many visitors to use.

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**Figure 20: Trail connecting the visitor center and historic buildings at Hopewell Furnace NHS**

Source: Volpe Center. (Fall 2007)



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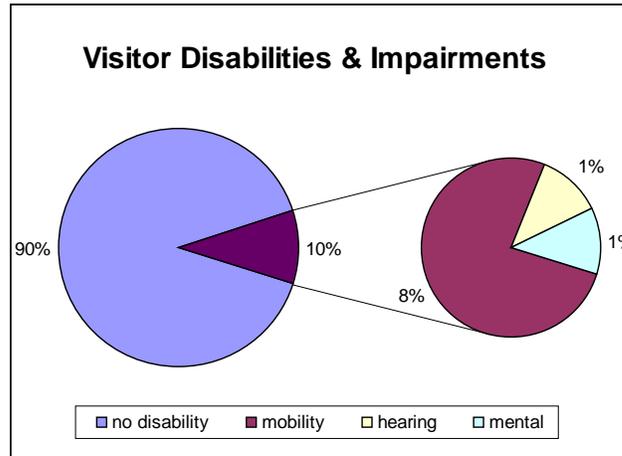
### Issues for the Disabled

The steep grade separating the visitor center and parking area from the historic village is of particular concern for visitors with mobility impairments and those traveling with small children. The 2002 Visitor Survey notes that among the 10 percent of visitors who had disabilities or impairments, 77 percent indicated mobility problems. Other issues included asthma and having small children in strollers. Of those who listed disabilities or impairments, 42 percent encountered access or service problems, including difficulties in walking up and down steep hills and in climbing the stairs to the main house. Visitors also noted a lack of benches.

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**Figure 21: Visitor Disabilities and Impairments**

Source: 2002 Hopewell Furnace National Historic Site Visitor Study.



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Although the vast majority of visitors felt safe at Hopewell Furnace NHS, a few replied that they felt unsafe; the survey reported that “climbing up steep stairways to the historic buildings was the main reason that visitor groups felt unsafe.”

Anecdotally, Hopewell Furnace NHS staff explained that many visitors underestimate the difficulty of the hill and will walk down to the historic village but find they cannot make the return trip back to the visitor center and their automobiles. Hopewell Furnace NHS owns an electric cart which staff members use to transport visitors up and down the hill. This service is not advertised, but provided if requested. While the electric cart is a low-emissions transportation method, and of an appropriate scale to the setting, it is not wheelchair accessible. (Those visitors with more mobility may be able to store their wheelchair in the back of the cart for the duration of the brief ride, but this is not possible in all cases.) In addition, assigning staff to operate the cart has been difficult, as demand is unpredictable and this task takes employees away from their primary job of providing interpretation or managing the visitor center.

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**Figure 22: Existing Electric Cart**

Source: Volpe Center. (Fall 2007)



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Many of these access issues could be resolved by the relocation of the visitor center adjacent to the village as proposed in the revised GMP.

## Anticipated Growth and Development

To consider the need for alternative transportation service at Hopewell Furnace NHS, the study team examined current land use and transportation data as well as projections for the future. As Hopewell Furnace NHS is located in the northern region of Chester County and in the southern section of Berks County, transportation plans and projections for both counties were reviewed. In addition, as mentioned above, Hopewell Furnace NHS is located within the Pennsylvania Highlands, which were the focus of a recent U.S. Forest Service study on the impact of development patterns on natural and recreational resources. This study was also reviewed.

### *Transportation patterns and improvements*

According to the 2000 Census, commute patterns surrounding Hopewell Furnace NHS are similar to Chester County as a whole, with most people (over 80 percent) driving alone. With less access to public transportation than other parts of the county, only one percent of commuters use public transportation in the Northern Communities of Chester County as compared to three percent County-wide.

The 2007 Chester County Transportation Plan identified “Immediate Priorities” for funding. The majority of these projects are south of US 76 in the central and western portions of the county. The top priority is engineering of the Paoli Transportation Center, a multi-modal center on the SEPTA R5 Commuter Rail and Amtrak Line. Immediate priorities identified for the northern regions of the County include developing engineering plans for reconstruction of US Route 422 in North Coventry, safety improvements on PA Route 100 through South Coventry (east of St. Peters Village), and engineering of the Chester Valley Trail, a 16-mile rails -to-trails conversion paralleling Route 30.

Other projects in the northern region of the county include:

- additional safety improvements to PA Route 100
- design of the interchange of PA Route 100 and PA Route 401, known as Ludwig’s Corner
- reconstruction of US Route 422 in North Coventry
- engineering and initial construction of the river crossing of US Route 422 at Valley Forge
- alternatives analysis for Schuylkill Valley Passenger Rail Service (Schuylkill Valley Metro)
- engineering for the Schuylkill River Trail

In general, Berks County currently has few plans for transportation improvement or expansion projects in the area. The Berks County Transportation Plan includes the following projects near Hopewell Furnace NHS:

- Replacement of State Route 345 Bridge crossing the Schuylkill River near Birdsboro.
- Realignment of the intersection of State Route 724 and State Route 345 in Birdsboro to correct offset.

None of the projects in either county are expected to have a direct effect on transportation to Hopewell Furnace NHS. Incremental improvements may improve vehicular access to the NHS and continuing trail development may have a long-term contribution to bicycle access.

### *Growth and development*

Growth in Chester County, which is adjacent to Philadelphia, has been the greatest of any county in Pennsylvania over the last ten years and the Chester County Planning Commission is in the process of a major overhaul of its Comprehensive Plan. Growth is occurring most rapidly in the southern portions of the county with over 25 percent population gains in both the Southeastern

and Southwestern regions. The Northern Region, where Hopewell Furnace NHS is located, is the second smallest of the regions and had the lowest population gain, just over 4,000 people, as compared to almost 13,000 people in West Chester and the Central Region. With most of the growth away from Hopewell Furnace NHS, development and related transportation pressures immediately adjacent to the park will likely be less significant than in the rest of the county. However, it should be noted that the site for Bryn Eyre Village, a proposed “new town” development with over 10,000 units, is located 8.5 miles west of Hopewell Furnace. In addition, as will be detailed below, regional growth and development could have impacts on demand for resources such as those offered by Hopewell Furnace.

In Berks County, much of the land surrounding Hopewell Furnace has been preserved as permanent open space or recreational area. Much of the surrounding land is designated as rural conservation or agricultural preservation areas and therefore protected from major development. However, according to the Southern Berks Regional Comprehensive Plan, the county grew 11% between 1990 and 2000 (compared to 3.4% statewide) and is expected to increase by another 20% by 2030.

As mentioned above, the Highlands Conservation Act of 2004 provided funding for the Highlands area. It also directed the USDA Forest Service to conduct a Connecticut and Pennsylvania Update to the Highlands Regional Study, which Congress had directed the Forest Service to conduct in 1990 and again in 2002 for New York and New Jersey. That study assessed the region’s resources and land use patterns, examined the impacts of change, and proposed strategies to protect the long-term integrity of lands and traditional land uses within the region.

The USDA Forest Service has completed Part 1 of the Update, which includes an inventory and evaluation of natural resources in the Highlands of Connecticut and Pennsylvania. Part 2, which is currently being reviewed for release to the public, will determine the likely effects of current and future land-use change on these resources. Comparing patterns of growth from Part 2 with the pattern of resource value from Part 1 will result in a map showing areas of natural, recreational and cultural resources most likely to be affected by land use change, demographics, and development.

Overall, the technical study conducted for Part 2 by Yale University states that the region is under tremendous pressure from development sprawling out of New York City, Philadelphia, and even the Washington, DC metropolitan area and that development has been strongest in the center of the PA Highlands in Berks, Lancaster and Montgomery Counties. The study concludes that population and housing units in the PA Highlands region is growing faster than in the state as a whole (33.1% compared to 4.1% for population and 60% vs. 33.8% for housing units). The study calculates the potential for new housing units and new residents based on a zoning analysis. The future projections vary by county, with the highest growth in Lancaster, Lebanon, and Chester counties. Chester County has the potential for over 200% growth in both population and housing and Berks County has the potential for over 60% in both. The study concludes that the current zoning is inadequate to preserve the natural environment though it also identifies Hopewell Big Woods core area of 12,500 acres as a protected area not under threat of development.

However, the technical study also identifies Hopewell Big Woods as one of areas with the highest concentration of recreational and natural resources surrounded by a region with the highest potential for build-out, in particular the area of Southern Berks County. The implication of this assessment is that there will likely to be increased recreational demand on the attractions within Hopewell Big Woods, as one of the only such resources in the midst of growing development. Thus, as development increases, alternative transportation should be considered in order to accommodate the additional visitors so that the roads will not be overly congested, visitor experience will not suffer, and the rural character will be preserved.

## Partnership Assessment

Partnership with other Federal, state, and local organizations, as well as private companies, have been a successful model of providing transportation services in national parks. The staff of the Hopewell Furnace NHS have established good working relationships with several local governments and natural, cultural, and historic sites in the region. In addition to individual agency relationships, Hopewell Furnace NHS participates in the Hopewell Big Woods (HBW) Partnership. The HBW Partnership serves as a forum for ongoing discussion and advancement of projects of mutual interest.

### *Methodology*

The study team conducted telephone interviews with a small subset of the natural, cultural, and historic sites in the region based on the recommendation of Hopewell Furnace NHS staff. Interviewees were asked about existing transportation conditions, agency priorities, and their thoughts on a potential alternative transportation system (ATS) at Hopewell Furnace NHS or connecting Hopewell Furnace NHS to other local attractions. The interview protocol is attached as an appendix. Based on those interviews and discussions with NPS staff members, the following partnership assessment was prepared. A summary of the overall findings is provided, followed by a synthesis of each partner's goals and interests in local or regional ATS.

### *Findings*

Transportation issues were relatively low priority for the interviewees. However, there is agreement that the "rural" character of roadways should be preserved as the area develops and there is also a strong need for improved wayfinding for visitors traveling by private automobile, the predominant mode of transportation to Hopewell Furnace NHS.

Based on the interviews that were conducted, it is reasonable to assume that most sites would welcome an ATS and provide marketing support and a few may have the interest and capability to contribute financially. If an ATS were to be implemented, it would be important to design it so that it respects and coordinates with the interests of identified partners as well as those of the region and other nearby sites.

The developers of St. Peters Village, an active local development company, has the strongest interest in seeing an ATS and is the most likely partner to participate in implementation. It should be noted, however, that they have not made an explicit offer. The Schuylkill River National Heritage Area also has some interest in a regional tour or shuttle and might serve as a partner to seek out and apply for grant funding opportunities.

### *Partner Summaries*

#### **The Natural Lands Trust**

*Jim Thorne, Senior Director of Science*

The Natural Lands Trust (NLT) is a non-profit regional land trust that is primarily concerned with open space preservation and encourages sustainable economic development as a means to that end. NLT has used state, federal and nonprofit grants to support the HBW Partnership. Future work is likely to include economic development planning. NLT may be a source of in-kind planning or marketing support, but would have little direct interest in an ATS at Hopewell Furnace NHS. A regional ATS or tour may be of interest if it supports sustainable economic development in the region.

## **French Creek State Park**

*Eric Brown, Manager*

French Creek State Park (FCSP) conserves the natural environment adjacent to Hopewell Furnace NHS while providing a number of outdoor activities for the public including boating, fishing, swimming, hiking, biking, and camping.

Mr. Brown believes that the region has a good road network but is not conducive to large vehicles. Visitors typically arrive by private vehicle, although there are school groups, bible camps, and day care groups that arrive by bus, generally when the pool is open.

The pool complex has approximately 800 parking spaces and Mr. Brown has never known it to be full. Parking has recently been added to the campground to alleviate inadequate availability there. Additional parking has also been added at Shed Road to accommodate additional users. French Creek State Park is currently working to add more parking and also to reconfigure the parking at the Hopewell Lake mooring area.

Visitation is at its highest between June 15 and Labor Day, during which time the pool complex is open. Mr. Brown estimates annual visitation at approximately 800,000 each year and there is a general upward trend. FCSP serves an urban population that does not have recreational resources in their backyards, so picnicking continues to be popular. Hunting has been on the decline. There are very few horses, but there are still horse trailer parking areas.

Cabins and cottages are open year-round and FCSP has one of the most popular campgrounds in the state. It is estimated that 65-70percent of visitors stay for at least one night. Many use the park as a base from which to visit cultural and historic sites in the area, including Valley Forge, Hopewell Furnace NHS, and the Conrad Weiser Homestead.

FCSP's interest in working with the HBW Partnership is primarily to preserve land and promote sustainable economic development in the area. The forest buffer is important in preserving clean drinking water for the Philadelphia metropolitan region.

Mr. Brown would be interested in strengthening connections with Hopewell Furnace NHS. He believes that it would be helpful in increasing awareness of other resources among visitors and also would provide an educational benefit. He suggests that signage would be the simplest method of connecting the parks.

He has not given much consideration to transportation links, but would not be opposed to them, so long as slow, safe speeds were used. He suggested that twice-daily service, perhaps tied to special programming, may be a possibility. Farm tractors are already in use on-site. Mr. Brown thought that it may make sense to connect the campground as well as the pool and lakes to Hopewell Furnace NHS.

### *Summary*

The majority of FCSP visitors arrive by private automobile. Historic parking shortages at some campsites have been remedied by the addition of parking. The parking lot at the popular swimming pool has not been known to fill. Given FCSP's visitation and transportation patterns, ATS is unlikely to be a high priority.

However, an ATS could expand the range of programming at FCSP and provide increased safety if it served popular hiking areas which currently do not have parking. FCSP would allow an ATS vehicle to use its roads and would likely be an important information source for potential riders.

## **Joanna Furnace**

*Charles Jacob, Vice President*

Joanna Furnace, a cold-blast furnace dating to 1791, is preserved and maintained by the Hay Creek Valley Historical Association (HCVHA), a local nonprofit. HCVHA holds three major events each year: the Fall Festival, the Apple Festival, and Christmas at Joanna. The Fall Festival is the largest, drawing widely from Southeast Pennsylvania, and there is not sufficient on-site parking to accommodate all visitors. A local transportation provider operates shuttles between off-site parking and the Furnace over the three days of the Festival, running every five minutes between 7:00 AM and 6:30 PM. The cost is generally in the range of \$9,000 to \$10,000. In addition, fire and police officers are hired to direct traffic. The shuttle has operated fairly smoothly in the past, although some patrons are reluctant to use it since doing so requires them to park along Route 10 and walk to the shuttle. Route 10 is a fairly busy road, which creates some safety concerns.

When asked about running shuttle trips to Hopewell Furnace NHS during special events, Mr. Jacob noted that it might work better during the Apple Festival than the Fall Festival. There is a lot to do and see at the Fall Festival and visitors would be unlikely to have time. The Apple Festival, however, is typically not a full-day event. In the past, HCVHA Board members have not been enthusiastic about this idea.

When a special event is not taking place, visitors drive in and walk around. Tours are usually offered on Thursdays and Sundays, depending on staff availability. Many visitors are geologists or are interested in the local history. There has been an increase in the number of school groups visiting Joanna Furnace and they now make up about one-third of the visitation on Fridays. Schools and school districts were sent marketing packages at the beginning of the school year. As a part of the program, students go on a “scavenger hunt” at the Furnace, collect stamps, and receive a prize.

Joanna Furnace has received some tour buses in the past, although not frequently. A past superintendent at Hopewell Furnace NHS suggested a joint Iron Industry Tour, with Hopewell Furnace NHS, Joanna Furnace, and Cornwall Iron Furnace, a state historic site located about an hour west of Hopewell Furnace NHS, as the stops.

### *Summary*

Special events are major fundraisers for this non-profit organization and diverting visitors from them is unlikely to appeal. Activities that increase visitation, such as a shuttle or tour bus stop on-site, would likely be very welcome. However, as a small non-profit organization, funding for such a service may be scarce. Joanna Furnace has experience in working with local transportation providers for major special events and would likely be a source of local knowledge and lessons learned.

## **Schuylkill River National & State Heritage Area / Schuylkill River Greenway Association**

*Kurt Zwikl, Executive Director*

The non-profit Schuylkill River Greenway Association (SRGA) manages the Schuylkill River National and State Heritage Area, described earlier in the report. The organization is multifaceted, working on a variety of projects designed to enhance environmental preservation and economic revitalization of the corridor.

Partnerships and partnering are major tools of the organization. Their website ([www.schuylkillriver.org](http://www.schuylkillriver.org)) provides information related to partners and features a trip planner for potential visitors. The Heritage Area currently has 13 gateway centers throughout the region.

These gateway centers have a three-minute video, a map of the entire Heritage Area, and a map of the area around the gateway. The locations of the gateways varies widely and include a sporting goods store, chambers of commerce and visitor centers, a community college, and public attractions including Hopewell Furnace NHS.

The SRGA also acts as a grant-giving organization, passing on state grant moneys to specific projects. SRGA has received private grant money from Exxon. It is also currently working with Montgomery County Community College to design an education program and further develop the Heritage Conservation Center, which will have classrooms and exhibits in their headquarters building. SRGA is very interested in evaluating the success of funded programs by tracking grants and outcomes.

Some of their signature projects include:

- Schuylkill River Trail, which goes from Center City, Philadelphia to Valley Forge. There is currently a gap from there to Pottstown, where the path picks up again to Reading. There is a second gap from Reading to Hamburg and then 89 miles of trail into Schuylkill County. The goal is to have the trail end in Pottsville, PA.
- Schuylkill River Sojourn, which is a 7-day paddling event (now in its tenth year) along the entire river. Participants can sign up for each day and campsites, lectures, and other events are organized to support the trip.
- The development of the interpretive center.

There is no official data on users of the trail, but Mr. Zwinkl believes that it is used primarily by locals. In urban areas, some bike to the trail, but many people also drive to trailheads with their boats, bikes, or dogs. Once the trail is complete, they hope to market it as a regional destination. They received a grant from the William Penn Foundation in 2006 to sign the trail. The Foundation was adamant that they include the entire trail even though it is not done yet. The sign system includes directional signs to get to the trail.

Mr. Zwinkl is familiar with the Chester County Iron and Steel Heritage Region, described earlier in the report, and would consider helping to move such an initiative forward, perhaps by posting it on their website.

Mr. Zwinkl mentioned that the Pennsylvania Department of Conservation and Natural Resources (DCNR) may be looking at purchasing land between French Creek State Park and the Heritage Area. If so, this might be an optimal place to construct a bike connection.

Mr. Zwinkl sees the goal of the HBW Partnership as protecting the land before it is developed. He sees the Schuylkill River Trail as the physical spine of the project. He believes the most effective activities for the Partnership will be working with the local governments to buy the land and/or to prevent development from occurring.

When asked about a shuttle system, Mr. Zwinkl focused on connecting Valley Forge, the Heritage Area's (future) visitor center and Hopewell Furnace NHS. The Heritage Area does not currently have staff or funding to support a shuttle but there may be some opportunity to find grant money. He thinks the ideas of having topically focused tours, with interpretation on industrial or political themes, could be attractive to visitors. For example, Valley Forge NHS works with Once Upon a Nation ([onceuponanation.com](http://onceuponanation.com)) storytellers to provide interpretation.

#### *Summary*

The Heritage Area / SRGA has a good track record of obtaining grant funding and maintains a well-designed website with a trip planner feature. It may be a potential partner in seeking funding

for a regional shuttle or tour. It is also a strong partner for providing additional traveler information and improving wayfinding, due to its work in designing and implementing signage, as well as its online presence.

### **Earth Companies**

*Tom Drauschak, President*

A development firm is redeveloping and expanding St. Peters Village, an area 3.5 miles away from Hopewell Furnace NHS. 121 new housing units and 25-30 new shops are planned. Businesses already open include the St. Peters Inn and Bakery. These are doing well and the developer is considering setting up a bottling operation as well. A bike and hike store is also planned. Special events have been held to promote the area and have drawn relatively large crowds in the past; some 6,000 visitors attended the October 2007 Oktoberfest.

The developer has purchased the right of way for, and is making improvements to, a five-mile trail leading from a trailhead in St. Peters Village to Hopewell Furnace. The trail also crosses Natural Lands Trust property. At the trailhead, Earth Companies is constructing a new building which will be used as a ranger station for Chester County rangers and possibly as a museum. The County is financially contributing to the project. The trail work should be completed by summer 2011 and the building could be finished at about the same time.

The developer would like to see a “rustic-looking” trolley connecting St. Peters Village, Hopewell Furnace, French Creek State Park, and possibly Joanna Furnace as well. This would bring recreational visitors into St. Peters Village for shopping and dining and encourage visitors to St. Peters Village to explore the cultural and historic resources in the area. Peak times would likely be afternoons and evenings during the months of July and August. The developer’s websites could be used to promote the service.

The developer has discussed rail transportation possibilities with Peter Montague of the Federal Railroad Administration and has contacted the offices of Arlen Specter (Senate) and Jim Gerlach (House). Plans to move forward with the Schuylkill Valley Metro are currently on hold.

#### *Summary*

On special event days, St. Peters Village draws a large crowd and parking becomes tight. If an ATS were operating, it may appeal to those who are interested in visiting Hopewell Furnace NHS, but reluctant to move their cars. On an ongoing basis, it would be in the developer’s interest to attract park visitors to St. Peters Village for shopping and dining while they are in the area. As a for-profit entity, the developer also is likely to have the most available resources for a potential ATS.

### **Krapf Bus**

*Gary Krapf, Vice-President*

Krapf Bus, a private bus transportation company, provides much of the local transportation services west of Philadelphia. These services include fixed-route service for the City of Coatesville, Upper Merion Township, the Transportation Management Association of Chester County, four of the Southeastern Pennsylvania Transportation Authority (SEPTA) western suburban routes, and six routes in New Castle County, Delaware. In addition Krapf Bus provides demand-response service, known as “Rover” for Chester County and is currently providing daily summer shuttle service at Valley Forge National Historical Park. Krapf Bus has also provided shuttle services for universities and private business and provides charter and school bus service. For the diverse set of services it runs, Krapf Bus maintains a varied fleet of vehicles ranging from

16-passenger, ADA-accessible vehicles to full size coach buses. All of the vehicles it uses except for a subset of vehicles used for SEPTA service are owned by Krapf Bus.

*Summary*

As a private business, Krapf Bus is not restricted as to the agreements and services that they can engage in, as some public transportation providers would be. The company has expressed a willingness to work with Hopewell Furnace to provide transportation services at cost since it is likely that most services would be run at off-peak periods for the company's other business ventures.

**Hendershot Hitch**

The National Park Service has located a provider of horse drawn carriage services, Hendershot Hitch, and contracted with Darryl Herdershot of Sanatoga, PA, to provide shuttle service for the park's 2009 Christmas program held in Hopewell Village and at Bethesda Baptist Church. (See Figure 23.) If this provider has the capacity to serve the park on a more regular basis, the horse drawn wagon for local runs might provide a popular alternative to driving.

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**Figure 23: Existing Horse-Drawn Carriage.**

Source: Hopewell Furnace NHP. (Winter 2009)



## Analysis of Alternative Transportation Scenarios

As noted in the partnership assessment, local organizations were generally receptive to alternative transportation connections with Hopewell Furnace NHS; a few were particularly interested. The study team developed hypothetical routes and operating scenarios to better understand how such a service might operate. The scenarios are summarized in the table below; for all scenarios, either regularly-scheduled or special-event service might be operated.

**Table 1: Summary of Alternative Transportation Scenarios**

Source: Volpe Center

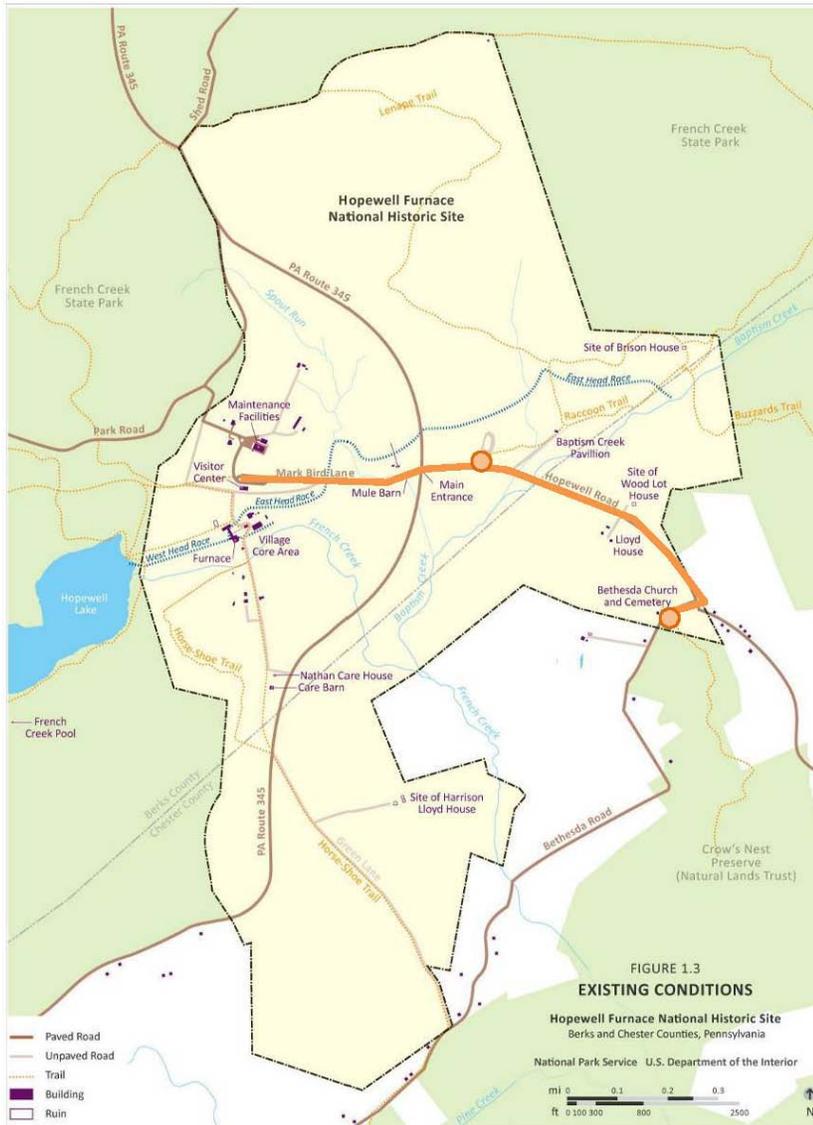
Route	Round Trip Miles	Round Trip Travel Time (min)	Minimum Headway* (min)	Assumed Speed (mph)
1 – Baptism Creek & Bethesda Church	2.2	10	10	10
2a – French Creek Pool Shuttle	1.5	10	15-20	4.5-9
2b – French Creek Park Loop Route	9.5	24	30	23-75
3 – St. Peters Village Shuttle	7	20	20-30	21
4 – Joanna Furnace Shuttle	18	40	45-60	27
5a – Colonial Forge and Furnace Trail East	29	50		35
5b – Colonial Forge and Furnace Trail	25	43		35
5c – Underground Railroad Tour	62	107		35
*Minimum time between pick-ups assuming a single vehicle shuttle (Headway must be more than round trip travel to allow for loading and for driver breaks)				

### Scenario 1: Connections to Bethesda Church and Baptism Creek

Baptism Creek is located approximately 0.5 miles and Bethesda Church is located approximately one mile from the Hopewell Furnace Visitor Center. Both locations provide insight into the social life of the village while Baptism Creek features an engineering marvel of Hopewell Furnace Company, the water source for the 18<sup>th</sup> century iron furnace. Limited parking is available at both areas. As shown in Figure 24, a shuttle service could be used to provide visitors access without needing to drive. From the visitor center, the shuttle would cross Route 345 and stay on Hopewell Road for approximately .1 mile. Drop visitors there. Then proceed approximately .5 miles. A sharp right on Bethesda Road and the shuttle would arrive at the Church. Since the trip is relatively short, approximately 5 minutes each way, a single vehicle could provide trips every 10 minutes or so.

**Figure 24: Potential Bethesda Church Shuttle**

Source: National Park Service.



*Ridership Potential*

**Baptism Creek**

Visitors interested in the extraordinary 18<sup>th</sup> century engineering for the iron industry as well as hiking the National Recreation Trail would appreciate this service as parking is very limited here.

**Bethesda Church:**

Visitors coming to experience the lifestyle and operations of the iron-making community may be interested in touring the Bethesda Church as well. Except for the park’s annual Christmas special event, an information panel provides the only interpretation of the site. Live interpretation, either by the driver or through a living history experience could attract visitors from the main village to tour the Church site.

**Scenario 2: Connection to French Creek State Park**

While Hopewell Furnace NHS borders French Creek State Park (FCSP), FCSP visitors are not always aware of Hopewell Furnace NHS and its proximity. There is limited signage at some points

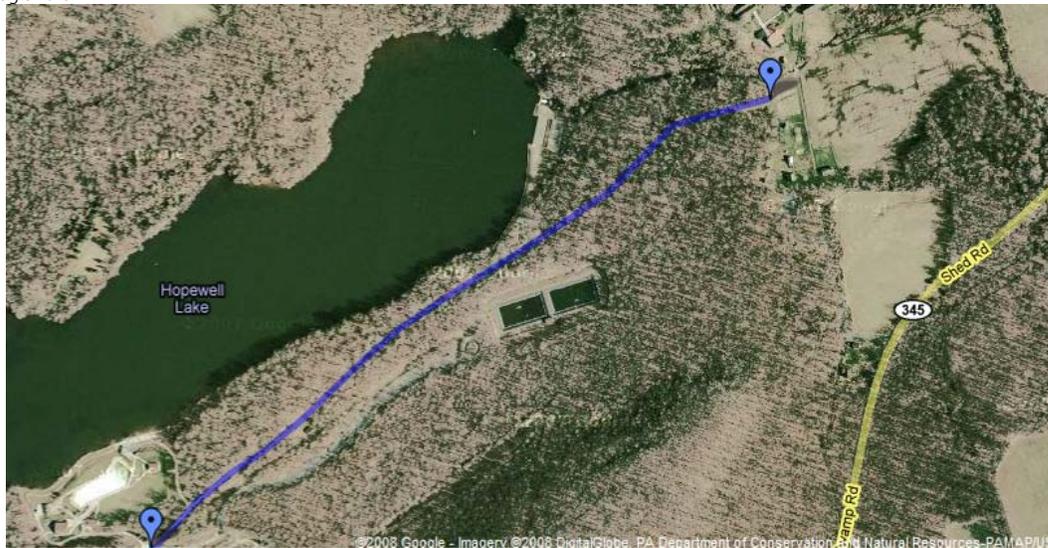
along the boundary, but there is relatively little directional signage within FCSP. In addition, the dense forest cover further obscures Hopewell Furnace NHS from the attention of FCSP visitors. Two groups of FCSP visitors were identified as potential audiences for an ATS: campground visitors and pool users. Two potential routes were considered: a direct connection using an existing path which is unpaved on Hopewell Furnace NHS property but which connects with a paved road at FCSP, as shown in Figure 25, and a more circuitous route using external roadways.

#### *Hopewell Furnace NHS to French Creek State Park Pool Area*

A shuttle between Hopewell Furnace NHS and French Creek State Park pool area would provide a guided link between the two sites, which are approximately three-quarters of a mile apart. The existing dirt road may need additional work in order to provide a smooth ride and to prevent further deterioration. A van or horse-drawn wagon may be appropriate for such a service. Depending on the travel mode, a shuttle could be expected to take 10 to 20 minutes round-trip.

**Figure 25: Potential FCSP Pool Access Shuttle Route.**

Source: Google Earth.



#### *Hopewell Furnace NHS to French Creek State Park Loop*

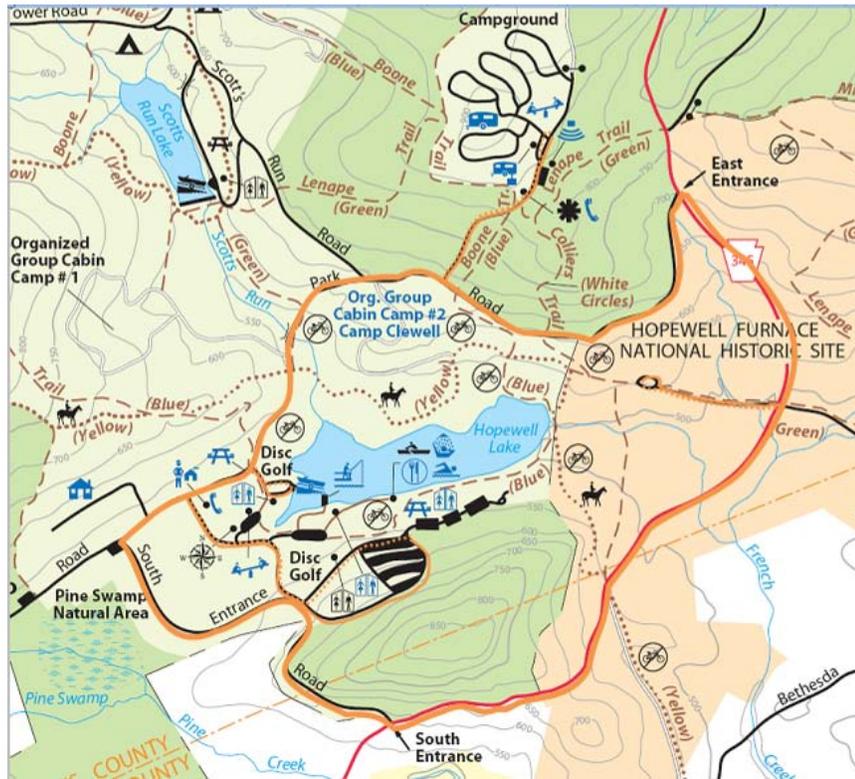
A shuttle that connects Hopewell Furnace NHS to the campgrounds and other attractions at French Creek State Park (see Figure 26) would provide an opportunity for visitors staying at the campground to visit attractions within both parks without having to get in their private vehicle. While campground visitors are in the area primarily for recreation, they stay at least one night at FCSP and thus have more time to spend in the area. In the 2002 visitor survey, 23 percent of Hopewell Furnace NHS visitors stated that FCSP was their primary destination and 14 percent had walked in from FCSP. While Hopewell Furnace NHS is within walking distance of the campgrounds, it is likely that transportation service between the NHS and the campgrounds would attract some visitors. This may be particularly attractive to visitors who come by recreational vehicle, who could then park their vehicle and reach the attractions more easily, and to visitors in family groups that have separate itineraries for the day and would make use of multiple transportation options.

A counterclockwise loop starting at Hopewell Furnace could connect to the campgrounds via PA Route 345 and the East Entrance into Park Road. It is recommended that the shuttle travel up to the campgrounds and loop around just beyond the contact station. After picking up passengers at the campground the shuttle would return to Park Rd. and take a right. Following Park Rd. west, stops can be made at the boat ramp and golf course area and the main park office. After stopping

at the office, the shuttle would take a right to shuttle passengers to the swimming area and return to Park Road. The shuttle would then follow South Entrance Rd. to PA Route 345, where it would take a left and return to Hopewell Furnace. The loop could also be run in the clockwise direction. The loop is approximately 9.5 miles and with generous time provided at each of the stops, would take approximately 30 minutes.

**Figure 26: Potential FCSP Loop Shuttle.**

Source: French Creek State Park website.



*Ridership Potential*

The FCSP pool is a large facility that attracts crowds of visitors, many from nearby Reading. Pool users tend to be making day trips with the express intent of using the pool; their level of interest in the historic and cultural resources at Hopewell Furnace NHS will vary greatly between visitors. Similarly, campground visitors are likely to be primarily in the area for recreation.

Offering transportation service is likely to attract some number of campground visitors and pool users, but ridership is not expected to be high. Transportation is not a barrier to visitation today. The vast majority of FCSP visitors already have access to Hopewell Furnace NHS either using their own motor vehicles or walking and will have little incentive to use a transportation service which may not operate at their preferred times. It may be more appropriate to offer campground service on “peak” weekends only, when the pool of potential riders is greatest.

**Scenario 3: Connection to St. Peters Village**

St. Peters Village provides lodging and other amenities for visitors looking for a weekend getaway, as well as shops and attractions for day trips. Shown in Figure 27, a shuttle between St. Peters Village and Hopewell Furnace could be attractive to visitors who either wish to park their car and forget about it for the weekend or for visitors who would like to enjoy a one-way hike along the five-mile Horse-Shoe trail that runs between St. Peters Village and Hopewell Furnace NHS.

A shuttle might operate as follows: Take St. Peter's Road north 0.9 miles, to Harmonyville Rd. east. Stay on Harmonyville Road for 0.4 miles and then take a right onto Hopewell Road. Approximately 1.5 miles down Hopewell Rd, the Bethesda Church, maintained by Hopewell Furnace, can be visited just around the bend of Bethesda Road. Hopewell Furnace is approximately 1 mile further west on Hopewell Road, with the park entrance across PA Rt. 345. The 3.5 mile one-way trip takes approximately 10 minutes each way without a stop at the Bethesda Church.

**Figure 27: Potential St Peters Village Shuttle Route.**

Source: Google Maps.



#### *Ridership Potential*

While the St. Peters developer has expressed interest in better connections to Hopewell Furnace NHS as St. Peters Village is developed, there is not a clear market for shuttle service. Visitors to St. Peters Village arrive by private motor vehicle and would need a strong incentive, such as high parking costs or traffic congestion, to switch to a shuttle. Guests at the St. Peters Inn may be more attracted to using a shuttle, as they will be spending at least one night in the area, but with only seven rooms, the pool of potential riders is limited.

During special events, however, the situation is different. St. Peters Village attracts many visitors to its special events, increasing the pool of potential riders and making the parking supply much tighter and ATS service more attractive. Combining ranger-led hikes to Hopewell Furnace NHS with a return shuttle would likely expand the number of visitors interested in making the hike.

#### **Scenario 4: Connection to Joanna Furnace**

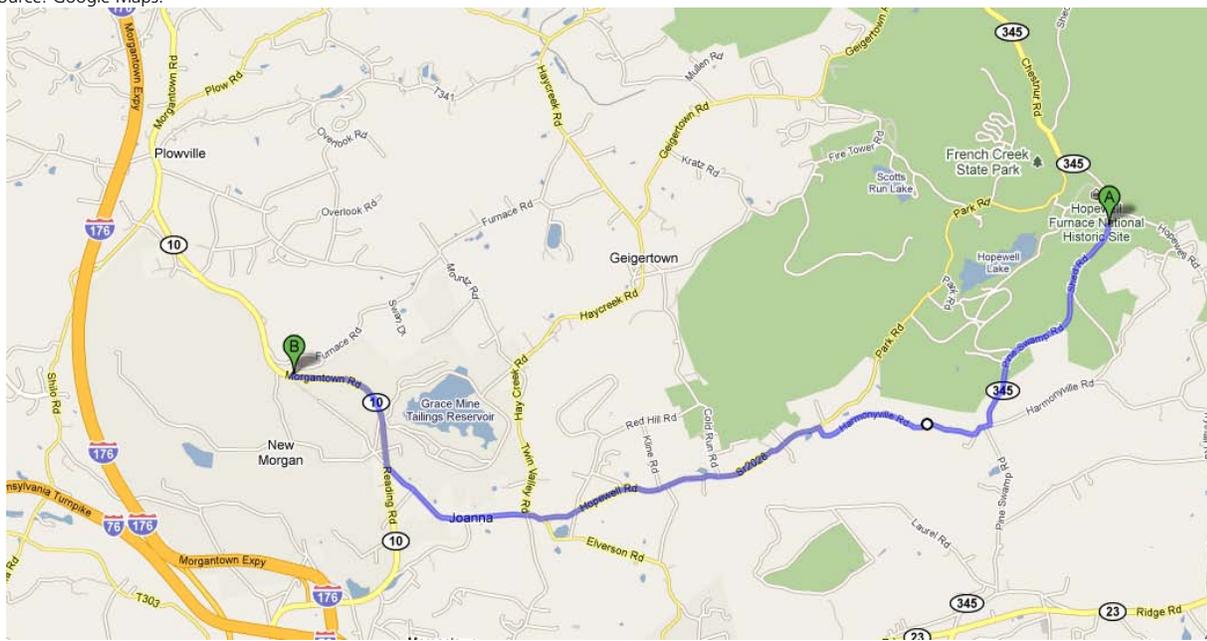
The area around Hopewell Furnace is home to many natural, cultural, and historic resources, and staff have expressed interest in connections with these sites. To explore this strategy, Joanna Furnace was chosen as it is both thematically compatible with Hopewell Furnace NHS and relatively close. A route map is shown in Figure 28. Much of the following also applies to other

historic and cultural attractions in the area, although the more distant the attraction and the less similar the theme, the less likely visitors would be to use any type of transportation service.

A shuttle between Joanna Furnace and Hopewell Furnace NHS would run 18 miles round trip. Starting at Hopewell Furnace, the vehicle would take a right from Hopewell Rd onto PA Route 345, Shed Rd. After 2.5 miles, the shuttle would take a right on Harmonyville Rd and travel 1.5 miles before turning left onto Hopewell Rd. After 2.4 miles, the vehicle would take a slight right onto Elverson Rd and travel 1.4 additional miles. After a final right on Route 10, Morgantown Rd/Reading Rd, the shuttle would arrive at Joanna Furnace in approximately 1.4 miles. Total one-way travel time is approximately 20 minutes.

**Figure 28: Potential Joanna Furnace Shuttle Route.**

Source: Google Maps.



### *Ridership Potential*

The typical visitor to Joanna Furnace is likely to also be interested in visiting Hopewell Furnace NHS, given the thematic connections between the sites. However, with the exception of school groups, visitors arrive by personal motor vehicle; visitors would have little motivation to use a shuttle since this would require an additional trip to return to their car instead of just departing from the second location visited. Joanna Furnace is also only open to regular visitation two days each week, which would limit the pool of potential users.

Joanna Furnace also is host to three annual special events, which are well-attended. Special events include crafts, local foods, and local history exhibits and demonstrations. Visitors to these events may not have any particular interest in iron-making; it is not known whether they would be receptive to leaving the event to travel to Hopewell Furnace NHS and then return to Joanna Furnace to pick up their cars.

### **Scenario 5: Regional Themed Tours**

Regional themed tours would provide a way to connect visitors to historic sites throughout the region. These would be a multi-hour tour with interpretation and would require pre-registration. The vehicle would wait for visitors at each stop and a tour guide would provide information and direction at each site visited.

The National Park Service has been working with several partners to implement Chester County's Iron and Steel Heritage Study. The team has identified four driving routes with individual destinations. The Nails to Rails Trail covers sites in eastern Chester County and Montgomery County including the Phoenixville Historic District. The Green Hills and Steel Mills Trail focuses south of Interstate 76 from Springton Manor Farm south to Coatesville.

The Colonial Forge and Furnace Trail extends from Spring Grove Forge in Lancaster County to the Coventry Iron Works in Chester County. The sites identified for this trail (shown in Figure 6) can be broken down to make smaller tours such as the two following identified by the Iron and Steel Heritage Study Team that include Hopewell Furnace NHS:

*The Colonial Forge & Furnace Tour East*

Sites: N. Coventry Love Valley, Welkenweir, Coventry Works, Hopewell  
 Major Natural Areas: Warwick County Park, French Creek State Park, Horseshoe Trail, Iron Heritage Trail  
 Destinations: St. Peters, Coventryville, J. Maki Winery (Warwick Furnace)  
 Travel: Approximately 25 miles plus return

*Colonial Forge & Furnace Tour*

Sites: Hopewell, Joanna Furnace  
 Major Natural Areas: French Creek State Park, French Creek, Boars Back Trail  
 Destinations: Elverson Borough,  
 Travel: Approximately 25 miles round trip

Another existing tour highlights stops on the Underground Railroad and is shown in Figure 29. This tour is organized by the Central Pennsylvania African American Museum in Reading and stops at the (A) Central African American Museum at the Old Bethel AME Church in Reading, (B) Pine Forge Academy, (C) the Mount Frisby AME Church on Geigertown Rd, (D) Hopewell Furnace, (E) Joanna Furnace, and (F) the Parvin Homestead in Ontelaunee. A round trip tour stopping at all of these locations would cover approximately 65 miles.

**Figure 29: Underground Railroad Tour Sites**

Source: Google Maps.



Tours could also be based out of Philadelphia, or from commuter rail stations, to provide access to the large population base there and many potential visitors that don't have access to a car. The drive from Philadelphia to Hopewell Furnace is approximately 50 miles and takes one hour and ten minutes, which should be seen as a maximum one-way additional distance for such a tour. It is expected that each tour would have a demand of one or two trips a season.

#### *Ridership Potential*

This option would require visitors to plan ahead as opposed to the previous options which could attract visitors without prior knowledge of the service until arriving on-site. Requiring reservations and a significant portion of a day, the tour would be an experience unto itself as opposed to solely a mode of transportation. It is likely that such a tour could be attractive to visitors interested in the historic aspects of the trip. Individual visitors could sign up for general tours or trips could be designed for student or senior groups or historical societies. It is likely that participants on a tour would be willing to pay for such a service.

#### **ATS Considerations**

- For all external routes, assuming that the service which provides transportation only (without any type of on-board interpretation), a transportation fee would likely discourage use, as the vast majority of visitors have access to their own vehicular transportation and many could walk in from FCSP for no charge.
- Shuttle users should be dropped off at the visitor center so they can be oriented to Hopewell Furnace NHS.
- On-board interpretation would add value to the service and would be likely to increase ridership to some extent.
- As noted in the partnership section, if an ATS were to be implemented, it would be important to design it so that it respects and coordinates with the interests of identified partners as well as those of the region and other nearby sites.
- Based on conversations with a local transportation operator, weekend transportation service could be purchased for any of the on-road scenarios for a cost of approximately \$330 per vehicle per day. Weekday service would cost more as it would conflict with the operator's primary business. If the park were to purchase vehicles and operate its own service, gas and staff costs would start at approximately \$28 per hour per vehicle. Administrative, maintenance and other capital costs would be additional.

## Findings and Recommendations

Based on the analysis of existing conditions and likely future trends, the study team recommends improvements in wayfinding and marketing, continued improvements in bicycle and pedestrian access, internal circulation improvements, and a two-year pilot shuttle service through which Hopewell Furnace NHS can test a number of different transportation options to determine the feasibility of each before committing to a permanent service.

### *Wayfinding and marketing improvements are needed.*

As shown in the 2002 Visitor Survey and echoed by the interviewees, wayfinding is difficult for drivers, cyclists, and pedestrians. With so many natural, cultural, and historical resources in the area, accessed by relatively minor roads, quickly orienting visitors is critical. Existing roadway signage is somewhat cluttered and difficult for the user to interpret quickly. For FCSP visitors, improving awareness of the proximity of Hopewell Furnace NHS (through mapping, signage, flyers, and ranger visits), would be a low-cost way to increase visitation. In addition, visitors, tour operators and schools that visit other sites in the region could be made aware of the resources and attractions available at Hopewell Furnace NHS

#### **Recommendations:**

- Improve visitor awareness of resources by implementing new signage and wayfinding tools (maps, brochures, websites) to enhance wayfinding for visitors en route to the NHS and those already there. The Hopewell Big Woods Partnership brochure and website are excellent examples of cooperative marketing. Clearly Hopewell Furnace NHS and French Creek State Park could redesign their maps (or produce a joint map) so that each shows the same trail network and each other's primary attractions. Consider similar efforts with St. Peters Village.
- Continue to work with the Chester County Iron and Steel Heritage Region, Hopewell Big Woods, and Schuylkill River National & State Heritage Area, and the sites included in each, to cross-promote and provide information to visitors online. Regional themed tours like those described in Scenario 5 could be provided as brochures for personal driving tours instead of or in addition to sponsored tours.
- Consider reaching out to organizations like PhillyCarShare, a Philadelphia-based carsharing organization. Carsharing increases accessibility for visitors without a personal automobile and most organizations routinely send out newsletters with itinerary suggestions.
- Explore encouraging tour operators to serve Hopewell Furnace NHS with a marketing package; work with other local organizations to make tour information widely available. Reach out to local schools to promote Hopewell Furnace NHS as a field trip destination.

### *Continued improvements in bicycle and pedestrian access are important.*

Hopewell Furnace NHS will most likely continue to see increased bicycle use and should continue to work with the state and partners to improve bicycle and pedestrian access within the park and the region.

#### **Recommendations:**

- Conduct a formal study to assess bicycle access needs and determine future practices in Hopewell Furnace NHS. The revised GMP is expected to also make this recommendation.

- Continue to support trails that connect Hopewell Furnace to regional trails and destinations and work with organizations to complete such trails.

*Internal circulation problems are limiting visitor access.*

Internal circulation poses serious obstacles to visitor access; the steep slope separating the visitor center and parking area from the historic village reduces accessibility for those with mobility constraints. Improving internal circulation will increase visitor access to resources.

Marsh-Billings-Rockefeller National Historical Park (NHP) in Woodstock, Vermont faces a similar situation, with the Marsh-Billings-Rockefeller Mansion located at the top of a steep hill. Currently the park provides access to the Mansion by using two eight-person vans operated on a part-time, as-needed basis, by NPS staff. Marsh-Billings-Rockefeller NHP is a relatively new park, with broadly similar visitation patterns to Hopewell Furnace NHS. This suggests that a higher-capacity system than the existing electric cart may be appropriate.

Strategies to address the situation at Hopewell Furnace NHS are listed below, in increasing order of cost and difficulty of implementation.

**Recommendations:**

- Reposition existing benches and add additional benches. This will expand the range of visitors who are able to walk up the hill under their own power, so long as they are able to rest along the way.
- Formalize vehicle access and parking at the southern end of the historic village (accessed from Route 345 by Clement Brooke Lane) for visitors who cannot traverse the hill. This would increase visitor access at little cost to the NPS, although pathway improvements from the lower parking area and signage would likely be required. Upon request, visitors could be given a parking pass at the visitor center, so that use of this secondary access could be monitored.
- Purchase or lease a wheelchair-accessible van to provide either regularly-scheduled or on-demand service between the visitor center, the historic village, and potentially to sites further afield, such as Bethesda Church. Running the service on a regular schedule would allow for staff to incorporate the task into their duties instead of performing it on an ad hoc basis. Providing scheduled service may reveal latent demand. If visitor demand requires more frequent operation, it may be advisable to hire a seasonal staff member whose primary duty is to operate the van. An implementation grant from the Paul S. Sarbanes Transit in the Parks Program is a potential source of pilot funding.
- Many of these access issues could be resolved by the relocation of the visitor center to adjacent to the village and the development of wheelchair-accessible paths between the parking area, the visitor center, and the village. This would expand the areas that mobility-constrained visitors are able to access. Adding a visitor contact station as a secondary entrance would improve the situation as well. Relocation of the visitor center is being proposed in the revised GMP but depending on the timeline for such a relocation, other interim transportation solutions such as those mentioned above may still be important to consider.

*Pilot shuttle could offer opportunity to test internal and external ATS options.*

This study recommends that the park apply for a Paul S. Sarbanes Transit in the Parks implementation grant for a pilot shuttle service for a two-year period in which Hopewell Furnace NHS can test a number of different transportation options to determine the feasibility of each before committing to a permanent service. The goal of the pilot would be to explore how an

alternative transportation system could increase visitation, improve the visitor experience, promote regional connections, improve accessibility, and reduce emissions. The market potential for ATS is unclear, in part due to distances, number of visitors, current visitation access patterns, and cost. Development and population in the region is supposed to increase, which though it is not likely to increase local traffic congestion or parking shortages, may increase demand on recreational resources. All of these factors should be considered in the evaluation of the test services.

Services to be tested include:

- Use of vehicle for transferring mobility-impaired passengers from the Visitor Center into the historic village (see description above);
- transportation between national and state park facilities and national register properties scattered throughout the region as described under the Analysis section of this report:
  - transportation between the Hopewell Furnace visitor center and the Bethesda Church,
  - transportation between St. Peter's Village and Hopewell Furnace,
  - transportation between French Creek State Park's pool and campgrounds and Hopewell Furnace,
  - transportation between Joanna Furnace and Hopewell Furnace,
  - transportation and shared parking between nearby sites during special events,
  - regional, half-day or day-long tour of historic, cultural and natural sites throughout the region.

Such a pilot service would require a marketing campaign, evaluation, purchasing of signage and benches, and the leasing of equipment and hiring of temporary positions or contracting with local transit operators to run the shuttle service.

Marketing would primarily involve providing information on both Hopewell Furnace's website and those of partner websites. For the regional organized tours requiring reservations, a more active marketing effort would be needed. Information including points of interest at Hopewell Furnace and other sites, travel time, service frequency and hours of operation should be posted both at the shuttle stops and on fliers throughout the sites to advertise shuttle services.

The pilot program should also include an evaluation of each of the services. At the least, data should be collected on the number of passengers using each service, including where and when the board and alight. Sources of funding and operational costs should also be recorded. A part-time staff position would be dedicated to take on the scheduling, marketing, and data analysis.

In terms of equipment, it is recommended that two wheelchair-accessible, alternative-fuel vans (12-15 passengers) be leased for the period of the pilot study. Two vehicles are recommended in order to have one available in the case that the second is not working properly and since two vehicles running simultaneously may be necessary to achieve adequate frequency for some of the test services. Operational and maintenance costs need to be considered as well. It is expected that a shuttle will be run every weekend throughout the peak season; from June through October (5 months), plus two weekends in the shoulder seasons of March, April and November, plus an average of day per month for the remaining months. Presuming four weekends per month, this would be approximately 56 days. Average hours of operation would be approximately 10:00 AM to 6:00 PM, or 8 hours per day. If more limited service is desired, a private operator may be cost effective for both providing the necessary vehicle(s) including maintenance and operating the service. It should be noted that at this time alternative transportation funds are not available for operations and maintenance. The private operator would have to list its capital and operating

expenses separately if reimbursement for capital costs is to be provided by alternative transportation funding sources.

The study's recommendations are intended to address concerns at Hopewell Furnace NHS regarding internal circulation, regional connections, regional growth, and visitation and to achieve improved visitor service and increased visitation.

## APPENDIX: Stakeholder Interview Protocol

(For individuals, read “you” for “your agency”)

*For all interviewees:*

1. Can you identify existing transportation needs?
2. How could alternative transportation benefit your agency?
3. Is your agency conducting any transportation projects or initiatives that we should be aware of?
4. Does your agency have any resources that could contribute to implementation of alternative transportation? These might include vehicle storage and maintenance facilities, parking for patrons, funding, staff, cross-promotional possibilities, and interpretative content.

*For HBW Partnership members:*

5. What is your agency’s interest in the HBW partnership?
6. What role does your agency play in the HBW partnership?
7. Does your agency have goals for the HWB area?
8. What other partners share the most similarities? In mission? In visitation?

*For sites, parks, etc:*

9. Who are your users? (i.e., locals, school groups, out-of-town tourists?)
  - a. What do they come to do? (i.e., mountain bike, walk, learn local history, participate/watch specific event?) {by percent}
  - b. When do they come? (i.e., weekends, seasonal, events?) {scale - how many?}
10. How do they arrive?
11. Do you have any school or tour bus traffic?
12. What visitor amenities do you provide?
13. Describe your transportation network.
  - a. What types of roads lead to your site? (i.e., 2-lane striped, narrow no markings, 4-lane highway)
  - b. Are they adequately maintained?
  - c. Are they sized to accommodate demand from your site? Future demand?
  - d. What is your internal transportation network? (i.e., 10 miles of dirt horse trails, paved roads with sidewalks, narrow trail with stairways)
  - e. Describe your parking facilities?
    - i. How many spaces? Handicapped spaces?
    - ii. Does it meet your needed capacity?
    - iii. Would an airport-shuttle van be able to navigate it? What about a tour bus?



**REPORT DOCUMENTATION PAGE**

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<b>14. ABSTRACT</b> Transportation study that analyzed current transportation conditions, including the impacts of expected development in and around Hopewell Furnace National Historic Site. The study then reviewed potential transportation partnerships with partners in the region. Finally, the study made recommendations for improvements related to wayfinding and marketing; bicycle and pedestrian facilities; internal circulation; and alternative transportation services.					
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