

# **ALTERNATIVES**

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# INTRODUCTION

Five alternatives for the proposed project are presented in this chapter, as summarized below:

- *Alternative 1: No-Action* — This alternative describes the continuation of the current interpretive transportation service, which is focused on guided sightseeing, with no changes to the NPS policy affecting the recreational use of Segway® HTs and electric scooters or any additional travel demand management actions. Narrated shuttle bus tours would continue to be provided to visitors seeking in-depth educational / interpretive opportunities. This alternative is the baseline for comparing the management direction and environmental consequences of the other alternatives. If Alternative 1 was selected, the National Park Service would respond to future needs and conditions in the project area on a case-by-case basis without major new actions or policy changes.
- *Alternative 2: Preferred Alternative* — The preferred alternative, the National Park Service's proposed action, proposes an integrated transportation system to meet the needs of a broad visitor market. Transportation service would provide a frequent, easy-to-use system with basic orientation and a choice of additional educational / interpretive services. Visitor transportation services would be expanded in the visitor core and Arlington National Cemetery, and additional access on designated routes would be provided for the recreational use of personal transportation vehicles (Segway® HTs and electric scooters). New parking policies would allow meters for paid parking on some roadways managed by the National Park Service to support local travel demand management objectives.
- *Alternative 3* — Alternative 3 proposes a new ride-and-learn visitor bus transportation service, which would be focused on providing sightseeing and in-depth interpretive experiences, rather than on convenient transit service. There would be no policy changes related to the recreational use of Segway® HTs and electric scooters, and there would be no additional travel demand management actions.
- *Alternative 4* — Alternative 4 proposes a coordinated system of easy-to-use bus transit opportunities designed to maximize views while conveniently meeting needs for frequent transportation between visitor sites. In addition, general traffic and parking would be restricted on Madison Drive NW and Jefferson Drive SW, which would be dedicated to transit and selected uses. The recreational use of Segway® HTs and electric scooters would be allowed on all park sidewalks and trails.
- *Alternative 5: Downtown Circulator* — Alternative 5 proposes frequent bus transit service to meet the transportation needs of visitors, local residents, and workers in central Washington, D.C. No educational / interpretive opportunities would be provided, and no changes would be made to multimodal access or any additional travel demand management actions. The two proposed routes would supplement two routes that are currently in operation as part of the overall *District of Columbia Downtown Circulator Implementation Plan* (NCPC/DDOT/DBID/WMATA 2003).\*

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\* As previously described, an additional Circulator route, known as the Smithsonian/National Gallery of Art route, was begun in March 2006, while this document was being written. This route passes through the National Mall & Memorial Parks and uses existing Metrobus stops. For purposes of this environmental assessment, the Circulator service is evaluated as proposed in 2003; new routes are not included in this evaluation.

Alternatives 1, 3, 4, and 5 are the same as the preliminary Alternatives A, C, D, and E presented in the second planning newsletter; Alternatives B and F were considered but dismissed (as discussed on page 79). The preferred alternative (alternative 2) is a new alternative that was developed through the National Park Service's Choosing by Advantages process,\* and it incorporates various elements presented in the preliminary alternatives.

How the alternatives would meet the goals of the National Environmental Policy Act, as stated in section 101(b), is discussed in Table 22 on page 76. Table 23 on page 81 compares and contrasts the five alternatives, and Table 24 shows how well each alternative would achieve the identified purposes of the project. Environmental consequences are summarized in Table 25 beginning on page 85.

## **ALTERNATIVE DEVELOPMENT PROCESS**

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The range of alternatives considered in this environmental assessment is based on preliminary alternatives developed during the internal and public scoping process for this project (see the *Scoping Report*, NPS 2005i).

Preliminary alternatives were developed taking into account public comments made at workshops in February 2004. In addition, selection criteria based on project objectives and NPS policy were established to help guide subsequent steps of alternative screening and evaluation. The alternative concepts were grouped based on desired access to visitor sites, common transit routes, and objectives for education, interpretation, and orientation. These alternative packages (a no-action alter-

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\* Choosing by Advantages is a process by which the differences of advantages for alternatives and their related costs are compared, ranked, and rated in order to make better decisions. The process can be used to develop alternatives that combine advantages from several previous alternatives while working to reduce associated costs.

native and five action alternatives) were presented in the second newsletter, distributed in September 2004.

The preliminary alternatives were further refined, and as previously discussed, two alternatives were dismissed. The remaining alternatives were then evaluated by means of Choosing by Advantages. Through this process the National Park Service's preferred alternative was developed. Additional information on alternative development is provided in the "Consultation and Coordination" chapter.

## **PLANNING CONSIDERATIONS AND ASSUMPTIONS**

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All of the alternatives are based on comparative data for transit service (such as route lengths and travel times, connections to public transit, bus service hours and miles), general requirements for constructed facilities and equipment (such as the number of transit vehicles, the number of stops, vehicle maintenance and storage), and staffing requirements.

The alternatives consider transportation services for 10-year and 20-year planning horizons (2015 and 2025). Services offered, as well as facilities and equipment, under each alternative would meet visitor needs during the peak season (generally from mid-April through mid-September).

Preliminary facility and equipment costs and ongoing operations and maintenance costs are provided for each alternative and will be refined during the implementation of the selected alternative.

All mitigating measures are incorporated into the alternatives. No additional mitigations are proposed.

## Trip Planning and Onsite Visitor Information

Pedestrian access and wayfinding programs would be implemented under all alternatives. Wayfinding programs could include maps, signs, brochures, kiosks, and expanded visitor information on the Internet.

## Transportation Service Types

The alternatives include a combination of bus transportation service types, which consist of different routes, stop locations, opportunities for visitor orientation and interpretation / education, and visitor experiences, as described below:

- **Visitor Core** — Transportation service would be provided to the National Mall and/or the downtown area. Most alternatives would also provide a transit connection between the visitor core and the Arlington National Cemetery visitor center.
- **Arlington National Cemetery** — Transportation service would be provided within Arlington National Cemetery and the vicinity, except for Alternative 5, which would provide no service at this location.
- **Supplemental Services** — Transportation service with variable routes and/or schedules could be provided, including:  
Excursions: Guided tours or point-to-point transit to destinations such as Mount Vernon, Civil War sites, Frederick Douglass National Historic Site, Anacostia Park, Rock Creek Park, Chesapeake & Ohio Canal National Historical Park, and George Washington Memorial Parkway. Operating schedules and destinations could be changed based on market demand.

Introductory Tour: A two- to three-hour guided orientation tour of the visitor core.

Special Event Transit: Numerous special events take place throughout the year in

the visitor core, such as the annual Cherry Blossom Festival and the Smithsonian Folklife Festival. Certain events require roadways to be temporarily closed. Transit service for special events could be provided under any alternative. Special event operations would be coordinated with public transit providers to supplement access by means of Metrorail, Metrobus, and other multimodal connections. This type of service is not analyzed in detail in this environmental assessment.

## Ridership

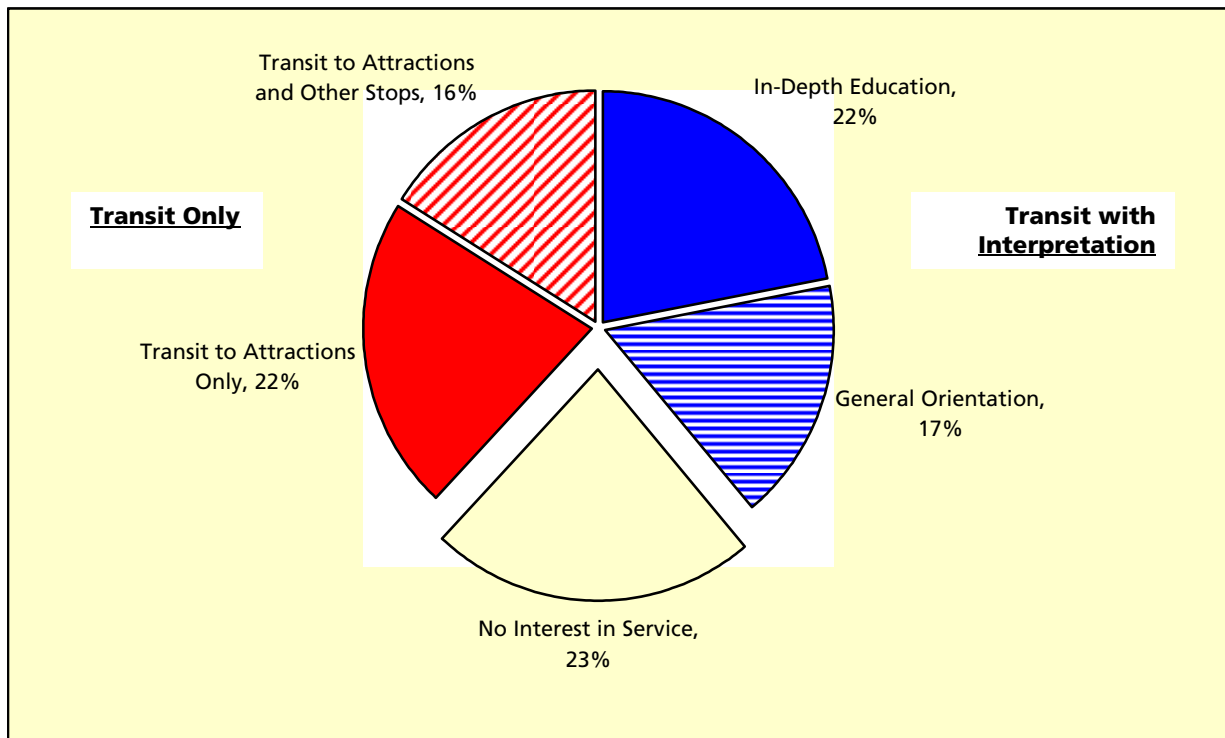
### Visitor Core Transit User Market

The 2003 *Visitor Transportation Survey* suggests that visitors are interested in four types of transportation service. A total of 1,386 people responded to a question about how desirable certain types of service would be to use (NPS 2003f). Service choices fell into two overall categories: transit only (to attractions or to attractions and other stops) and interpretive transit (general orientation or in-depth interpretation). The current NPS service falls into the category of in-depth interpretive transit service.

When asked which type of service visitors would be most interested in using, responses were fairly evenly distributed, ranging from 16% to 22% for each type (see Figure 1). However, 23% said they would not use any of these services. The survey responses show there are multiple, overlapping markets, so various integrated service options would be needed to meet demand.

### Ridership Levels

Potential ridership was estimated based on use of the existing concession service, with year 2000 chosen as the base year because ridership was not yet influenced by the events of September 11, 2001, after which time use fell. Overall 2004 ridership statistics indicate that passenger levels have begun to increase since 2001, and they could return to 2000 levels

**Figure 1. Visitor Transportation Services Visitors Were Most Interested in Using**

SOURCE: NPS 2003f.

before an alternative in this environmental assessment is implemented.

Ridership estimates for the visitor core and Arlington National Cemetery are presented for each alternative based on the following assumptions.

#### Visitor Core

For Alternatives 2, 3, and 4 the potential transit ridership market within the visitor core was based on differences from Alternative 1 in route patterns and access to top destinations (see Table 27 on page 134 for top destinations in the Washington, D.C., area). Compared to current NPS concessioner operations, the frequency of transportation service (also referred to as headways) would be increased, and some bi-directional service instead of one-way service would be offered in some alternatives. Based on data compiled by the Transportation Research Board (TRB), a 10% improvement in

the frequency of transit service is expected to cause a 5% gain in ridership (TRB 2004).

For the purposes of this environmental assessment, visitor core ridership estimates for Alternatives 1–4 were also based on the following assumptions:

- Annual ridership would remain flat for first 10 years (through 2015).
- Annual ridership for 20 years (through 2025) assumes a growth rate consistent with national population growth projections (middle series) by the U.S. Census.

Visitor core ridership estimates for Alternative 5 were obtained directly from the *Downtown Circulator Implementation Plan* and represent the visitor circulation and visitor access/egress travel markets only (NCPC/DDOT/DBID/WMATA 2003). The overall ridership estimates assume that all routes would be fully implemented and that the transit service would draw users from a much broader range of po-

tential riders than the existing NPS concessioner service.

### Arlington National Cemetery

Potential ridership for Arlington National Cemetery visitor transportation services was estimated based on the year 2000 Tourmobile use. Additional ridership for an expanded Arlington National Cemetery route considered results from the visitor survey that identified current and latent demand to the U.S. Marine Corps War Memorial (Iwo Jima).

## **Transit Vehicles**

New transit vehicles would be required under all alternatives to meet future needs, given the 20-year planning horizon for this study. The existing transit vehicles have been maintained to operate beyond the typical 12- to 15-year economic life for transit buses.

The visitor transportation service would meet the *Americans with Disabilities Act Accessibility Guidelines*, in accordance with NPS design guidelines. All transit vehicles, stops, and information material (kiosks, etc.) will be accessible to people with disabilities under all alternatives.

Based on the most desirable characteristics of the existing vehicles and the desired attributes of future transit services in each alternative, representative vehicle types were selected for services in the visitor core and Arlington National Cemetery, as well as supplemental or excursion tours. Vehicle types were chosen for their flexibility to meet the following criteria:

- potential to provide a distinctive image and attractive design
- easy and safe boarding and exiting (on / off) attributes (low floors, multiple doors, and wheelchair accommodations)
- maneuverability for congested urban streets

- large windows to maximize viewing potential
- multiple fuel options (including clean fuels)
- potential to provide visible storage areas (including no overhead or below seating storage) for improved security screening
- reduced noise levels

Specific vehicles are not recommended in this environmental assessment. Vehicle selection and procurement will occur during the implementation phases of the project.

### **Vehicles for the Visitor Core**

Under all alternatives a high-capacity transit bus would replace the current transit vehicles in the visitor core area. Buses in this class are larger and offer more passenger seating and standing area than a 40-foot standard transit bus. Articulated buses would also be included in this class. This vehicle type was selected primarily because it offers passenger capacity comparable to existing vehicles, flexibility in seating and standing room arrangements, options for multiple doors, low floors, large windows for viewing, and the potential to use clean fuels.

### **Vehicles for Arlington National Cemetery**

A tourist tram/bus with trailer would continue to be the most suitable transit vehicle type for services provided within Arlington National Cemetery. A vehicle typically consists of one bus power unit and two trailer units. This vehicle type was selected primarily because passenger capacity levels are comparable to existing vehicles, and it offers flexibility in linking one or two trailers to a power unit for varying passenger demand, large windows for viewing, and the potential to use clean fuels. Vehicle design would respect the dignified setting of Arlington National Cemetery.

Potential future expansion of Arlington National Cemetery transportation services outside the cemetery grounds might require

alternative vehicle types. Vehicle types should be compatible with route characteristics and constraints, ridership market, ease of access, and the desired character for the transportation service.

### ***Vehicles for Supplemental Services***

A small transit bus was selected as the most suitable vehicle type for an introductory tour and for excursion tours. This vehicle type would be consistent with current vehicle configurations for special excursion services, offer good maneuverability in different settings, provide comfortable seating, and have the potential to use clean fuels.

Special event services could be provided on an as-needed basis. This might require the use of additional leased vehicles or the reallocation of visitor core fleet vehicles when normal service was temporarily interrupted by special events.

### ***Vehicle Fuels***

During the development of alternatives it was assumed that a range of clean fuels would be appropriate for the proposed transportation service, including clean diesel, biodiesel, compressed natural gas, and hybrid electric. The engine technology required to use these fuels has been proven and is continuing to undergo modifications to meet U.S. Environmental Protection Agency emission standards. At present, the current emission standards could be met or exceeded by any of the recommended fuels. Final selection of clean-fuel powered vehicles will be made during the implementation phase of the project.

### ***Vehicle Fleet***

The number of vehicles that would be required under each alternative and transportation service type was based on operating plans for the peak season and the peak time of day. Estimated peak vehicle requirements correlate to route travel times and related service frequency. Fleet size estimates include additional

vehicles for use as back-ups for mechanical emergencies and special events. For the visitor core and Arlington National Cemetery services the additional vehicle ratio would be 25%, and for supplemental or excursion tours one additional vehicle would be required.

### **Infrastructure**

It was assumed that transportation services would continue to operate entirely on existing public rights-of-way or public infrastructure, including existing roads in mixed-flow traffic without the use of exclusive dedicated bus-travel lanes. It was assumed that minor improvements to roadway surfaces would be required at some locations to accommodate transit vehicle movements in curbside travel lanes and passenger access at transit stops. Any additional improvements that would change the existing infrastructure would be analyzed in separate environmental compliance documents.

### **Facilities**

#### ***Transit Stops***

The alternatives include the following three types of typical transit stops:

- *Standard Stop* — This stop would provide basic hop-on / -off access to visitor sites such as memorials, museums, and historic landmarks. Stops would typically include a bus stop sign (basic indicator, logo, and route or service name), a local area orientation map, and bench(es).
- *Transfer Stop* — This stop would provide hop-on / -off access and transfers at route junctions or between separate visitor transportation routes in the visitor core area. Stops would typically include a bus stop sign, a local area orientation map with kiosk sign (integrated with the D.C. signing / wayfinding systems), bench(es), bike rack(s), and shelter(s) (approximately 5 feet by 12 feet).
- *Intermodal Stop* — Stops of this type would be within one-half block of a

Metrorail station and would provide hop-on / -off access and connections to Metrorail transit services. Stops would typically include a bus stop sign, a local area orientation map, bench(es), and bike rack(s).

In addition to the features identified for each stop, other elements could be required at some locations to address specific needs, for example, concrete bus pads to reinforce curb-side travel lanes, and curb ramps to accommodate pedestrian movements. For cost estimating purposes, added improvements were assumed to be required at 25% of the stops.

Specific needs and improvements for each transit stop would be identified during implementation. Proposed facilities would meet applicable design guidelines and use the existing palette of approved street furnishings or be compatible with them. Proposed facilities would also undergo reviews by the National Capital Planning Commission and the Commission of Fine Arts, as well as consultation with the D.C. Historic Preservation Office, as necessary.

### ***Maintenance / Storage Facility Requirements***

Maintenance and storage facility requirements under each alternative would depend on the service delivery and implementation approach. Under all alternatives offsite facilities could be provided by an independent third-party contractor. Alternatively, the current facilities in East Potomac Park could be used, and if needed, supplemented with facilities at another location. Changes to the existing maintenance site or facility, or improvements at a new site, would be analyzed in a separate environmental compliance document.

Representative space requirements for maintenance and storage facilities were estimated for each alternative using comparable bus facility estimates for the National Park Service and public transit agencies. Site area estimates were based on the required building area for bus maintenance and storage, additional space

for employee parking, onsite vehicle circulation, building setbacks, utility easements, and limited landscaping.

Requirements for a maintenance facility site and building were based on the possible range of vehicle sizes and types. For example, bus bays and storage area requirements would differ depending on whether a 45-foot transit bus or a 65-foot articulated bus was used for service in the visitor core. Final requirements would depend on factors such as bus fleet size, vehicle size, fuel type used, the fueling location (either on site or at a remote location), specific maintenance activities to be performed, outdoor versus indoor vehicle storage, and needs related to administrative staff, drivers, and other staff.

Arlington National Cemetery transportation service requirements could either be accommodated in a separate facility or be combined with other services, depending on future contracting, implementation, and operating decisions.

## **Costs**

### ***Capital Costs***

Capital cost estimates are provided for the vehicle fleet and transit stops for each alternative. Cost estimates for transit stops assume a bus stop sign, a local area orientation map, and a bench or benches. Depending on the stop location and type, stops could also include a kiosk sign (integrated with the D.C. signing/wayfinding systems), bike rack(s), and shelter(s). Maintenance and storage facilities are assumed to be included in the hourly cost of operations as discussed above and under operation and maintenance costs. A range of implementation methods and fare recovery scenarios could be used to fund capital costs, as discussed under “Transportation Service Implementation and Fares.”

Cost estimates for transit stops do not include other possible desired elements such as custom passenger platforms, development of bus

pullouts/lanes, major landscaping, ornamental fencing, traffic or security bollards, lighting, restrooms, drinking fountains, or ticket booths.

### **Operation and Maintenance Costs**

Operation and maintenance costs are based on data from six representative public transit agencies in the Washington, D.C., area (Federal Transit Administration [FTA] 2005), rather than from the existing NPS third-party operator. This was because (1) detailed operating statistics such as vehicle hours or miles were not available, (2) vehicles are older than typical public transit vehicles and may have higher maintenance costs than newer vehicles, (3) the present service includes an on-board interpreter / narrator, and (4) the management structure of a new visitor core transit system might be different than the current arrangement.

Operating and maintenance costs in the visitor core area include expenses for transportation operations, vehicle maintenance, general maintenance, and administration, as well as labor and nonlabor costs. Operating costs for all visitor core services also include roving fare inspectors, thus allowing passenger boarding through all doors and reducing loading times. Average unit costs were determined for key driving variables (cost per revenue bus-hour, cost per revenue bus-mile, and cost per peak vehicle). The resulting average unit cost for vehicle maintenance for the six transit agencies was then increased by 20% to account for the likely use of unique and larger vehicles. The average unit cost for general administration was also increased by 40% to account for additional marketing/sales costs likely to be incurred for a visitor core transportation service. Operating costs for Alternative 1 were further increased by \$25 per revenue bus-hour to account for wages and fringe benefits for on-board interpreters / narrators.

Operation and maintenance costs for the Arlington National Cemetery service were estimated using the methodology described for

visitor core services. Costs for Alternative 1 were increased to account for on-board interpretation / narration services with a separate guide. This derived average cost was increased by 5% to account for larger vehicles (and thus, potentially higher vehicle maintenance costs).

Operation and maintenance costs for the supplemental or excursion services were assumed to be similar to the visitor core services, with a separate on-board interpreter / narrator (similar to Alternative 1).

### **Staffing**

Staffing requirements for transportation service include transit drivers and/or interpreters, vehicle mechanics, maintenance personnel, and general administrative staff. Staffing requirements were based on local transit agency full-time employee productivity factors for revenue bus-hours and revenue bus-miles (FTA 2005). Staffing requirements for supplemental transportation services were not estimated since specific routes, related operating statistics, and interpretation / narration approach have not been defined. Staffing estimates are provided only so that alternatives may be compared and are not intended to indicate actual numbers of employees to be used by any operator.

### **Multimodal Access**

It was assumed that alternative modes of transportation would remain available to supplement transit access between visitor core sites, or as an alternative recreational experience within the National Mall & Memorial Parks. All multimodal access and personal transportation alternatives analyzed in this document only apply to the National Mall & Memorial Parks and do not apply to George Washington Memorial Parkway, President's Park, Chesapeake & Ohio Canal National Historical Park, or National Capital Parks-East. It was also assumed that all current infrastructure (including 16 miles of multi-use trails with the National Mall & Memorial Parks) would continue to support pedestrians,

bicycles, water transport / excursions, and personal transportation vehicles. Recreational bicycle rentals would continue to be available from the Thompson Boat Center. Bike tours could continue to be arranged with NPS ranger staff without cost, and they would be scheduled on a seasonal basis. The rental of Segway® HTs, electric scooters, and bicycles for recreational use would continue to be available at sources outside park property.

All multimodal improvements would focus on the visitor core area only, specifically on areas managed by the National Mall & Memorial Parks; no multimodal access is evaluated outside park areas. Multimodal access considerations for the surrounding park areas encompass a much wider range of considerations, such as at-grade trail crossings of major regional roadways. Any impacts associated with changes to multimodal access in the surrounding parks would be analyzed in separate environmental compliance documents.

All alternatives would include the following provisions at a minimum:

- continued access for pedestrians and bicycles on all multimodal trails within national park system areas
- continued access for persons with disabilities by Segway® HT and electric scooter throughout the National Mall & Memorial Parks. This access would not be changed under any alternative. All other use of Segway® HTs or electric scooters within this document is referred to as “recreational use.”
- replacement of bicycle racks in disrepair and the installation of additional bicycle racks at key locations throughout the National Mall & Memorial Parks, specifically focusing on the East Coast Greenway.\* Through the National Mall & Me-

morial Parks, the greenway designation would overlay the existing multimodal trail designations.

- bicycle racks on transit vehicles
- continued recreational access for Segway® HTs and electric scooters on NPS sidewalks adjacent to roadways maintained by the District of Columbia. These include sidewalks crossing the National Mall along 3rd, 4th, 7th, and 14th streets NW/SW.

## Travel Demand Management

Travel demand management is a strategy using incentives and disincentives to help alleviate growing demand on an area’s road network and limited parking. The *Comprehensive Plan for the National Capital: Federal Elements* promotes a pedestrian friendly environment, encourages transit stops to be within walking distance of federal attractions and to be coordinated with Metrorail stations, supports increased public transit access to the visitor core and improved visitor information about long-term parking facilities adjacent to public transportation, and encourages tour bus management and increased bicycle use (NCPC 2004). The alternatives are generally compatible with regional travel demand management policies, but Alternatives 2 and 4 address parking demand in different ways. Specific policy implementation decisions for managing travel demand will be aimed at providing alternatives to private vehicular travel and offering the public more choices in the transportation market.

## Other Considerations

### Onsite Visitor Parking

The alternatives assume that visitors would continue to be encouraged to use outlying parking lots serviced by public transit, and

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\* The East Coast Greenway is a national trail from Maine to Florida currently being developed as the “urban sister” to the Appalachian Trail. The trail is intended for many users, including walkers and

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cyclists. This route runs east-west along the north side of the National Mall from the U.S. Capitol Reflecting Pool to the Arlington Memorial Bridge.

that no new onsite parking would be provided within the National Mall & Memorial Parks. This would support travel demand management objectives.

### ***Public and Other Transportation Services***

Public and other transit operations would continue to meet a variety of transportation and mobility needs of visitors and commuters. The existing transit network includes

- the Metrorail subway, with 16 stations within the study area
- bus service (Arlington County, Metrobus, D.C. Downtown Circulator, Georgetown Metro Connection, etc.), with numerous buses crossing the National Mall (primarily at 4th, 7th, and 14th streets NW / SW), plus several routes on Constitution Avenue NW and Independence Avenue SW

Commuter train service is provided from both Virginia and Maryland to Washington, D.C., along with other select transit services such as the free Kennedy Center shuttle to and from the Foggy Bottom Metrorail station, the National Air and Space Museum shuttle to the Udvar-Hazy Center, and the shuttle to the Wolf Trap Performing Arts Center from the Falls Church Metrorail station. Numerous tour bus companies operate within the area, in addition to several private sightseeing operators that provide hop-on / -off services. Other private transportation services include taxis, limousine services, bicycle rentals, recreational Segway® HT and electric scooter rentals, and private employee shuttle and bus services.

### ***Sustainability***

NPS policy supports sustainable transit and design, and these policies guide approaches to transit and facility planning and development. The objectives of sustainability are

- to design park facilities to minimize adverse effects on natural and cultural values, to reflect their environmental setting, and to maintain and encourage biodiversity

- to construct and retrofit facilities using energy-efficient materials and construction techniques
- to operate and maintain facilities to promote their sustainability
- to illustrate and promote conservation principles and practices through sustainable design and ecologically sensitive use

The principles of sustainability are included in all alternatives.

### ***NPS Educational / Interpretive Programs***

NPS personnel throughout the National Mall & Memorial Parks, and at adjacent national park system sites, would continue to offer educational / interpretive programs for visitors. Park rangers provide programs that connect visitors educationally and emotionally with park resources and help them understand the significance of historic sites and events.

### ***Law Enforcement and Security Requirements***

Monitoring and surveillance measures on transit vehicles and at transit stops would be provided as necessary.

## **TRANSPORTATION SERVICE IMPLEMENTATION AND FARES**

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### **Implementation**

Several transit implementation or service delivery methods were examined during the development of alternatives, but no single method is recommended in this environmental assessment. The service delivery strategy\* will depend on several factors, including full and just compensation due to the NPS con-

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\* The service delivery strategy refers to the contractual means through which service would be provided, including potentially by an independent third-party operator or by the National Park Service.

cessioner upon the present contract's expiration and in accordance with the contract's terms, future government or private financing sources, and potential funding subsidies. Any implementation approach could be used with any of the alternatives. Each scenario assumes that a transportation service provider would be authorized to conduct operations on federal parkland, including fare collection and other support services. No significant differences in environmental impacts would be expected as a result of selecting a specific implementation strategy.

The final implementation approach will be a management decision by the National Park Service as to how to best meet financial sustainability and other management goals.

### ***Independent Third-Party Operator***

Under this option the National Park Service would solicit a third-party operator through a prospectus to manage transportation services within the project area. The third-party operator would take on ownership of the system through authorization by the National Park Service. In most third-party operated transportation services in the national park system, the contractor owns the vehicles and facilities. If funding sources were available, the National Park Service could subsidize the capital costs of vehicles and/or other facilities, but there would be no direct operating cost investment by the National Park Service. Transportation services would be paid for by using revenues generated directly from user fees or other third-party operations. The third-party operator would need to recover all non-subsidized costs, including depreciation (if appropriate), and have a reasonable opportunity for profit. The National Park Service would typically receive revenue in the form of franchise fees from the operator. Current NPS concession law states that contract terms are to be no more than 10 years initially, or up to 20 years if warranted. The current NPS concessioner arrangement with the National Mall & Memorial Parks and transit services at Denali National Park are examples of independent

third-party operated services within national park units.

### ***Agreement with Public Transportation Entities***

Under this option the National Park Service would enter into an agreement with other public entities, such as local transit authorities, or local, state, or federal agencies. This type of agreement would increase the range of possible funding sources. In most current examples, a local entity would manage the program and would be responsible for providing or overseeing operations. Under this option vehicles and facilities would be provided either by one of the other public transportation entities or by the National Park Service. The extent of NPS control would be established within the specific agreement. The agreement would determine the role of the National Park Service in regard to input, management, and control of the transit service and its operations. The Acadia "Island Explorer" and the Yosemite Area Regional Transit System are examples of such arrangements.

### ***Service Contract***

Under this option the National Park Service would employ a private contractor to provide transportation services, but the National Park Service would retain ownership. This service type would differ from an independent third-party operation by allowing the National Park Service to directly retain revenue from fares, depending on the terms of the contract negotiated. Either the owner or the contractor could provide the vehicles and facilities, with the cost per service-hour adjusted accordingly. Funds to support the service could come from various sources, such as park entrance fees and annual appropriations, as well as user fares. In the case of the National Mall & Memorial Parks no entrance fees are charged, but revenues could be generated through fare and other transportation-related fees (e.g., parking charges). Service contract terms are typically three years, with two one-year extension options. Transit services

provided at Zion and Rocky Mountain national parks, plus the Grand Canyon free shuttle, are examples of service contract arrangements. Transit vehicles are owned by the National Park Service at Zion and Grand Canyon national parks, while the contractor provides the vehicles at Rocky Mountain.

### ***Park-Operated Service***

Under this option the National Park Service would directly operate the transit service, allowing for total government control. The government would make all investments for facilities and vehicles, which could be leased or purchased, and NPS staff would operate and maintain the vehicles. If fares were charged, the National Park Service would retain all revenues to provide for a return on investment and to fund operating expenses. The Cape Cod beach shuttle is an example of a park-operated transit service.

### **Fare Determination**

Fares to use the visitor transportation services would likely be the primary source of revenues for the operator. A fare range is presented for informational purposes only; actual fares will depend on the final implementation plan. Fare ranges depend directly on potential funding mechanisms or revenue sources to supplement transit fare revenues. The average fare requirement will depend on factors such as the following:

- the scale and configuration of the service, and its resulting cost to implement and operate
- ridership
- sources of funds other than user charges to defray system capital and operating expenses (level of subsidy)
- choice of system operator
- on-board interpretive services
- full and just compensation due to the current concessioner upon the present

contract's expiration and in accordance with the contract's terms

Due to the number of factors that could influence average fare requirements, a range of potential fare requirements is presented below for information purposes only.

The primary factors influencing the average fare requirement include the method used to fund capital costs, the potential to attract a broader ridership market, and full and just compensation due to the concessioner. Under the current concession contract the operator must be compensated for the fair value of certain assets after the contract expires. This is typical of all NPS concession contracts.

A low fare and a high fare scenario were used to estimate average fare requirements. These scenarios reflect the following assumptions.

- *Low-Fare Scenario Assumptions* — A low fare scenario was developed by applying the ridership projections (as discussed in the previous section) and associated system cost estimates. It was assumed that the federal government would fund capital costs without being paid back by the operator. The capital cost elements for each alternative would include vehicle fleet acquisition and transit stop development, as well as full and just compensation due to the current concessioner upon the contract's expiration. It was assumed that all system operating costs would be defrayed by fares. The system would be operated by a cooperating transit agency under an agreement with a 10-year term. The low-fare scenario is possible when the capital investment of the new system does not need to be paid by fare revenue.

Arlington National Cemetery service was assumed to operate without on-board interpretation.

- *High-Fare Scenario Assumptions* — A high fare scenario was developed by applying the ridership projections (as described in

the previous section) and associated system cost estimates. For this scenario it was assumed that an independent third-party would fund fleet acquisition and transit stop development, as well as full and just compensation due to the current concessioner upon the contract's expiration. This operator would then be paid back through fare revenue, which would be the only source of funds to defray system operating and capital costs. The system would be operated by an independent third-party under a 10-year contract. The high-fare scenario is likely when both the capital investment and the operating costs would need to be paid by fare revenue.

Arlington National Cemetery service was assumed to operate with on-board interpretation.

Potential fares could range from an estimated \$7 per person per day under the low-fare scenario to \$31 per person per day under the high-fare scenario, both of which would include service to Arlington National Cemetery. These fare requirements are presented for information purposes only. Actual fares will be established during the implementation phase of the project and will be based on the final service delivery plan.

## ALTERNATIVE 1: NO ACTION

Current bus transit routes, which are focused on guided sightseeing, would remain under Alternative 1. New vehicles would be used on the existing bus transit routes. There would be no changes to multimodal access regulations or any additional travel demand management actions.

- A single one-way route in the visitor core would continue to be offered, plus service to Arlington National Cemetery, and supplemental service in the form of selected excursion tours (Mount Vernon, Frederick Douglass National Historic Site, and Twilight Tours). Access would continue to be provided to 28 of the top visitor destinations in the metropolitan area.
- Narrated shuttle bus tours would continue to be provided to a visitor market that seeks in-depth educational / interpretive opportunities, meeting transportation needs throughout the visitor core and selected outlying visitor destinations.
- No actions would be taken to manage travel demand, such as changes to parking policy. Multi-use trails would continue to provide access for currently allowed uses; no policy changes would be made for the recreational use of Segway® HTs and electric scooters on park multi-use trails. All commercial rentals of personal transportation vehicles for recreational use would occur off park land, except for rentals of bicycles, canoes, and kayaks at the Thompson Boat Center.

### TRANSPORTATION SERVICE

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#### Visitor Core

The current visitor core transportation service consists of one comprehensive one-way route with a direct transfer connection to Arlington National Cemetery. This route follows the current route for the American Heritage Tour.

The geographic limits of the route are Arlington National Cemetery on the west, Union Station and 1st Street NE on the east, E Street NW on the north, and Ohio Drive SW and East Basin Drive SW on the south.

The map for Alternative 1 illustrates the visitor core transportation service route. This route is generally a figure-eight pattern between Union Station and Arlington National Cemetery, operating along the National Mall via Madison Drive NW and Constitution Avenue NW, and Jefferson Drive SW, and crossing the National Mall on 15th Street NW/SW. This location, near the Washington Monument, would serve as a key transfer point, with stops at 15th Street NW/SW and Jefferson Drive SW for both directions of travel. The route length, travel time, and stop information are shown on the map.

#### *Transportation System Infrastructure*

Transportation services would continue to operate entirely on existing public rights-of-way or public infrastructure, including existing roads in mixed-flow traffic.

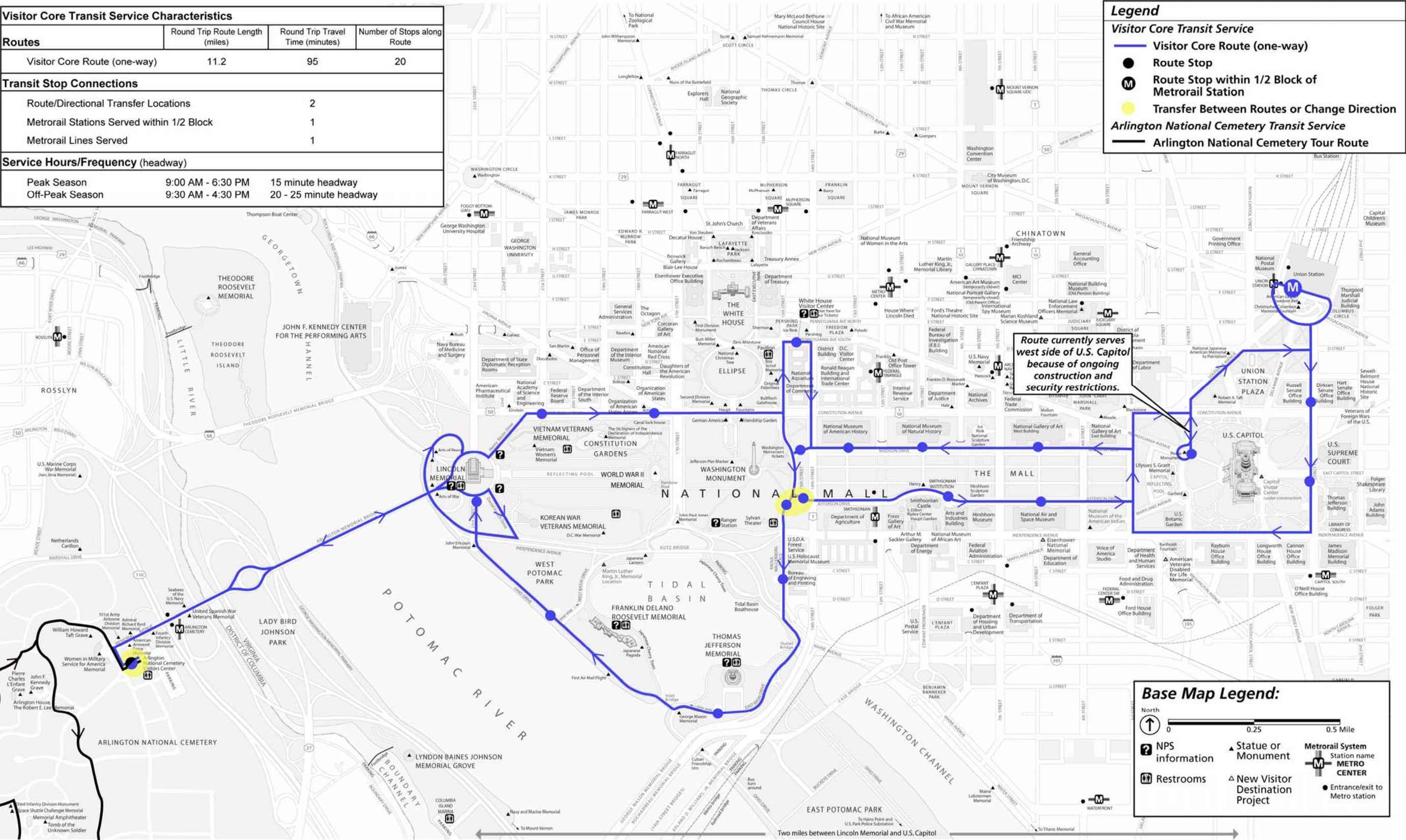
#### *Fares and Ticketing*

A daily fare would continue to be charged for hop-on / -off service. Actual fares would be established during project implementation and would be based on estimated ridership, expenses, funding sources, and a final service delivery plan. (Current fares for the American Heritage Tour are \$20 for adults, with discounts for children, groups, and two-day purchases. This fare also includes access to Arlington National Cemetery.)

Tickets would continue to be obtained at the Arlington National Cemetery visitor center, at Union Station ticket outlets, at certain ticket kiosks along the route, on-board from the driver, and through advance purchase on the Internet. The tickets would provide all-day

Alternative 1: Visitor Core Transit Service  
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Visitor Core Transit Service Characteristics			
Routes	Round Trip Route Length (miles)	Round Trip Travel Time (minutes)	Number of Stops along Route
Visitor Core Route (one-way)	11.2	95	20
Transit Stop Connections			
Route/Directional Transfer Locations	2		
Metrorail Stations Served within 1/2 Block	1		
Metrorail Lines Served	1		
Service Hours/Frequency (headway)			
Peak Season	9:00 AM - 6:30 PM	15 minute headway	
Off-Peak Season	9:30 AM - 4:30 PM	20 - 25 minute headway	

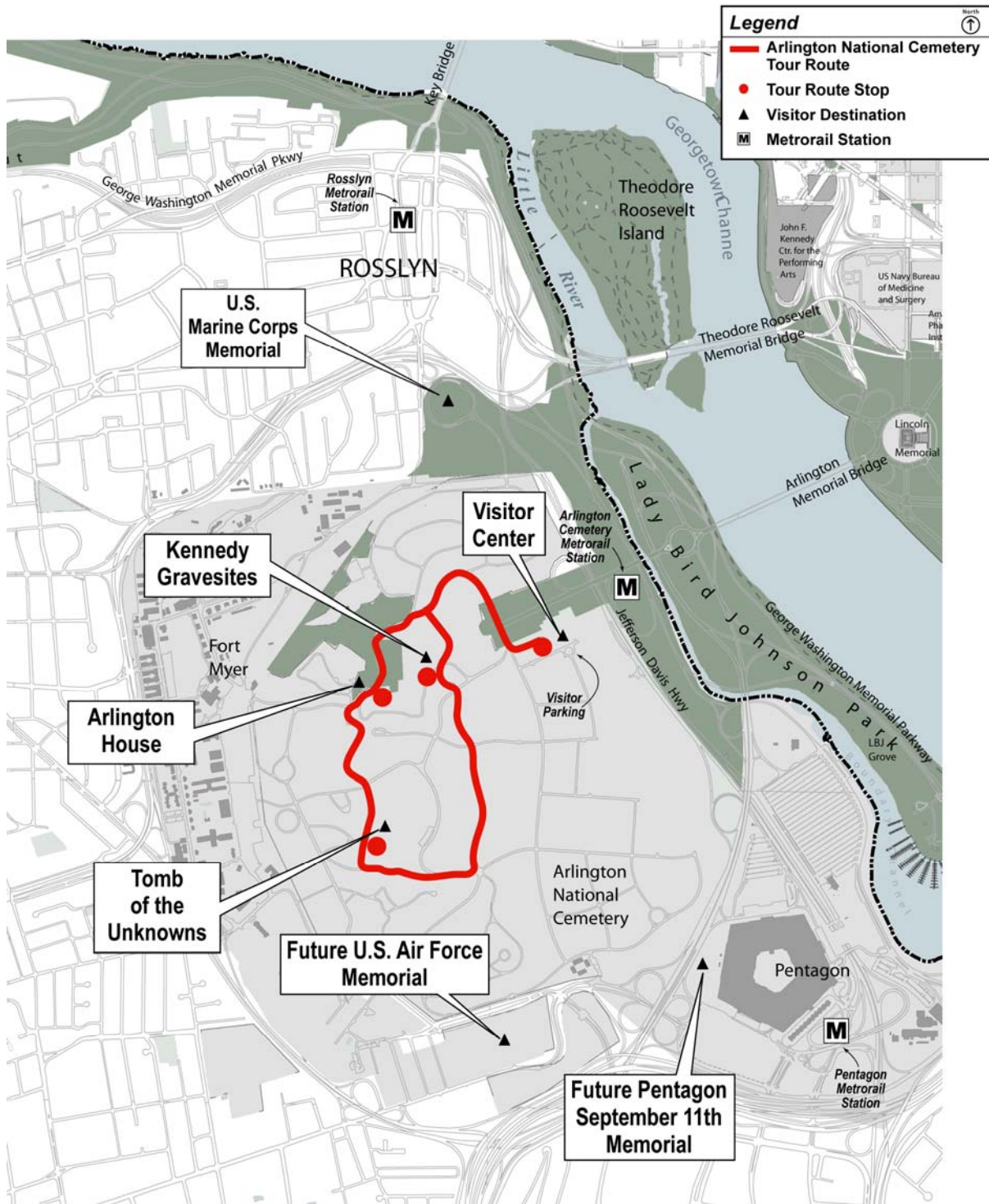


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# Alternative 1: Arlington National Cemetery Transit Service

National Mall & Memorial Parks

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hop-on / -off service, with one- and two-day passes for adults, children, and groups. Fare discount incentives would be offered by including the Arlington National Cemetery tour with the purchase of a visitor core service fare. Discounts would be offered for children, groups, and two-day purchases.

### ***Public Transit Connections***

The visitor core route would continue to provide one direct connection to Metrorail with a stop at Union Station. Metrobus routes could also be accessed along certain segments, including stops along Constitution Avenue NW, Independence Avenue SW, and 14th Street NW/SW, as well as at Union Station.\*

### ***Operating Plans***

The peak visitor season begins with the cherry blossom season in spring and continues until mid-September. For planning purposes the season is assumed to last from mid-April through mid-September, and bus service is provided from 9 a.m. to 6:30 p.m. seven days a week. Fifteen-minute service frequencies would continue throughout the day.

The off-peak season would extend from mid-September through mid-April, with service from 9:30 a.m. to 4:30 p.m. seven days a week. Service frequencies would be approximately 20 minutes on weekends and 25 minutes on weekdays.

### ***Educational / Interpretive Services***

An individual other than the driver would provide narration and interpretation of sites along the route through an on-board public address system. Narrative content would be coordinated with NPS interpretive staff.

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\* In March 2006 one additional direct connection to public transit was created when Tourmobile shifted the stop at the Arts and Industries Building on Jefferson Drive SW to 12 Street SW, adjacent to the Metro at the Smithsonian.

### ***Staffing***

Approximately 26 full-time employees would be required, including transit drivers, narrators, vehicle mechanics, maintenance personnel, and general administrative staff.

### ***Arlington National Cemetery***

The Arlington National Cemetery service would continue to follow the route that is used today. This route originates at the visitor center and provides one-way loop service through the cemetery. However, the route is often modified temporarily to accommodate funeral processions, memorial services, and related cemetery activities. This route is approximately 3 miles, and stops are made at the John F. Kennedy gravesite, the Tomb of the Unknowns, Arlington House, and the visitor center. Hop-on / -off access would continue to be provided at all locations, with a round-trip travel time of approximately 45 minutes. The visitor center would continue to serve as a transfer point for connections to the visitor core service.

### ***Fares and Ticketing***

Exclusive tickets for service to Arlington National Cemetery would be available only at the cemetery's visitor center. (Current fares are \$6 for adults and \$3 for children, with discounts for groups.) Service would continue to be included with ticket purchases for the current visitor core service, with tickets available at visitor core ticket outlets.

### ***Public Transit Connections***

Under Alternative 1 there would be only indirect connections to public transit associated with the Arlington National Cemetery service. The Arlington National Cemetery Metrorail station is slightly farther than a quarter mile from the cemetery visitor center.

### Operating Plans

The peak season for Arlington National Cemetery service would continue from April through September, 8:30 a.m. to 6:30 p.m., with 5- to 10-minute service frequencies. The off-peak season would continue from October through March, 8:30 a.m. to 4:30 p.m., with 15-minute service frequencies.

### Educational / Interpretive Services

An individual other than the driver would provide narration and interpretation of sites along the Arlington National Cemetery route through an on-board public address system. Narrative content would continue to be coordinated with NPS interpretive staff.

### Staffing

Approximately 23 full-time employees, including transit drivers, narrators, vehicle mechanics, maintenance personnel, and general administrative staff would be required for the Arlington National Cemetery service.

### Supplemental Transportation Services

#### Excursion Tours

Excursion tours would continue to be offered on a seasonal basis to other cultural and historic sites outside the visitor core area, including Mount Vernon and Frederick Douglass National Historic Site, as well as the Twilight Tour. These tours would be generally scaled to match visitor demand levels.

Due to the variations and declines in visitor demand since 2001, tour schedules have been refined to meet market conditions. One trip per day is offered to Mount Vernon and to Frederick Douglass National Historic Site. The Twilight Tour is also offered during the summer. The general characteristics of each tour are described in Table 1.

**Table 1. Excursion Tour Characteristics — Alternative 1**

<b>Tour</b>	<b>Characteristics</b>
<b>Mount Vernon Estate — seasonal</b>	<b>Departure:</b> Noon from Arlington National Cemetery, with one stop at the Washington Monument <b>Tour Length:</b> About four hours, including an onsite walking tour <b>Tickets:</b> Arlington National Cemetery and Washington Monument
<b>Frederick Douglass National Historic Site — Seasonal</b>	<b>Departure:</b> Noon from Arlington National Cemetery, with one stop at the Washington Monument <b>Tour Length:</b> About three hours, including an onsite walking tour <b>Tickets:</b> Arlington National Cemetery and Washington Monument
<b>Washington by Night: Twilight Tour — Seasonal</b>	<b>Departure:</b> 7 p.m. from Union Station <b>Tour Length:</b> About three hours <b>Tickets:</b> Union Station

### Fares and Ticketing

Ticket prices for excursion tours would be based on anticipated market demand and estimated expenses. Actual fares would be established during the implementation phase of the project. Tickets would be available at the Arlington National Cemetery visitor center, Union Station, and the Washington Monument ticket kiosk.

### Operating Plans

Based on the variability of market demand for excursion tours, the operating plan assumes four buses would be devoted to excursion tours in the peak season (mid-April through mid-September). Each bus would operate for an estimated 9.5 hours per day (9 a.m. to 6:30 p.m.). In the off-season, two buses would be required, operating for an estimated 7.5 hours per day (9 a.m. to 4:30 p.m.). This plan would allow service to three to five destinations per day in the peak season. Off-season service would serve the same destinations, but without daily service (e.g., trips to Mount Vernon on four days, and trips to Frederick Douglass National Historic Site on three days).

### **Educational / Interpretive Services**

An individual other than the driver would provide narration and interpretation on the excursion tours. Narrative content would be coordinated with NPS interpretive staff.

### **ACCESS TO TOP DESTINATIONS**

The existing transportation service would continue to serve 28 of the top visitor destinations in the D.C. metropolitan area (Table 27, page 134).

Two-way access would be provided only to the Washington Monument.

One-way access would continue to be provided to the following top destinations:

- Lincoln Memorial
- National Air and Space Museum
- Vietnam Veterans Memorial
- National Museum of American History
- National Museum of Natural History
- U.S. Capitol
- White House Visitor Center
- Arlington National Cemetery
- Jefferson Memorial
- Union Station

### **RIDERSHIP**

Table 2 presents transit ridership estimates for the visitor core and Arlington National Cemetery services in Alternative 1.

**Table 2. Transit Ridership Estimates — Alternative 1**

Year	Visitor Core	Arlington National Cemetery
2015	398,000	883,000
2025	433,000	963,000

NOTE: The factors used for ridership projections are described on page 25.

### **TRANSIT VEHICLES**

Vehicles used for the various services would be the same as those described under “Plan-

ning Considerations and Assumptions.” Numbers of vehicles required are shown in Table 3.

**Table 3. Number of Transit Vehicles Required — Alternative 1**

	Visitor Core	Arlington National Cemetery	Excursion Tours
Peak Service	8	8	4
Spare Vehicles	2	2	1
<b>Total</b>	<b>10</b>	<b>10</b>	<b>5</b>

### **FACILITIES**

#### **Visitor Core Transit Stops**

A total of 20 transit stops would continue to serve passengers under Alternative 1, but a new transportation service would result in upgraded standard, transfer, and intermodal stops. As described on page 28, 25% of the stops would be upgraded (e.g., bus pads and curb ramps).

#### **Maintenance / Storage Facility**

The current 42,352-square-foot maintenance / storage facility, which is used in accordance with the existing independent third-party contract for transit operations, is in East Potomac Park. Vehicles are maintained on site, and they are stored both inside and outside.

It is assumed that this facility would serve a comparable function under Alternative 1. However, if the facility was determined to be inadequate or incompatible with NPS land uses, site improvements or new offsite facilities could be required. For the purposes of this document, estimated site requirements for a new bus maintenance/storage facility are shown in Table 4.

Any new facilities would be the responsibility of the operator and would need to be provided off site. The actual requirements would be determined by the operator in response to a public solicitation process.

**Table 4. Maintenance / Storage Facility Site Requirements — Alternative 1**

Transportation Service	Estimated Site Requirements	
	Low Range	High Range
Visitor Core and Excursion Tours	3.1 acres	3.4 acres
Arlington National Cemetery	3.4 acres	3.4 acres
All Services Combined in One Facility	4.3 acres	4.8 acres

NOTE: Key factors related to maintenance/storage facility requirements are presented on page 28.

## COSTS

Capital and annual operation and maintenance cost estimates for Alternative 1 are shown in Table 5 and are based on the assumptions described on page 29.

## MULTIMODAL ACCESS (SEGWAY® HT, SCOOTER, AND BICYCLE)

No changes to access for pedestrians, bicyclists, or other personal transportation (e.g., recreational use of Segway® HTs and electric scooters) would be made. Access would be consistent with the description in “Planning Considerations and Assumptions.”

## TRAVEL DEMAND MANAGEMENT

No additional travel demand improvements beyond those discussed in “Planning Considerations and Assumptions” would be made.

**Table 5. Projected Capital and Annual Operating Costs — Alternative 1 (in millions)**

	Visitor Core	Arlington National Cemetery	Excursion Tours	Total
Vehicle Fleet	\$7.26	\$6.11	\$2.04	\$15.41
Transit Stops	\$0.72	N/A	N/A	\$0.72
<b>Total Capital Costs</b>	<b>\$7.98</b>	<b>\$6.11</b>	<b>\$2.04</b>	<b>\$16.13</b>
Annual Operating Costs	\$1.94	\$1.76	\$0.89	\$4.59

NOTE: Assumptions for costs are described on page 29.

## ALTERNATIVE 2: PREFERRED ALTERNATIVE

Alternative 2 proposes an integrated transportation system to meet the needs of a broad visitor market. Visitor transportation service would provide a frequent and easy-to-use system that would serve expanded areas in the visitor core and Arlington National Cemetery.

- Two new interconnected routes would be provided in the visitor core. Service in Arlington National Cemetery would be extended to the U.S. Marine Corps War Memorial. Selected excursion tours would continue to be offered, potentially including cultural and visitor sites outside the visitor core area as warranted by market conditions. Access would be provided to 39 of the top destinations in the Washington, D.C., area. New transit stops would be located within easy walking access of Metrorail stations.
- Basic orientation would be provided on the new routes, and users would have a choice of additional educational / interpretive services on all routes and supplemental transportation services.
- Additional designated access would be allowed for Segway® HTs and electric scooters along the existing multi-use trail system in the National Mall & Memorial Parks. Parking under the jurisdiction of the National Park Service on the National Mall would be metered to encourage greater use of local and regional transit services.

### TRANSPORTATION SERVICE

#### Visitor Core

Transportation service in the visitor core under Alternative 2 would consist of two interconnected routes, extending from Arlington National Cemetery on the west to Union Station and 1st Street NE on the east, and from F Street NW on the north to Ohio Drive SW and East Basin Drive SW on the

south. The “Alternative 2: Visitor Core Transit Service” map illustrates the two visitor core routes and provides length, travel time, and stop information for each route. This preferred alternative would offer frequent bus transit with a choice of educational / interpretive opportunities on both routes.

The two proposed routes are described below:

- **Blue Route** — The Blue Route would provide two-way loop service between Arlington National Cemetery, the U.S. Capitol, and Union Station. It would primarily operate along the National Mall by way of Madison Drive NW and Constitution Avenue NW, and Jefferson Drive SW and Independence Avenue SW. The Blue Route also would extend north to the White House Visitor Center on Pennsylvania Avenue South NW and south to the Jefferson Memorial on East Basin Drive SW and the FDR Memorial on Ohio Drive SW.

Optional detour segments for the Blue Route would include circulation along 3rd Street NW/SW and 1st Street NW/SW on the west side of the U.S. Capitol. This option would allow for detours when security measures were in place along primary route segments serving the east side of the U.S. Capitol.

- **Red Route** — The Red Route would provide one-way loop service from the Lincoln Memorial in West Potomac Park to the Judiciary Square area in downtown, and it would cross the National Mall on 14th, 15th, and 17th streets NW/SW.

Optional detour segments for the Red Route would include a segment along 11th Street NW and E Street NW. This option would allow for detours when Pennsylvania Avenue is closed for special events and functions.

Alternative 2: Visitor Core Transit Service

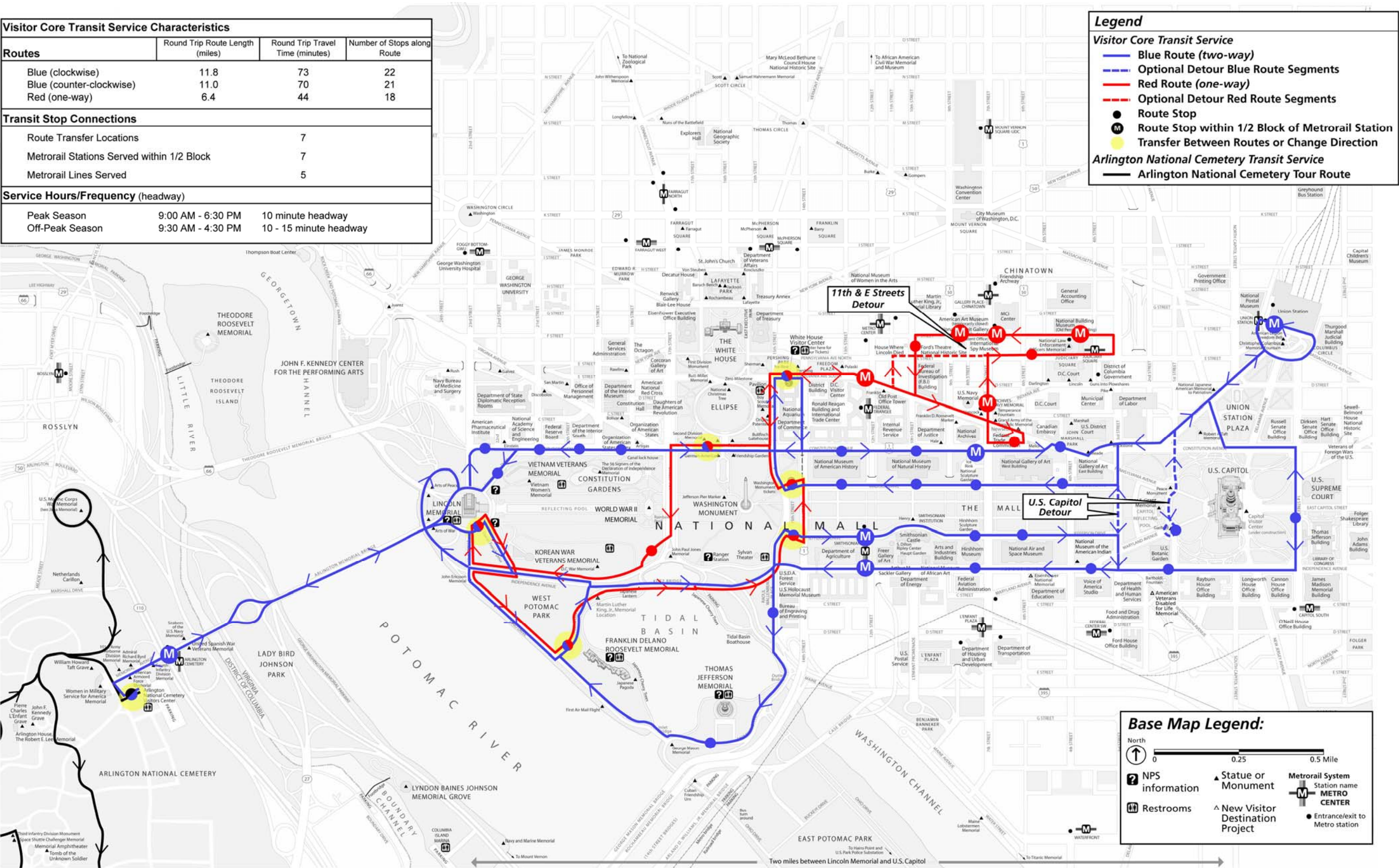
National Mall & Memorial Parks

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Visitor Core Transit Service Characteristics			
Routes	Round Trip Route Length (miles)	Round Trip Travel Time (minutes)	Number of Stops along Route
Blue (clockwise)	11.8	73	22
Blue (counter-clockwise)	11.0	70	21
Red (one-way)	6.4	44	18

Transit Stop Connections	
Route Transfer Locations	7
Metrorail Stations Served within 1/2 Block	7
Metrorail Lines Served	5

Service Hours/Frequency (headway)		
Peak Season	9:00 AM - 6:30 PM	10 minute headway
Off-Peak Season	9:30 AM - 4:30 PM	10 - 15 minute headway

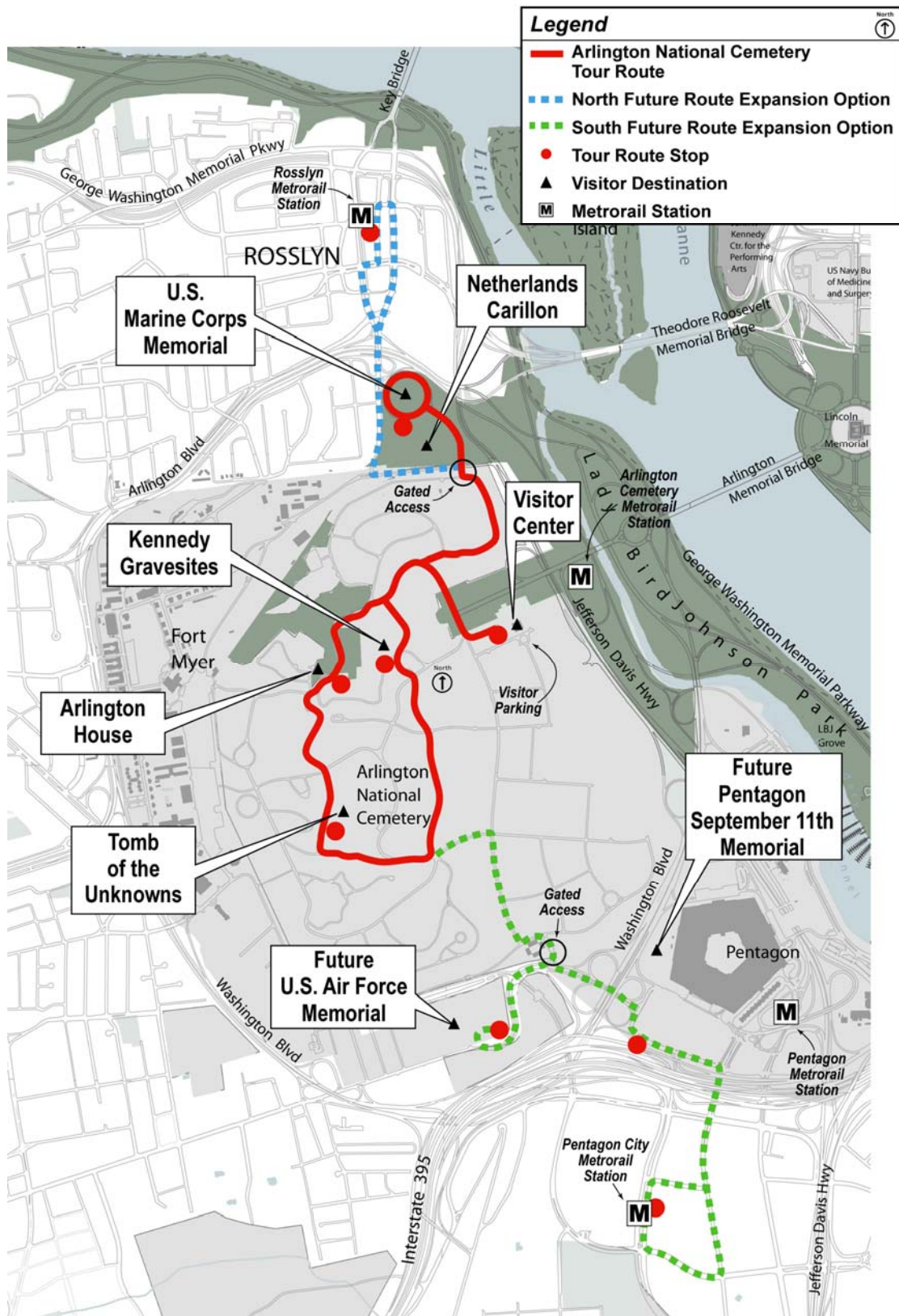


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# Alternative 2: Arlington National Cemetery Route Map

National Mall & Memorial Parks

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### ***Transportation System Infrastructure***

Transportation services would continue to operate in mixed-flow traffic entirely on public rights-of-way, including existing roads.

### ***Fares and Ticketing***

A daily fare for hop-on / -off service would be established during the implementation phase and would be based on estimated ridership, expenses, funding sources, and a final service delivery plan. Tickets could be bought at staffed outlet locations, such as the Arlington National Cemetery visitor center, Union Station, the Washington Monument ticket kiosk, and automatic ticket vending machines along the visitor core routes; advance purchases could be made by phone or on the Internet. Additional options for ticketing could include multiday or group passes.

The National Park Service would seek to use a fare and ticketing system that would be integrated with the ticketing systems of regional transit providers by offering SmarTrip card ticketing and other fare options at Metrorail stations, at park partner locations, and potentially at other visitor destinations. The intent would be to make using the visitor transportation service as seamless as possible by promoting interoperability between existing local and regional transit systems.

### ***Public Transit Connections***

A total of seven Metrorail stations would be within one-half block of a transit stop. Each route would provide connections to four stations. Metrobus routes could also be accessed along several select segments of the visitor core routes under this alternative, including stops along Constitution Avenue NW, Independence Avenue SW, 7th Street NW/SW, and Union Station.

### ***Operating Plans***

The seasonal hours of operation for visitor core routes would be the same as under Alternative 1, from 9 a.m. to 6:30 p.m. seven days a

week during the peak season, but service frequency would be increased to 10 minutes from 15 minutes to accommodate additional demand and improve visitor convenience. During the off-peak season service would be provided from 9:30 a.m. to 4:30 p.m. seven days a week; service frequency would be 10 minutes on weekends and 15 minutes on weekdays.

A second optional operating scenario was also evaluated for Alternative 2 that included two additional hours of service in the evening during both peak and off-peak seasons. Service would be extended from 6:30 p.m. to 8:30 p.m. in the peak season and 4:30 p.m. to 6:30 p.m. in the off-peak season, with 30-minute service frequencies.

A third scenario was tested for Alternative 2 to determine how twice as many riders in the visitor core would affect related transit fleet and operational requirements. If potential ridership was doubled, service frequency during the peak season would be 5 minutes for the Blue Route throughout the day, instead of the recommended 10 minutes. Peak-season service frequency for the Red Route would not change, nor would service frequency during the off-peak season.

### ***Educational / Interpretive Services***

Site orientation and interpretation along visitor core routes would be provided by the driver and audio/electronic systems. These systems could use pre-recorded announcements on the vehicles' public address systems, personal headsets, or electronic screens. Depending on cost and available technology, interpretive delivery devices or tools could also be purchased or rented from park partners and at other visitor destinations.

### ***Staffing***

Approximately 57 full-time employees, including transit drivers, vehicle mechanics, maintenance personnel, and general administrative staff would be required for the visitor core transportation service during the day.

Approximately 5 additional full-time employees would be required for the optional evening service.

### **Arlington National Cemetery**

Shuttle bus sightseeing tours would be continued within the grounds of Arlington National Cemetery along the existing route, with extended service to the U.S. Marine Corps War Memorial (see the “Alternative 2: Arlington National Cemetery Transit Service” map).

Service to the U.S. Marine Corps War Memorial would be offered approximately every 20 minutes. Service would require special access through a restricted gate along Marshall Drive, adjacent to the current cemetery boundary. Buses for this extended service would follow the current access road and circulate in a clockwise direction around the one-way memorial loop drive, with a new transit stop at the memorial. The round-trip route between the visitor center and the memorial would be approximately 1.7 miles, and round-trip travel time would be approximately 25 minutes because of reduced operating speeds, transit stop time, and some delay at the restricted access gate.

Additional route extensions could provide convenient transfers to public transit (WMATA and Arlington County Transit) if warranted by future demand. These extensions would support goals of visitor convenience without duplicating service. Coordination would be required with other local agencies and transit providers. Costs for these extensions are not included in the projected capital and annual operating cost estimates.

- *Service Additions to the North (the Netherlands Carillon and the Rosslyn Metrorail station)* — This route would add approximately 2 miles to the U.S. Marine Corps War Memorial route segment. Operating costs would increase by approximately 40% to 50% if similar service frequencies were provided.

- *Service Additions to the South (planned memorials including the Air Force Memorial / Arlington County Cultural Museum, and the Pentagon September 11th Memorial, as well as the Pentagon City Metrorail Station)* — This extension could also include future connections to a proposed light rail transit line along Columbia Pike. Route extensions to the south would require special access through a gated access point along Columbia Pike. In the future routes could also be extended to the Air Force Memorial when the cemetery expands to include this adjacent area (U.S. Army Corps Engineers 1998). If added to the current route, the trip would be approximately 4 to 5 miles longer. Fleet, operating requirements (staff, etc.), and costs would also increase. Operating costs would nearly double if similar service frequencies were provided.

### **Fares and Ticketing**

Fares would be established during the implementation phase and would be based on estimated ridership, expenses, funding sources, and a final service delivery plan. Future route extensions would require fare adjustments. Tickets would provide for all-day hop-on / -off access. Combined tickets for both visitor core service and Arlington National Cemetery service would also be provided.

As described for the visitor core transportation service, tickets could be obtained at staffed ticket outlet locations and in advance by phone or on the Internet. Ideally, ticketing operations would be integrated with regional transit providers' ticketing technology to offer a seamless transit experience.

### **Operating Plans**

Service hours and frequency would be the same as under Alternative 1. Additional service to the U.S. Marine Corps War Memorial would be provided every 20 minutes during the peak season and every 30 minutes during the off-peak season.

### **Educational / Interpretive Services**

Recorded narration would be provided on the Arlington National Cemetery route and to the U.S. Marine Corps War Memorial. Additionally, the driver would provide orientation, limited interpretation, and answer questions related to sites along the route. Interpretive messages would be appropriate to the commemorative and contemplative nature of the memorials.

### **Staffing**

Approximately 21 full-time employees, including transit drivers, vehicle mechanics, maintenance personnel, and general administrative staff would be required for service to Arlington National Cemetery.

### **Supplemental Transportation Services**

Excursion tours would be provided to other cultural and historic sites outside the visitor core area and would be the same as described under Alternative 1 — Mount Vernon, Frederick Douglass National Historic Site, and the Washington, D.C., Twilight Tour. Excursion tours to other cultural and visitor sites outside the visitor core area could be expanded to include Chesapeake & Ohio Canal National Historical Park, George Washington Memorial Parkway, Anacostia Park, and Rock Creek Park.

### **ACCESS TO TOP DESTINATIONS**

The proposed visitor transportation routes would provide access to 39 of the top destinations in the Washington, D.C., area, 11 more sites than under Alternative 1 (a 39% increase).

Two-way service would be provided to the following top destinations:

Washington Monument  
Lincoln Memorial  
National Air and Space Museum  
Vietnam Veterans Memorial  
National Museum of American History

National Museum of Natural History  
U.S. Capitol  
White House Visitor Center  
Arlington National Cemetery  
Jefferson Memorial  
Union Station

One way service would be provided to the following top destinations:

World War II Memorial (access directly from Home Front Drive)  
U.S. Marine Corps War Memorial (one of the top destinations that visitors want to reach by transit; access by way of the Arlington National Cemetery service)

### **RIDERSHIP**

Table 6 presents transit ridership estimates for the visitor core and Arlington National Cemetery transportation services during the day. Additional evening service would increase ridership, but is not shown in the table.

Current and historical ridership statistics served as the primary reference for projecting the future ridership potential. The other scenario that was also tested for Alternative 2, as previously mentioned, was twice the number of riders in the visitor core.

Current daily fares for the NPS concessioner, along with fares for other local comparable services and the NPS 2003 *Visitor Transportation Survey*, are some indicators of how much visitors are willing to pay for NPS-provided sightseeing or transportation services in the

**Table 6. Transit Ridership Estimates — Alternative 2**

Year	Visitor Core	Arlington National Cemetery
<b>Daytime Ridership Estimates</b>		
2015	563,000	998,000
2025	614,000	1,088,000
<b>Doubled Ridership Estimates</b>		
2015	1,126,000	998,000
2025	1,228,000	1,088,000

NOTE: The factors used for ridership projections are described on page 25.

vicinity of the National Mall. One of the goals under Alternative 2 is to provide an affordable transit option in the visitor core and surrounding areas and to offer convenient transit access in addition to educational opportunities. Actual fares would affect future ridership levels, but specific fare levels cannot be determined until a final implementation plan is developed (see the discussion on page 34).

## TRANSIT VEHICLES

Transit vehicles would be the same as described under “Planning Considerations and Assumptions.” Numbers of vehicles required are shown in Table 7.

**Table 7. Number of Transit Vehicles Required — Alternative 2**

	Visitor Core	Arlington National Cemetery	Excursion Tours*
<b>Vehicle Numbers for Daytime Ridership Estimates</b>			
Peak Service	24	9	4
Spare Vehicles	6	3	1
<b>Total</b>	<b>30</b>	<b>12</b>	<b>5</b>
<b>Vehicle Numbers for Doubled Ridership Estimates</b>			
Peak Service	43	9	4
Spare Vehicles	10	3	1
<b>Total</b>	<b>53</b>	<b>12</b>	<b>5</b>

\* Same as Alternative 1.

## FACILITIES

### Transit Stops

A total of 47 transit stops in the visitor core would be developed under Alternative 2. As described under “Planning Considerations and Assumptions,” typical amenities would be applied to three types of transit stops, and certain improvements (bus pads and curb ramps) would be made to 25% of the stops. In addition, ticket vending machines for passenger fares would be installed at a third of the stops.

### Maintenance / Storage Facility

It is assumed that the current maintenance / storage facility would serve a comparable function under this alternative. However, if

the facility was determined to be inadequate or incompatible with NPS land uses, site improvements or new offsite facilities could be required. For the purposes of this document, site requirements for a new bus maintenance / storage facility are shown in Table 8.

New facilities would be the responsibility of the operator and would need to be provided off site. Actual requirements would be determined by the operator and addressed in response to a public solicitation process. If ridership doubled and more vehicles were required, a larger maintenance / storage facility would also be required.

**Table 8. Maintenance / Storage Facility Site Requirements — Alternative 2**

Transportation Service	Estimated Site Requirements	
	Low Range	High Range
Visitor Core and Excursion Tours	3.6 acres	4.5 acres
Arlington National Cemetery	3.7 acres	3.7 acres
All Services Combined in One Facility	5.4 acres	6.1 acres

NOTE: Key factors related to maintenance/storage facility requirements are presented on page 28.

## COSTS

Capital and annual operation and maintenance cost estimates for Alternative 2 are shown in Table 9.

If ridership within the visitor core doubled, fleet size requirements would change from 30 to 53 vehicles, costs would increase by approximately 77% over the base visitor core ridership scenario, and annual operating costs would increase by approximately 52%. Other elements that would also change with a higher ridership scenario include staffing, maintenance facilities, and passenger fare levels. Further analysis would be required to fully quantify these changes.

**Table 9. Projected Capital and Annual Operating Costs — Alternative 2  
(in millions)**

	<b>Visitor Core</b>	<b>Arlington National Cemetery</b>	<b>Excursion Tours</b>	<b>Total</b>
Vehicle Fleet	\$21.78	\$7.33	\$2.04	\$31.14
Transit Stops	\$4.36	N/A	N/A	\$4.36
<b>Total Capital Costs</b>	<b>\$26.14</b>	<b>\$7.33</b>	<b>\$2.04</b>	<b>\$35.50</b>
Annual Operating Costs	\$4.93	\$1.75	\$0.89	\$7.57
<b>Projected Costs If Ridership Doubled</b>				
Vehicle Fleet	\$38.48	\$7.33	\$2.04	\$47.85
Transit Stops	\$4.36	N/A	N/A	\$4.36
<b>Total Capital Costs</b>	<b>\$42.84</b>	<b>\$7.33</b>	<b>\$2.04</b>	<b>\$52.21</b>
Annual Operating Costs	\$7.50	\$1.75	\$0.89	\$10.14

NOTE: Assumptions for costs are described on page 29.  
No costs have been developed for installing and maintaining parking meters.

## **MULTIMODAL ACCESS (SEGWAY® HT, SCOOTER, AND BICYCLE)**

In addition to existing permitted uses on park multi-use trails, recreational uses of Segway® HTs and scooters would be further allowed on designated routes. Any new commercial services (i.e., individual rentals or tours) for personal transportation would be provided by private operators off federal parkland.

### **Proposed Policies**

The following policies would be implemented for all personal transportation vehicles operating within the National Mall & Memorial Parks. All operators would be required to

- wear helmets at all times
- use a pedestrian warning device (bell) affixed to their vehicle
- secure vehicles to a bicycle rack when not in use; never leave vehicles unattended and unsecured
- yield the right-of-way to pedestrians
- obey all applicable traffic signals and traffic signs

### **Recreational Access**

#### ***Segway® HTs and Electric Scooters***

The use of Segway® HTs and electric scooters for recreational use within the National Mall &

Memorial Parks would be permitted only on designated routes along certain multi-use trails. Designated routes would include a National Mall trail with a loop option at the west end, and a West Potomac Park loop providing access to memorials in the southern portion of the Mall (see the “Alternative 2: Personal Transportation Designated Recreational Routes” map). Recreational Segway® HT and electric scooter access would also continue to be permitted on NPS sidewalks adjacent to roadways maintained by the District of Columbia (3rd, 4th, 7th, and 14th streets NW/SW). This access would continue to facilitate north-south cross-Mall travel and would connect Segway® HT and electric scooter users to the National Mall trail at various points. No access would be allowed within President’s Park, including Lafayette Park.

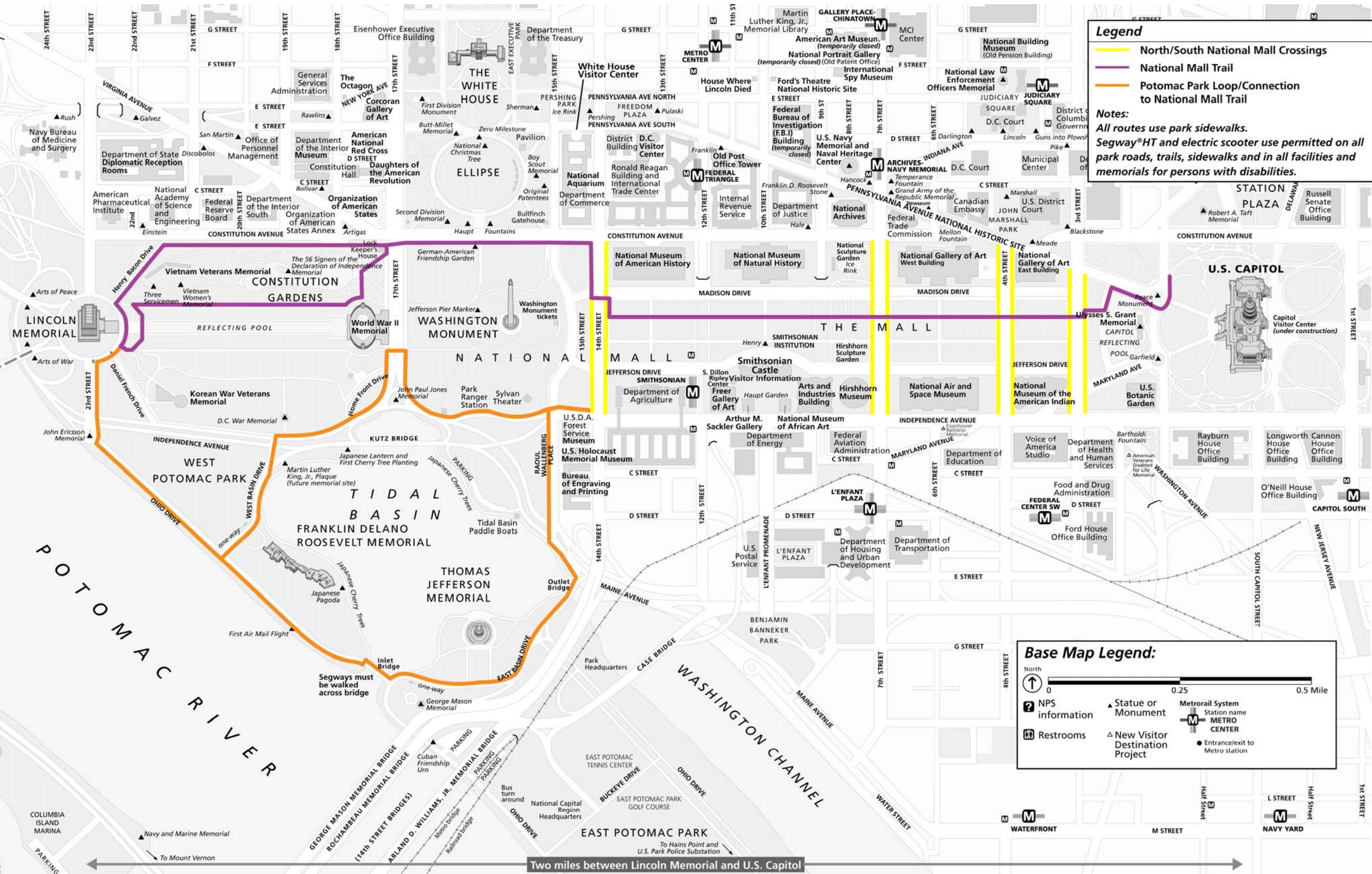
Route designation would include trail blaze signs to clearly mark appropriate Segway® HT and electric scooter use areas. Park brochures for Segway® HT and electric scooter use and policies would be developed, posted on NPS websites, and distributed to local user clubs and tour operators to ensure broad understanding and compliance.

In addition to the proposed policies, all recreational operators of Segway® HTs and electric scooters would be required to adhere to the following new use regulations:

Alternative 2: Personal Transportation Designated Recreational Routes

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- always use designated pedestrian crosswalks and specifically obey all pedestrian crossing signals
- adhere to a maximum speed limit of 8 mph
- be a minimum of 16 years old

### **Bicycles**

Bicycles would continue to be permitted on any designated multi-use trail within the National Mall & Memorial Parks. Use regulations as described above under “Proposed Policies” would also apply to all bicycle riders in park areas. As previously stated in “Planning Considerations and Assumptions,” existing bicycle racks would be upgraded and additional racks installed, with particular focus on the East Coast Greenway route.

## **TRAVEL DEMAND MANAGEMENT**

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Free parking would be converted to paid metered parking in locations along the National Mall under Alternative 2. This change would encourage greater use of local and regional transit services, rather than private vehicles, for access to the National Mall, and it could create a supplemental funding source for NPS transit operating costs, thereby reducing fares. Parking in East Potomac Park would continue to be free. Paid parking could

be based on a sliding-scale, with time restrictions to discourage all-day parking in various locations and possibly free or reduced-cost parking in the evening.

A paid parking program would be established for an estimated 1,000 parking spaces along Madison Drive NW and Jefferson Drive SW, Constitution Avenue NW (west of 15th Street NW/SW), Independence Avenue SW, Ohio Drive SW, and other select locations throughout the National Mall. On-street spaces along 3rd, 4th, and 7th streets NS/SW are not included in the estimate and are currently metered by the District of Columbia.

New parking meter technology using electronic meters that serve multiple spaces would be used to reduce impacts on resources. This type of meter allows cash or credit card payment and dispenses proof-of-payment tickets that are displayed on parked vehicles. During the implementation phase specific requirements for each metered area and application would be identified. Proposed parking meter infrastructure would meet applicable design guidelines and would use the existing palette of approved street furnishings or be compatible with them. Proposed facilities would also undergo reviews by the National Capital Planning Commission and the Commission of Fine Arts, as well as consultation with the D.C. Historic Preservation Office, as necessary.