



Appendix E: Transportation Purpose and Need



An Evaluation of the Purpose and Need
for the
Transportation Elements
in the

**General Management Plan/Environmental Impact Statement
for the
Valley Forge National Historical Park**

National Park Service
US Department of the Interior

prepared by:

Boles, Smyth Associates, Inc.

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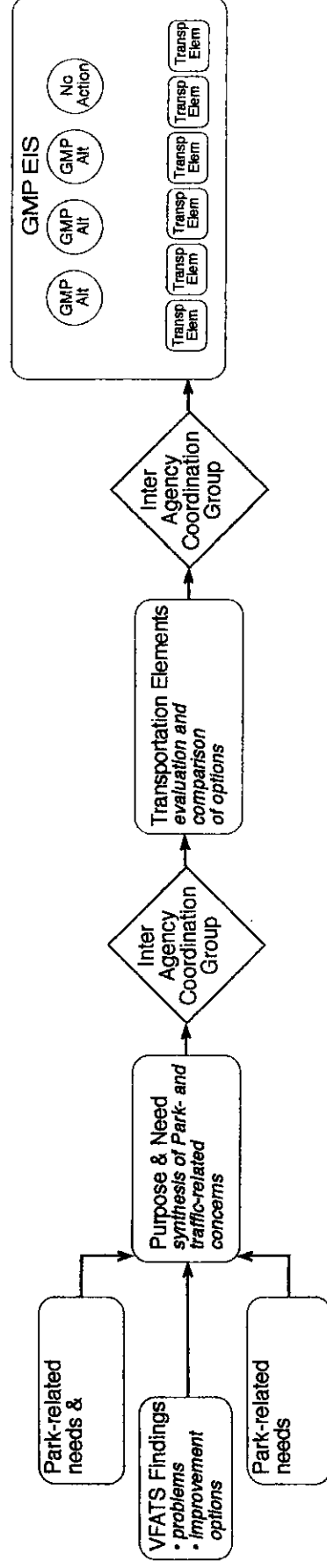
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Approach to Evaluating Purpose and Needs for the Transportation Elements in the GMP EIS



Defining purpose and need for the Transportation Elements for the GMP EIS calls for a synthesis of Park-related and traffic-related concerns, as well as in successive steps of environmental review.

I. Summary of Purpose and Need

This document is an evaluation of purpose and need for the transportation elements of the General Management Plan/ Environmental Impact Statement (GMP EIS) now being prepared by the National Park Service (NPS) for the Valley Forge National Historical Park (Park) in Montgomery and Chester Counties in Pennsylvania. The GMP EIS is being prepared to help the NPS, in consultation with the public, to determine the best resource protection and visitor experience practices for the Park, particularly in light of the imminent construction of the National Center for the American Revolution within the Park.

The inclusion of transportation elements within the GMP EIS has evolved from extensive inter-agency cooperation between NPS, the Federal Highway Administration (FHWA), the Pennsylvania Department of Transportation (PennDOT) and local and county governments to address the transportation problems and issues affecting the Park and adjacent communities. This cooperation led to joint sponsorship of a 2002 Valley Forge Area Transportation Planning Study (VFATS) which identified a range of problems, grouped them by type and then made recommendations for their remedy, based on the type of problems identified. These VFATS recommendations and the inter-agency approaches to achieving them were formalized in a December 2002 Programmatic Agreement.

The VFATS Study findings, combined with input from local officials and the public, identified a number of deficiencies and traffic-induced impacts which affect the Park, its resources, and operations key to the Park's Mission*. These conditions called for methods to better manage traffic in the Park, including possible control and/or relocation of traffic patterns, as well as mitigation of traffic impacts. A number of specific impact reduction options were suggested (named Options P1-P6). The study also suggested that since both problems and solutions were related directly to the Park, the NPS would be the most appropriate agency to lead further efforts for solutions. Therefore the GMP EIS will include transportation elements but these are not necessarily limited to the P Options in the VFATS study.

The NPS has worked with FHWA and PennDOT to define a needs evaluation for the GMP transportation elements which would address Park-related and traffic related concerns as well as the review criteria of each agency. The result is a synthesis of needs which includes: the NPS policy framework, observed traffic impacts, and increases Park visitation as components in Park-related needs, as well as the existing highway system deficiencies and projected increases in transportation demand as traffic-related needs. The documentation itself follows, in general, the overall format suggested for project needs evaluations outlined by PennDOT.

* Mission statement:

Valley Forge NHP educates the American people about one of the most defining events in our nation's history by preserving the natural and cultural resources that commemorate the encampment of the Continental Army at Valley Forge in 1777-78.

In addition to this synthetic approach to needs analysis, NPS has included both Park planning and transportation project review agencies in its interagency coordination. This is meant to allow those reviewing the transportation elements in the GMP EIS to recognize both perspectives in considering need, as well as in further stages the GMP EIS development.

Based on these evaluations and input to date, the following Statements of Purpose and Need have been defined for the Transportation Elements in the GMP EIS:

Statement of Purpose for the Transportation Elements in the GMP EIS:

- **help in meeting the Purpose and the Mission Goals of the Valley Forge National Historical Park for resource protection, visitor experience and opportunities for enhanced understanding**
- **help meet the increasing and evolving transportation demand related to the future Park activities and construction of the new National Center for the American Revolution**
- **while helping to meet Park-related transportation needs, also recognize and complement where possible and appropriate the transportation needs of adjacent communities and of the region.**

Statement of Need for the Transportation Elements in the GMP EIS

- **Reduce current traffic congestion and impacts in the park**
- **Address factors which impact safety conditions**
- **Help remedy potential impacts of future traffic increases from growing Park and NCAR visitation, as well as development in surrounding communities**
- **Help remedy impacts which could impair access for the Park and the NCAR**
- **Minimize conflicts between through traffic and Park activities**
- **Limit vehicular/bicycle/pedestrian conflicts**
- **reduce constraints on alternative transportation opportunities.**

II. Introduction

The National Park Service (NPS) is preparing an Environmental Impact Statement (EIS) for the General Management Plan (GMP) now being undertaken for the Valley Forge National Historical Park (Park) in Montgomery and Chester counties in Pennsylvania. A GMP is periodically prepared for each unit of the National Park System in order to help the NPS, in consultation with the public, to decide what resource conditions and visitor experiences a park should provide, and why. This GMP EIS will present alternatives for the future management of the Park for public review and comment.

This document is an evaluation of purpose and need for the transportation elements which are being considered in association with the EIS alternatives for the GMP. The transportation elements have evolved to address transportation problems identified in and around the Park, and which affect the Park's current conditions, mission, and future management potential.

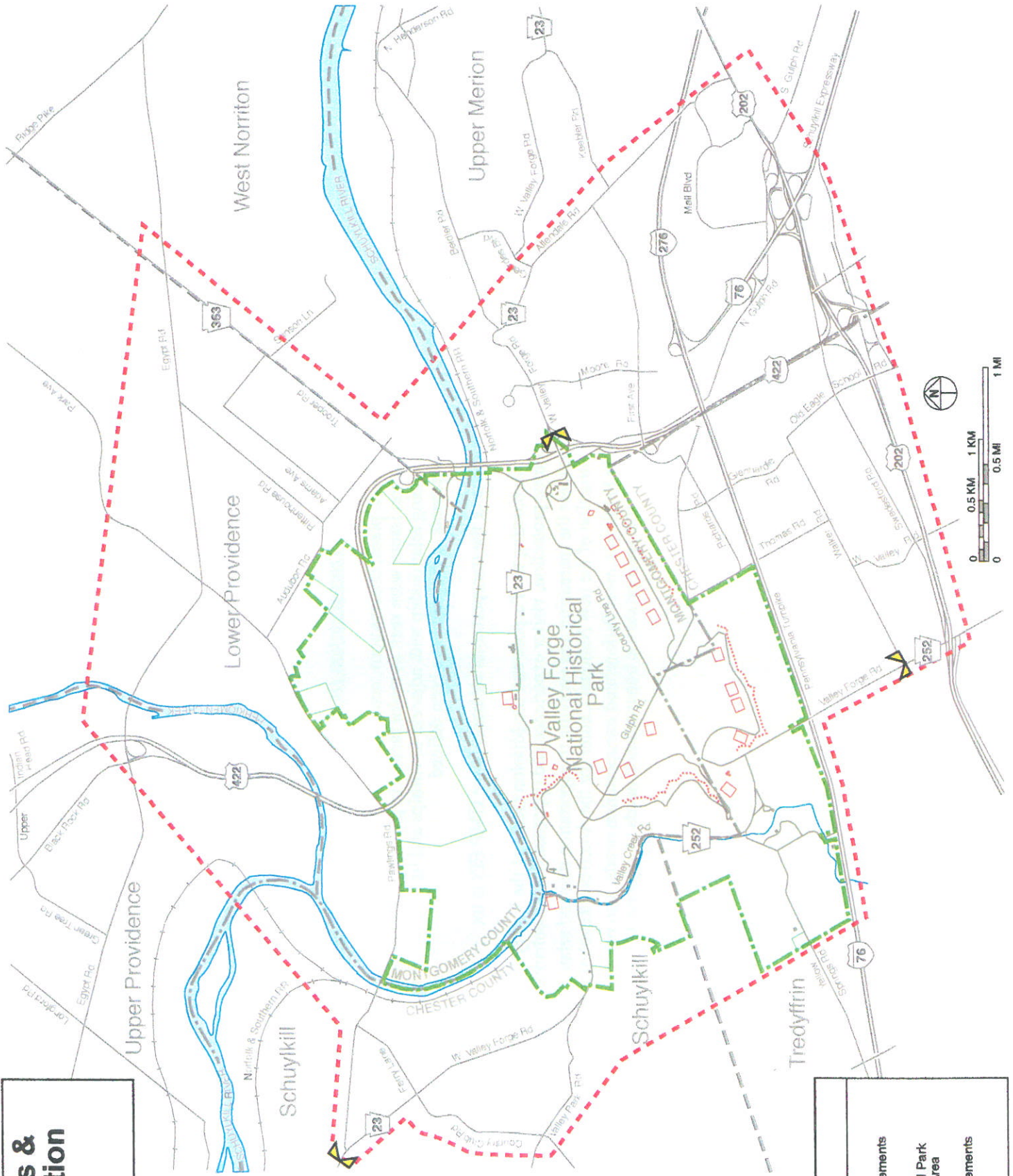
A. Purpose of the Transportation Improvements in the General Management Plan

In the studies, plans, observations, consultation and public input used as sources for the needs evaluation, transportation issues were seen as major factors in planning for the Park's future, as well optimizing the Park's ongoing relationship with adjacent townships and its role in the region. As such, the following broad statements of purpose have been defined

The purpose of the transportation elements in the GMP EIS is to:

- help in meeting the Purpose and the Mission Goals of the Valley Forge National Historical Park for resource protection, visitor experience and opportunities for enhanced understanding
- help meet the increasing and evolving transportation demand related to the future Park activities and construction of the new National Center for the American Revolution
- while helping to meet Park-related transportation needs, also recognize and complement where possible and appropriate the transportation needs of adjacent communities and of the region.

Study Areas & Transportation Element End Points



Legend

- Study Area for Transportation Elements
- Valley Forge National Historical Park GMP EIS Study Area
- End point for the Transportation Elements

B. Study Area Description

The study area for the GMP EIS is the boundary of the Valley Forge National Historical Park. However, the study area for the transportation improvements has been extended farther to:

- effectively encompass and evaluate the extent of traffic impacts which might occur with one or more of the transportation improvements
- accommodate the possibility that the transportation improvements might extend beyond the boundary of the Park
- to incorporate the full study area of the 2002 Valley Forge Area Transportation Planning Study (VFATS) with its comprehensive presentation of Park-related transportation issues

The study areas for the GMP EIS and for the transportation improvements are shown on the facing page.

C. Logical termini issues

The end points for the study of the transportation elements have been defined to allow consideration of the broadest range of meaningful improvement concepts while respecting the requirement for assuring logical termini (23 CFR 771.111(f)). (See Appendix A3 for a description of these requirements.)

The endpoints are defined in three locations where State Routes running through the Park connect into the area's roadway network. The end points are:

- the intersection of PA 23 (W. Valley Forge Rd.) and Pawlings Rd. (west of the Park)
- the intersection of PA 252 (Valley Creek Rd.) and Walker Rd. (south of the Park)
- the US 422PA 23 interchange (at the east edge of the Park and the Park's main entrance)

These end points are considered rational endpoints since they coincide with intersection points already defined in the existing roadway system. The end points also envelop all options currently being contemplated.

The intervals between the end points are a sufficient distance from one another (over a mile in each case) to allow full environmental evaluation of potential impacts. Based on their location and needs to be met, the transportation improvements can also be expected to have independent utility; they could be built and used effectively without the need for other improvements.

The transportation elements being studied are generally modifications to the existing roadway system in the study area, or are new roadway elements that expand or modify the existing system rather than replacing it. Therefore, they, or the impacts they might create, are not seen as precluding options for other reasonable, foreseeable transportation improvements. However, as the transportation elements are developed further, continuing coordination will be undertaken to insure they complement rather than conflict with—or pre-empt—other transportation projects and planning.

Valley Forge Area
Transportation Planning Study
**Summary
of Study
Recommendations**

Legend

- Bridge replacements, interchange modernizations and lane widenings to address US 422 corridor problems (These are now being forwarded as functionally independent projects in the Schuylkill River Crossing Complex)
- Roadway upgrade or realignment options (Options P1 - P6) to mitigate and/or relocate traffic impacts to less sensitive areas in the Park. (These have been incorporated as Transportation Elements in the GMP EIS by NPS.)
- Opportunities to reduce impacts and improve access with transit, intermodal facilities and traffic management (to be pursued in their host programs)
- Study area



D. Project History

The transportation elements in the GMP EIS are one result of broad-based and continuing inter-agency cooperation to identify and address the transportation problems of the Park and the surrounding area

Triggered originally from concerns about the replacement and possible impacts of the Betzwood Bridge, the National Park Service, PennDOT and the Federal Highway Administration worked together and in close consultation with local, county and regional governments to achieve the following milestones.

1. a March 2002 Memorandum of Understanding (MOU) which laid out common interest and concerns and a joint sponsorship of
2. the Valley Forge Area Transportation Planning Study (VFATS)—a comprehensive year long-effort to: 1) identify transportation problems affecting the Park and the surrounding area; 2) outline options to address the problems identified; and 3) recommend those options most promising for further development, including those which might be “early action” items.
3. a December 2002 Inter-Agency Programmatic Agreement which outlines implementation of the specific VFATS recommendations.

A brief highlighting of the VFATS observations and recommendations is appropriate for understanding how the transportation elements in the GMP EIS evolved.

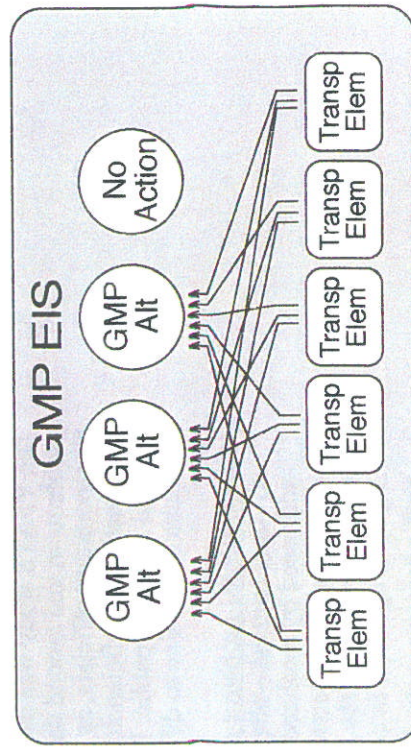
The VFATS study was laid out to identify and suggest how to address the full range of transportation problems in and around the Park. Using field observations, extensive consultation with Park and transportation officials, as well as input from adjacent townships and the public, the Study noted a combination of deficiencies and traffic impacts that affected the Park, adjacent communities and the regional traveling public. Furthermore, the Study found these could be grouped into different types of problems responsive to different types of remedies. The types of problems and their types of remedy are:

1. operational problems and congestion in the US 422 corridor which cause expressway traffic to divert to—and congest—alternate routes in the local road system. These problems can be most directly addressed by localized projects to modernize US 422 interchanges (with PA 23 and PA 363) and to replace bridges (Betzwood and US 422) in the area where US 422 crosses the Schuylkill River. *(These projects in the River Crossing Complex are being developed separately from this EIS by the highway agencies in consultation with the NPS.)*
2. traffic impacts in the Park which affect the Park and its mission. These problems, in many ways particular to the Park’s sensitive resource and visitor experience, would respond to options which control and/or relocate through traffic in the Park, as well as mitigating those the impacts identified. *(These options are included in the transportation elements in the GMP EIS being prepared by the NPS)*
3. off site (outside of the Park) improvements to transit service, alternative transportation facilities, and “intelligent transportation system” practices which might have an overall traffic relief benefit for the area. *(These improvements might be most appropriately addressed in separate programmatic approaches.)*

This summary of Study findings was the basis of overall recommendations which are illustrated on the facing page.



A July 23, 2003 "open house" on the GMP EIS conducted by the NPS. The fifth in a series of meetings which featured transportation issues, this meeting hosted several break-out sessions to discuss benefits and impacts of transportation related to the Park. With Heavy attendance by residents from adjacent communities, the dialogue will be helpful in defining both benefits and potential impacts of improvement options being considered.



The GMP EIS is structured with differing General Management Plan scenarios as the primary EIS alternatives and the Transportation Elements as improvement options where one or more might be incorporated into the preferred EIS alternative. This allows greater flexibility in devising the most effective GMP (as shown by the possible arrow combinations).

E. Public Involvement

Starting with the VFATS study, the transportation issues in the Park and the surrounding area have been the subject of continuous consultation with local and county government, as well as the subject of several public meetings. This has included: Upper Merion; West Norriton; Lower Providence; Schuylkill; and Tredyffrin Townships; and Montgomery and Chester Counties.

A public “open house” was held at the Park for the VFATS study on June 25, 2002, following distribution of a public notice/informational newsletter. Transportation issues were also major discussion items at additional public “open house” meetings for the GMP EIS held on: March 13 and October 23, 2002 and February 26 and July 23, 2003.

Public input has produced a range of individual viewpoints and concerns, but also there were prevailing sentiments expressed that:

- transportation issues are understandably high-level concerns in Park planning
- traffic problems in the Park often relate to—or are the same as—traffic problems in adjacent areas
- traffic solutions are also likely to be inter-related between the Park and neighboring areas.

The volume and character of the commentary will provide valuable input for developing and then evaluating the range of transportation elements in the GMP EIS.

F. Methodology

The transportation elements in the GMP EIS represent a special circumstance in terms of the approach to this needs evaluation and subsequent environmental review.

First, the primary alternatives in the GMP EIS are differing overall approaches to future Park development and management for resource protection and the visitor experience. Transportation improvements will be important to the effectiveness of the selected GMP EIS alternative. However the transportation elements will be a range of improvement options (instead of primary EIS alternatives), one or more of which might be forwarded as part of the selected GMP EIS alternative for overall Park management. Maintaining this flexibility in the EIS process reflects the “real world” adaptability the transportation elements should have for different EIS alternatives—key for the effectiveness of the GMP.

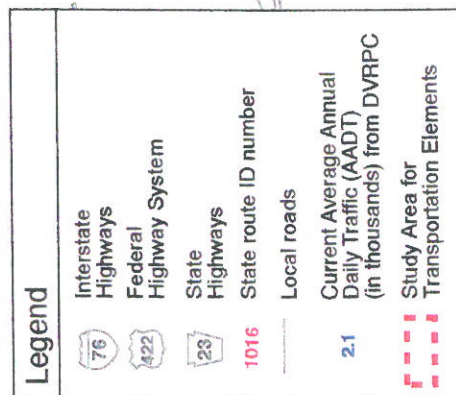
Second, for several reasons, the environmental review of the transportation elements is meant to incorporate the procedural approaches for both Park planning and transportation project development. While the NEPA principles are similar for all Federal agencies, the detailed procedures for environmental review differ. Therefore, as the lead agency in this EIS, NPS as been working closely with FHWA and PennDOT to synthesize procedures for a combined environmental review (including the purpose and needs evaluation) that will, to the degree possible, meet the requirements of each agency and minimize duplication and delay. Just as the procedures have been synthesized, the interagency review group has been expanded to include both park and transportation review representatives.

As a result, the reviewer of this needs evaluation will note the inclusion of a substantial number of Park-related issues and criteria within the overall format normally used for proposed transportation projects.

Highway Traffic Data

The map displays the following locations and features:

- Locations:** West Norriton, Upper Merion, Valley Forge National Historical Park, Schuylkill, Tredyffrin, Lower Providence, Upper Providence.
- Highways:** 422, 202, 76, 302, 3009, 3039, 3020, 3022, 3023, 3024, 3025, 3026, 3027, 3028, 3029, 3030, 3031, 3032, 3033, 3034, 3035, 3036, 3037, 3038, 3039.
- Traffic Data Points (AADT):** 15.2, 16.4, 16.8, 17.1, 17.5, 17.9, 18.7, 19.0, 20.1, 20.5, 21.3, 21.7, 22.2, 22.8, 23.1, 23.5, 24.0, 24.5, 25.0, 25.5, 26.0, 26.5, 27.0, 27.5, 28.0, 28.5, 29.0, 29.5, 30.0, 30.5, 31.0, 31.5, 32.0, 32.5, 33.0, 33.5, 34.0, 34.5, 35.0, 35.5, 36.0, 36.5, 37.0, 37.5, 38.0, 38.5, 39.0, 39.5, 40.0, 40.5, 41.0, 41.5, 42.0, 42.5, 43.0, 43.5, 44.0, 44.5, 45.0, 45.5, 46.0, 46.5, 47.0, 47.5, 48.0, 48.5, 49.0, 49.5, 50.0, 50.5, 51.0, 51.5, 52.0, 52.5, 53.0, 53.5, 54.0, 54.5, 55.0, 55.5, 56.0, 56.5, 57.0, 57.5, 58.0, 58.5, 59.0, 59.5, 60.0, 60.5, 61.0, 61.5, 62.0, 62.5, 63.0, 63.5, 64.0, 64.5, 65.0, 65.5, 66.0, 66.5, 67.0, 67.5, 68.0, 68.5, 69.0, 69.5, 70.0, 70.5, 71.0, 71.5, 72.0, 72.5, 73.0, 73.5, 74.0, 74.5, 75.0, 75.5, 76.0, 76.5, 77.0, 77.5, 78.0, 78.5, 79.0, 79.5, 80.0, 80.5, 81.0, 81.5, 82.0, 82.5, 83.0, 83.5, 84.0, 84.5, 85.0, 85.5, 86.0, 86.5, 87.0, 87.5, 88.0, 88.5, 89.0, 89.5, 90.0, 90.5, 91.0, 91.5, 92.0, 92.5, 93.0, 93.5, 94.0, 94.5, 95.0, 95.5, 96.0, 96.5, 97.0, 97.5, 98.0, 98.5, 99.0, 99.5, 100.0, 100.5, 101.0, 101.5, 102.0, 102.5, 103.0, 103.5, 104.0, 104.5, 105.0, 105.5, 106.0, 106.5, 107.0, 107.5, 108.0, 108.5, 109.0, 109.5, 110.0, 110.5, 111.0, 111.5, 112.0, 112.5, 113.0, 113.5, 114.0, 114.5, 115.0, 115.5, 116.0, 116.5, 117.0, 117.5, 118.0, 118.5, 119.0, 119.5, 120.0, 120.5, 121.0, 121.5, 122.0, 122.5, 123.0, 123.5, 124.0, 124.5, 125.0, 125.5, 126.0, 126.5, 127.0, 127.5, 128.0, 128.5, 129.0, 129.5, 130.0, 130.5, 131.0, 131.5, 132.0, 132.5, 133.0, 133.5, 134.0, 134.5, 135.0, 135.5, 136.0, 136.5, 137.0, 137.5, 138.0, 138.5, 139.0, 139.5, 140.0, 140.5, 141.0, 141.5, 142.0, 142.5, 143.0, 143.5, 144.0, 144.5, 145.0, 145.5, 146.0, 146.5, 147.0, 147.5, 148.0, 148.5, 149.0, 149.5, 150.0, 150.5, 151.0, 151.5, 152.0, 152.5, 153.0, 153.5, 154.0, 154.5, 155.0, 155.5, 156.0, 156.5, 157.0, 157.5, 158.0, 158.5, 159.0, 159.5, 160.0, 160.5, 161.0, 161.5, 162.0, 162.5, 163.0, 163.5, 164.0, 164.5, 165.0, 165.5, 166.0, 166.5, 167.0, 167.5, 168.0, 168.5, 169.0, 169.5, 170.0, 170.5, 171.0, 171.5, 172.0, 172.5, 173.0, 173.5, 174.0, 174.5, 175.0, 175.5, 176.0, 176.5, 177.0, 177.5, 178.0, 178.5, 179.0, 179.5, 180.0, 180.5, 181.0, 181.5, 182.0, 182.5, 183.0, 183.5, 184.0, 184.5, 185.0, 185.5, 186.0, 186.5, 187.0, 187.5, 188.0, 188.5, 189.0, 189.5, 190.0, 190.5, 191.0, 191.5, 192.0, 192.5, 193.0, 193.5, 194.0, 194.5, 195.0, 195.5, 196.0, 196.5, 197.0, 197.5, 198.0, 198.5, 199.0, 199.5, 200.0, 200.5, 201.0, 201.5, 202.0, 202.5, 203.0, 203.5, 204.0, 204.5, 205.0, 205.5, 206.0, 206.5, 207.0, 207.5, 208.0, 208.5, 209.0, 209.5, 210.0, 210.5, 211.0, 211.5, 212.0, 212.5, 213.0, 213.5, 214.0, 214.5, 215.0, 215.5, 216.0, 216.5, 217.0, 217.5, 218.0, 218.5, 219.0, 219.5, 220.0, 220.5, 221.0, 221.5, 222.0, 222.5, 223.0, 223.5, 224.0, 224.5, 225.0, 225.5, 226.0, 226.5, 227.0, 227.5, 228.0, 228.5, 229.0, 229.5, 230.0, 230.5, 231.0, 231.5, 232.0, 232.5, 233.0, 233.5, 234.0, 234.5, 235.0, 235.5, 236.0, 236.5, 237.0, 237.5, 238.0, 238.5, 239.0, 239.5, 240.0, 240.5, 241.0, 241.5, 242.0, 242.5, 243.0, 243.5, 244.0, 244.5, 245.0, 245.5, 246.0, 246.5, 247.0, 247.5, 248.0, 248.5, 249.0, 249.5, 250.0, 250.5, 251.0, 251.5, 252.0, 252.5, 253.0, 253.5, 254.0, 254.5, 255.0, 255.5, 256.0, 256.5, 257.0, 257.5, 258.0, 258.5, 259.0, 259.5, 260.0, 260.5, 261.0, 261.5, 262.0, 262.5, 263.0, 263.5, 264.0, 264.5, 265.0, 265.5, 266.0, 266.5, 267.0, 267.5, 268.0, 268.5, 269.0, 269.5, 270.0, 270.5, 271.0, 271.5, 272.0, 272.5, 273.0, 273.5, 274.0, 274.5, 275.0, 275.5, 276.0, 276.5, 277.0, 277.5, 278.0, 278.5, 279.0, 279.5, 280.0, 280.5, 281.0, 281.5, 282.0, 282.5, 283.0, 283.5, 284.0, 284.5, 285.0, 285.5, 286.0, 286.5, 287.0, 287.5, 288.0, 288.5, 289.0, 289.5, 290.0, 290.5, 291.0, 291.5, 292.0, 292.5, 293.0, 293.5, 294.0, 294.5



III. Existing Transportation Situation

The Valley Forge National Historical Park (Park), a historic and natural resource of regional and national importance, is located within two miles of the region's largest suburban office and retail complex, as well as the most concentrated convergence of expressways in the region. As a result, transportation issues are closely related to the Park, its operations, and its potential to protect resources and enhance the visitor experience in the future.

This section of the needs documentation provides basis information on existing highway system, transit services, and alternative transportation networks. Transportation and traffic conditions are also characterized in terms of: existing traffic volumes; transportation Level of Service in key intersections; and locations where routine congestion has been observed.

This section also indicates existing transportation deficiencies, both in overall terms from information drawn from the VFATS study as well with sample photographs to illustrate the types of transportation problems and traffic now affecting the Park.

A. Existing Highway System

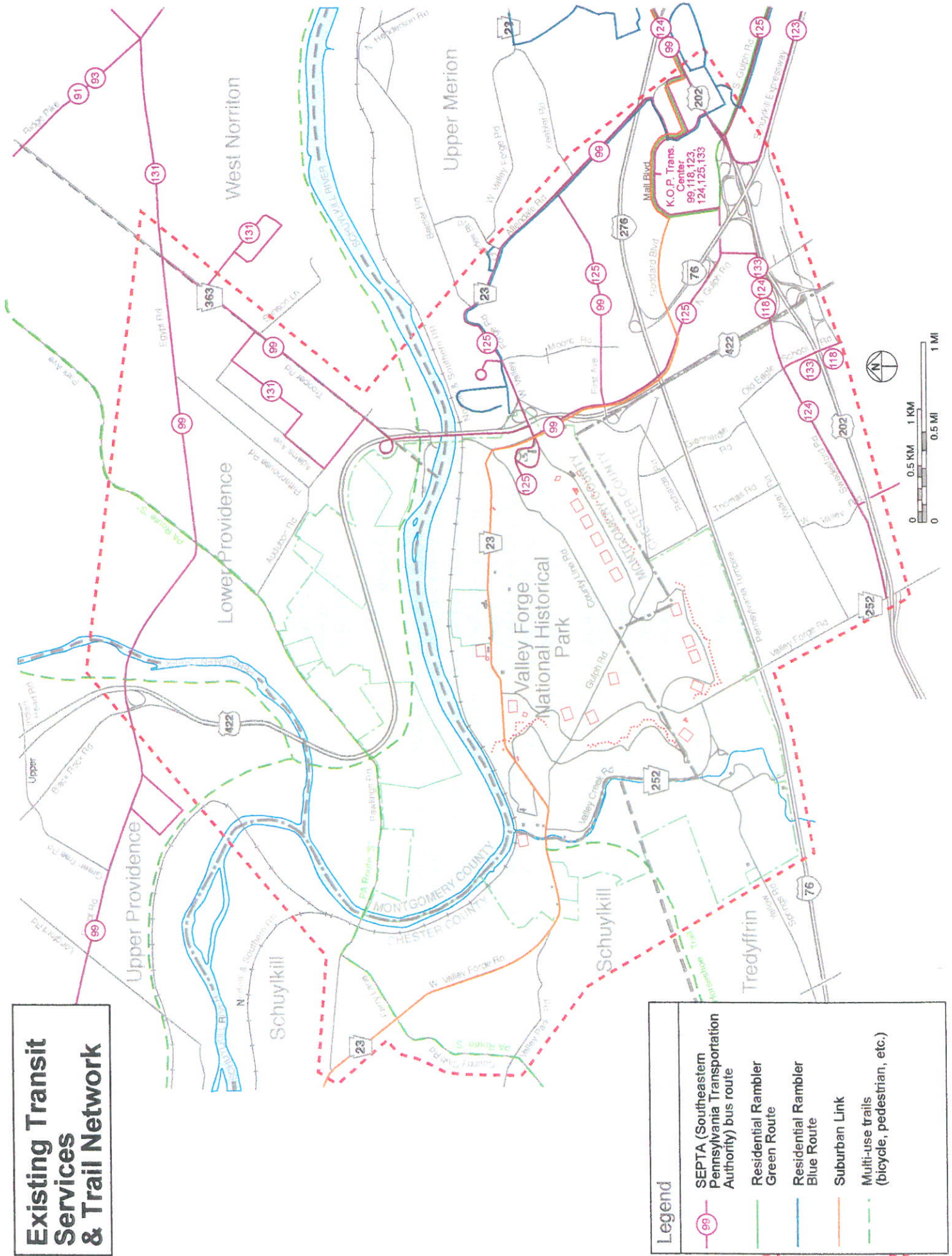
The Valley Forge National Historical Park is located adjacent to a key focal point in the regional highway network, located just northwest of the confluence of the Pennsylvania Turnpike (I-276), the Schuylkill Expressway (I-76), US 202, and the Pottstown Expressway (US 422). US 422 runs along the eastern edge of the Park, and two of its interchanges (which connect with State Routes PA 23 and 363, respectively) lie adjacent to or within the Park's boundaries. The US 422/PA 23 interchange also connects to the Park's main entrance and is adjacent to Park Headquarters and the Visitor Center. There are six State Routes passing through the Park (PA 23, PA 252, County Line Rd. (SR 3022), Gulph Rd. (SR 3031), Yellow Springs Rd. (SR 1016) and N. Gulph Rd. (SR 3039)).

Current traffic volumes for highways in the study area have been derived from PennDOT and DVRPC sources and are shown as Average Annual Daily Traffic (AADT) on the facing page. The volumes show how the expressway system carries the preponderance of traffic, primarily regional and commutation in function. Volumes on the state route and arterials vary, based on capacity, connectivity and proximity to the expressway system as well as their collector function with the local street network.

Transportation planning for the GMP EIS must recognize that a Park established for its cultural and natural resources is located at one of the region's major traffic and economic vortices. It is estimated that currently over 325,000 vehicles pass through on the regional expressway complex (I-76, I-276, US 422 and US 202) that interconnects within the shadow of the Park. Four of the State Routes passing through the Park (PA 23, PA 252, County Line Rd. and Gulph Rd.) carry a total of over 23,000 vehicles/day. Volumes for each road can be seen on the facing map. Of these, PA 23 and PA 252 carry substantial amounts of through traffic as well as Park visitors and users

Crash data related to PA 23 within the Park are shown in Appendix C.

Existing Transit Services & Trail Network



B. Transit and Alternative Transportation

The Valley Forge National Historical Park has limited transit connections, but the adjacent area includes several transit routes and services. The Southeastern Pennsylvania Transportation Authority (SEPTA) Route 125 stops weekdays at the Park's Visitor Center in its run to suburban transit service hubs (at King of Prussia and Gulph Mills) and on to Center City Philadelphia. Other SEPTA bus routes serve areas around the Park, as do shuttle routes sponsored by local townships, the Greater Valley Forge Transportation Management Association, or through transportation partnerships.

The Valley Forge National Historical Park contains a network of pedestrian, equestrian and multi-use trails which are key to the extensive recreational use of many of the Park's visitors. The Park is also a destination on the Schuylkill River Trail, a 25-mile multi-use facility extending alongside the Schuylkill River from Fairmount Park in central Philadelphia through the Valley Forge Park and on to Oaks in Montgomery County.

The use and extent of the multi use trail system should not be underestimated. Informal surveys by NPS of trail use note that parking lots are routinely full near the trail connections where bicyclists depart, indicating hundreds of riders to or from the Park on both weekdays and weekends. Based on current use patterns (estimated at 250,000/year), Montgomery County predicts an increase to 300,000 riders/year as the Schuylkill Valley trail is recognized as continuous and complete between Philadelphia and Oaks.

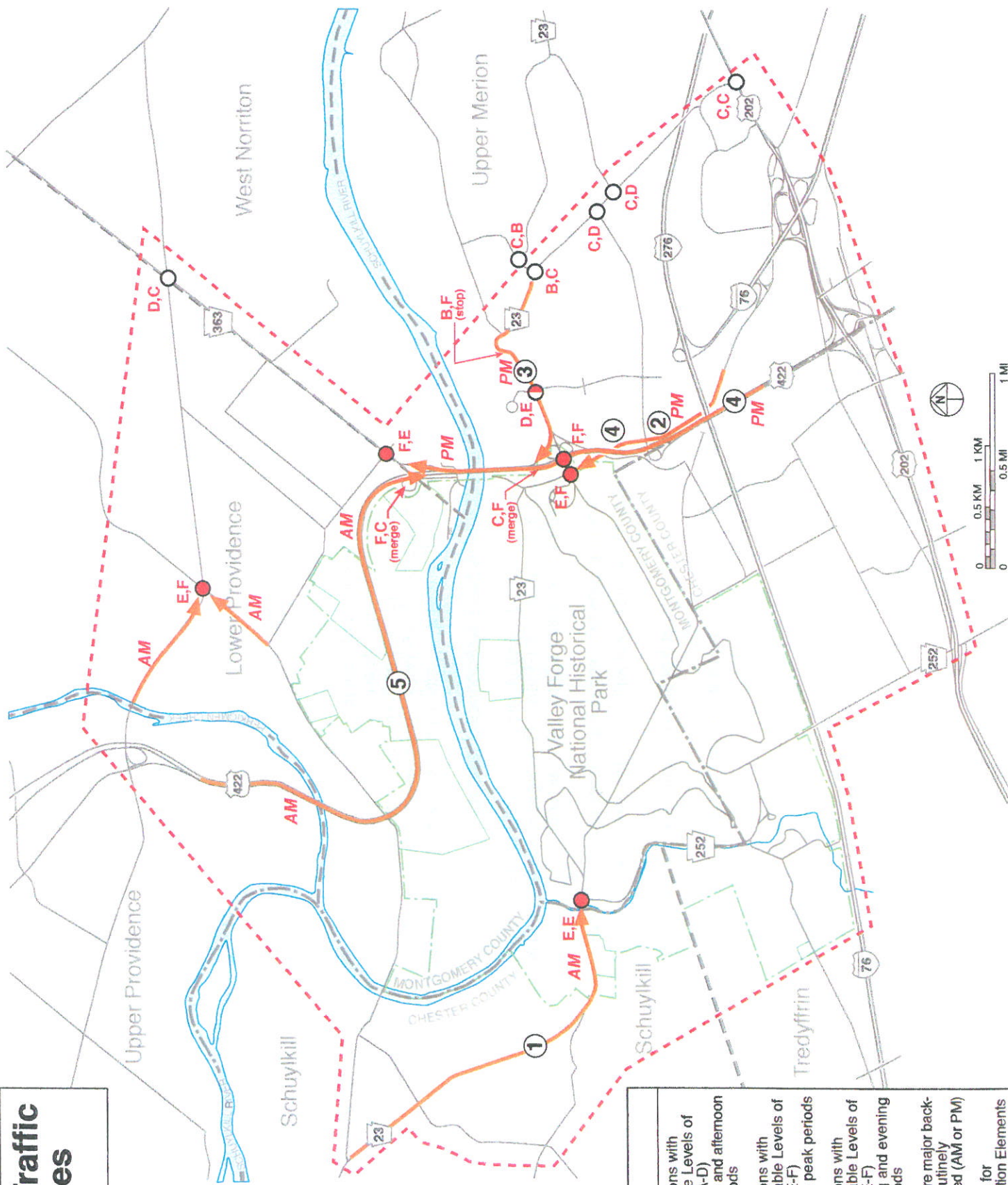
C. Current travel demand management initiatives

The study area is within the area of responsibility for the Greater Valley Forge Transportation Management Association (GVFTMA). This organization has been active in a broad range of voluntary and partnership travel demand efforts which include:

- information and corporate outreach programs to foster demand reduction efforts
- setting up and running local and shuttle transportation services with local governments and corporate participation
- a series of promotional and publicity efforts to promulgate travel reduction benefits

The GVFTMA has been an active participant in the VFATS Steering Committee and in address Park/transportation issues.

Existing Traffic Deficiencies



Legend	
○ AM, PM	Intersections with acceptable Levels of Service (A-D) in morning and afternoon peak periods
◐ AM, PM	Intersections with unacceptable Levels of Service (E-F) in evening peak periods
● AM, PM	Intersections with unacceptable Levels of Service (E-F) in morning and evening peak periods
AM or PM	areas where major back-ups are routinely experienced (AM or PM)
→	study area for Transportation Elements

D. Deficiencies observed in current transportation patterns

A basic charge of the Valley Forge Area Transportation Planning Study was to identify the range of transportation problems in and around the Park. The discussion of deficiencies and problems is divided between:

- deficiencies and congestion in the US 422 corridor and the study area
 - deficiencies and traffic impacts in the Park which affect resources and activities related to its mission
- The map on the facing page characterizes the current transportation conditions in the US 422 corridor and study area in terms of Levels of Service at key intersections, as well as locations where major congestion and substantial delay occur routinely.

It can be seen that US 422 is subject to serious congestion (eastbound in the AM, and westbound in the PM). This relates to capacity and operational problems with the US 422 interchanges (with PA 23 and PA 363, respectively) on both sides of its crossing of the Schuylkill River. These problems are further indicated by failing Levels of Services (LOS F) in the intersections and ramp merges within those interchanges, and have been identified in field observations. Traffic trying to avoid the congestion on US 422 diverts to local roads, resulting in surcharges of more non-local traffic and additional congestion affecting the Park, adjacent communities and the regional driving public alike.

Analysis during the VFATS study indicated that many of the congestion problems on US 422 could be effectively addressed with targeted and functionally independent projects to:

- modernize the US 422 interchanges with PA 363 and PA 23
- upgrade the Schuylkill River crossings with a Replacement Betzwood Bridge and the ultimate replacement of the US 422 bridge. (They are being forwarded now independently of this GMP EIS but in consultation with NPS.)

The descriptions for congestion conditions numbered on the map on the facing page are:

1. congestion related to side road access, trucks along with capacity limitations at PA 252
2. congestion related to the northbound lane drop on N. Gulph Rd. after passing under the US 422 viaduct, as well as the traffic interlock in the US 422/PA 23 interchange
3. congestion related to the section bounded by northbound stop sign at Mancill Mill Rd. and ramp merge conflicts at US 422
4. congestion related to US 422 westbound weave condition at the PA 23 loop ramps, heavy traffic merge with the on ramp from PA 23, and capacity/weave conditions on the US 422 bridge
5. congestion related to heavy US 422 eastbound traffic merge with the on ramp from PA 363, limited acceleration lane and capacity/weave limitations on the US 422 bridge

The surrounding locales and the LOS failures impact the Park itself, both directly and indirectly. The deficiencies and impacts related more to the Park are discussed in the following section.

[illegible]

conflicts between traffic,
Park activities and users
impacts to viewshed
offset intersections
impact turns and
pedestrian activities
difficult geometric
conditions
study area

>

10

E. Deficiencies and Impacts Related to the Park

Traffic and transportation problems in the US 422 corridor and the study are noted in the previous pages are a precursor for more direct, Park-related problems. The overburden of through traffic in the Park, including trucks, constitutes a portion of the impacts affecting the Park's resources, interpretive activities and the quality of the visitor experience.

The problems of through traffic are aggravated by the geometry of the State Routes PA 23 and PA 252 within the Park, which were laid out well before the advent of the automobile. Constrained lane and turning conditions in the PA 23/PA 252 intersection cause back-ups and impacts adjacent to the Washington Headquarters area, a key historic resource.

The observations of traffic evidenced the following:

- difficult adjacencies between traffic and pedestrians, bicyclists, walking tour groups, and recreational users throughout the PA 23 corridor
- visual impacts of traffic in key viewsheds throughout the PA 23 corridor and the PA 23/252 intersection area
- congestion constraining recreational and visitor circulation in the east end of the PA 23 corridor in the vicinity of the Visitor Center, the Washington's Headquarters area, and the Memorial Arch area
- noise interfering with external interpretive activities along PA 23
- difficult turning conditions in several intersections along PA 23 due to heavy, fast moving traffic

The following pages include photographs to illustrate examples of some of the deficiencies and traffic conditions that impact Park resources and operations.

Examples of Park-related problems



Photo 1: The sharp turns and steep grades on PA 23 can be difficult driving, especially for trucks. The temporary barrier fence in the foreground outlines the spill area from a tanker which overturned just weeks before this photo was taken last year.



Photo 2: Most of the traffic in the park is through traffic. When heavy traffic and congestion occurs (as seen here at the PA 23/PA 252 intersection), it delays residents and commuters while hindering the movements of park visitors. This sort of traffic also impacts nearby facilities and activities key to the park's preservation and educational mission.



Photo 3: Looking east towards PA 252 and the one-lane covered bridge on Yellow Springs Rd. over Valley Creek. The narrow width of the bridge and the roadway curves approaching the entrances on either side now force the driver to proceed in a cautious manner, resulting in a traffic "calming" effect. Pedestrian activity and ways to minimize conflicts with auto traffic are key to effective improvements in the PA 252 corridor.



Photo 4: Looking northwest at PA 23 traffic from the Grand Parade in the park. This view indicates how traffic can be visually jarring in some of the park's best vistas—even at long distances, and thereby impact the interpretive experience for park visitors.

Examples of Park-related problems



Photo 5: Looking east at the Pawlings Rd. underpass and the Norfolk & Southern railroad bridge where the substandard 10'-3" clearance limits use of the road by larger trucks, forcing them onto other roads such as PA 23 through the park.



Photo 7: Traffic is evident in even the most symbolic and tranquil locations in the Park, as seen here where Gulph Rd. passes by the Memorial Arch, and introduces pedestrian traffic conflicts.



Photo 6: Vehicles on PA 23 often pass close by pedestrians, bicyclists, joggers and baby carriage-pushers (as can be seen here with a Connecticut school group walking near the Washington Memorial Chapel). These conflicts compromise safety and the tranquility needed for certain interpretive settings as well as the peace and quiet neighbors seek in the park as a place to relax.



Photo 8: Park access for the many bicyclists and pedestrians using the Schuylkill Valley Trail is now limited to this narrow path beside expressway traffic on the US 422 bridge over the Schuylkill River. Future trail planning may look to more linkage than will be provided by the Replacement of Belzwood Bridge parallel to US 422.

IV. Current and Future Planning, Socioeconomic and Community Conditions

Defining the needs for the Transportation Elements in the GMP EIS from the Park perspective requires exploration of the policy framework of NPS practices in general and for the Valley Forge National Historical Park in particular.

A. Policy Framework for Defining Park-Related Transportation Needs

Planning for the Park was the central factor in determining needs for the transportation elements in the GMP EIS. The GMP planning process, undertaken periodically (every 10-20- years) for all NPS parks, in consultation with the public, helps NPS decide what resource conditions and visitor experiences a park should provide, and why.

All GMP's consider: preservation of a park's resources, facilities development for public enjoyment and use, the park's carrying capacities for visitors, and possible boundary modifications. To create an effective GMP, the park must clearly define and understand its purpose, significance, mission and mission goals. Those for the Valley Forge National Historical Park have been devised through a comprehensive process, and will be described in detail in the upcoming EIS documentation. However, they are summarized below to provide the framework for defining Park related needs for the transportation elements in the GMP.

The **Statement of Park Purpose** explains the reasons for Congressional action to establish the park, as well as providing the fundamental criterion against which the appropriateness of all plan recommendations and future operational decisions and actions are tested

The purpose of Valley Forge National Historical Park is to educate and inform present and future generations about the sacrifices and achievements of General George Washington and the Continental Army at Valley Forge, and the people, events, and legacy of the American Revolution, through preservation of the cultural and natural resources that embody and commemorate the Valley Forge experience and the American Revolution, and provision of opportunities for enhanced understanding.

The **Statement of Park Significance** identifies key resources and the Park's importance. It also helps set priorities and direction for resource management and the visitor experience

Valley Forge National Historical Park is nationally significant as the location of the 1777-78 winter encampment of the Continental Army under General George Washington. Few places evoke the spirit of patriotism and independence, represent individual and collective sacrifice or demonstrate the resolve, tenacity and determination of the people of the United States to be free as does Valley Forge. The historic landscapes, structures, objects, and archeological and natural resources at Valley Forge are tangible links to one of the most defining events in our nation's history. Here the Continental Army under Washington's leadership emerged as a cohesive and disciplined fighting force. The Valley Forge experience is fundamental to both American history and American myth, and remains a source of inspiration for Americans and the world.

Mission Statement and Mission Goals:

A park's mission is a vision for the future and articulates, in broad terms, the ideas that the NPS strives to achieve.

Valley Forge NHP educates the American people about one of the most defining events in our nation's history by preserving the natural and cultural resources that commemorate the encampment of the Continental Army at Valley Forge in 1777-78.

Four mission goals for the park have been defined to articulate in broad terms the ideal conditions the park and its partners will strive to attain. They are:

Mission Goal 1: *Preserve Park Resources. Significant resources (cultural landscapes, buildings, monuments, structures, archeological sites, artifacts and archives, and natural resources) are preserved, rehabilitated, or restored, maintained in good condition, and managed within the broader ecosystem and cultural context.*

This Mission Goal underscores the importance of the Park's resources and the measures to protect them. A logical construct of this goal is the importance of efforts to reduce impacts on the resources, such as the impacts of traffic that were detailed in the previous section.

Mission Goal 2: *Provide for public use, enjoyment, and experience of the park. Visitors understand and appreciate the history of Valley Forge. Visitors safely enjoy and are satisfied with the availability, accessibility, and quality of park programs, facilities, services, and appropriate recreational opportunities.*

This Mission Goal focus on optimizing the visitor experience, noting quality safety, availability and accessibility. As in Mission goal 1, the currently observed impacts of traffic in the Park compromise this objective. Inadequate, misused and poorly operating transportation facilities also can detract from this basic mission goal

Mission Goal 3: *Strengthen and preserve natural and cultural resources and enhance recreational opportunities managed by partners.*

(This Mission Goal is not directly related to transportation need)

Mission Goal 4: *Ensure Organizational Effectiveness. Valley Forge NHP increases its operational capacity through cooperative efforts with public and private entities that share the park's mission to preserve park resources and interpret cultural and natural history.*

This mission goal stresses cooperation in mission objectives. It is a valid direction for developing the transportation elements as well; transportation improvements beyond Park boundaries will require consensus and cooperation from adjacent communities and/or organizations.

The GMP EIS alternatives (for the overall Park experience, resource management, facility development and operations) will consist of differing ways in which these mission goals might be achieved. The

statements of purpose, significance, mission and mission goals above also help provide the basis (in conjunction with observed deficiencies) for defining the need from the Park planning perspective for transportation elements in the GMP EIS.

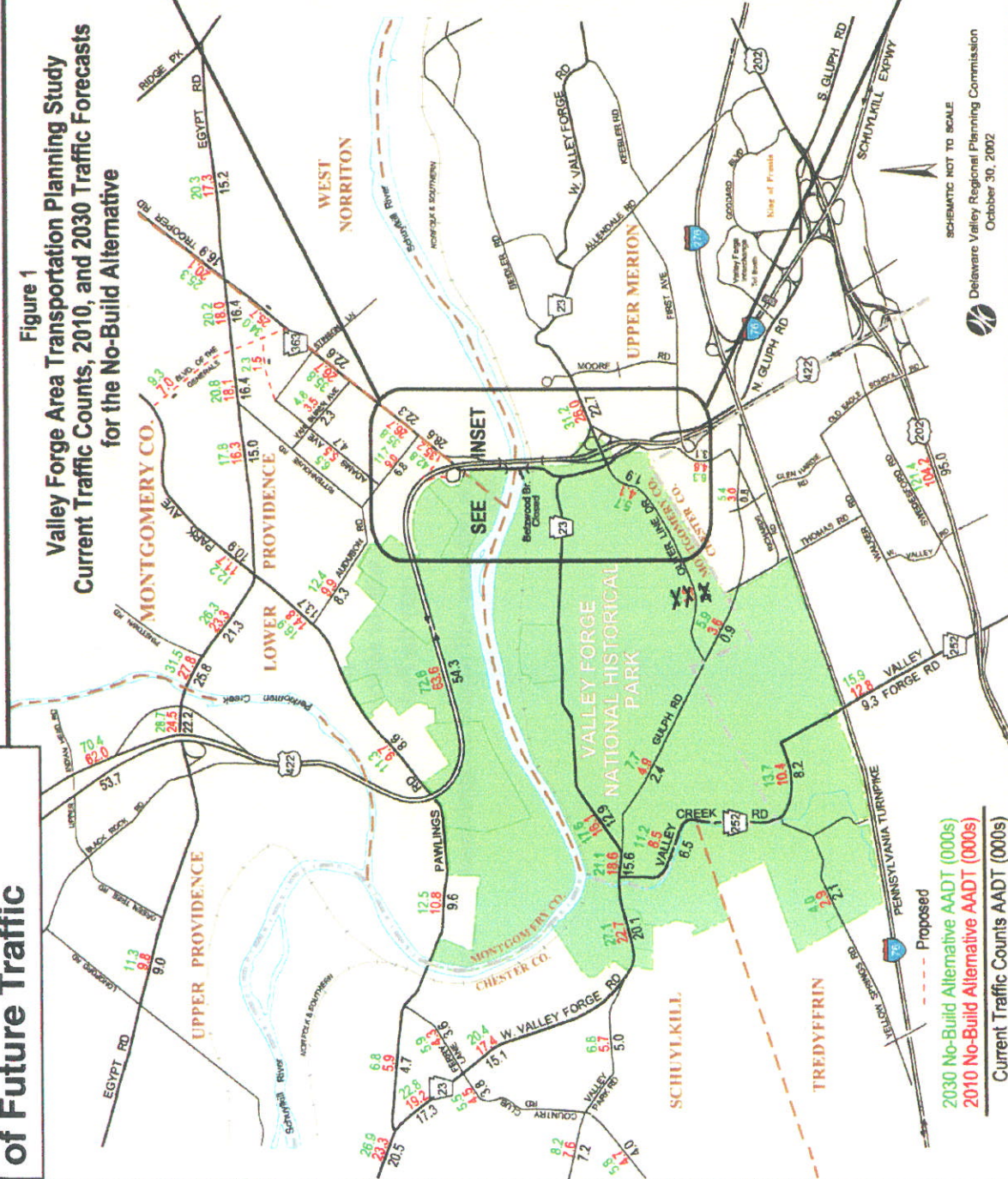
B. The local and regional planning context

Beyond the Park's own planning process, the Park is recognized as a permanent and important element in the planning work of adjacent local, county and regional entities. Adjacent townships and the counties have been consulted continuously on these matters in preparing the VFATS, and again in the development of the GMP in general and the transportation elements of the GMP in particular. (A list of coordinating meetings on the transportation elements is included as Appendix 1). The meetings have touched upon a number of varying and specific local issues, but, in summary, they have evidenced:

- the Park is a key open space/recreational resource with both local and regional significance in an otherwise rapidly developing area
- Park visitation, particularly with the new National Center for the American Revolution, is understood to be an increasingly important generator for both local and regional economies
- Park-generated traffic is likely to increase, just as it will for adjacent township and the area as a whole
- traffic congestion in and around the Park impacts not only the Park but also adjacent communities and regional mobility
- similarly, solutions to identified transportation problems will require a complementary approach of benefit to both the Park as well as its neighbors

DVRPC Projections of Future Traffic

Figure 1
Valley Forge Area Transportation Planning Study
Current Traffic Counts, 2010, and 2030 Traffic Forecasts
for the No-Build Alternative



This is a copy of the October 2002 DVRPC graphic showing its traffic projections for Year 2010 and Year 2030 "No Build" Scenarios. (The crossed out numbers along Outer Line Dr. are in question and are, therefore, shown as deleted with the understanding of DVRPC.)

V. Future Transportation Demand

A. Travel demand related to Park visitation

As required in all GMPs, Park planning is considering the carrying capacity of the cultural and natural resources vs. the potential growth in visitorship. This is particularly important with the planned construction of the National Center for the American Revolution in the Park, as well as more general patterns of increasing tourism in the metropolitan area and continuing development in the surrounding area. Park planners estimate as many as 700,000 additional visitors with the new Center, and the increased demand for more recreational use with more development nearby is also well recognized.

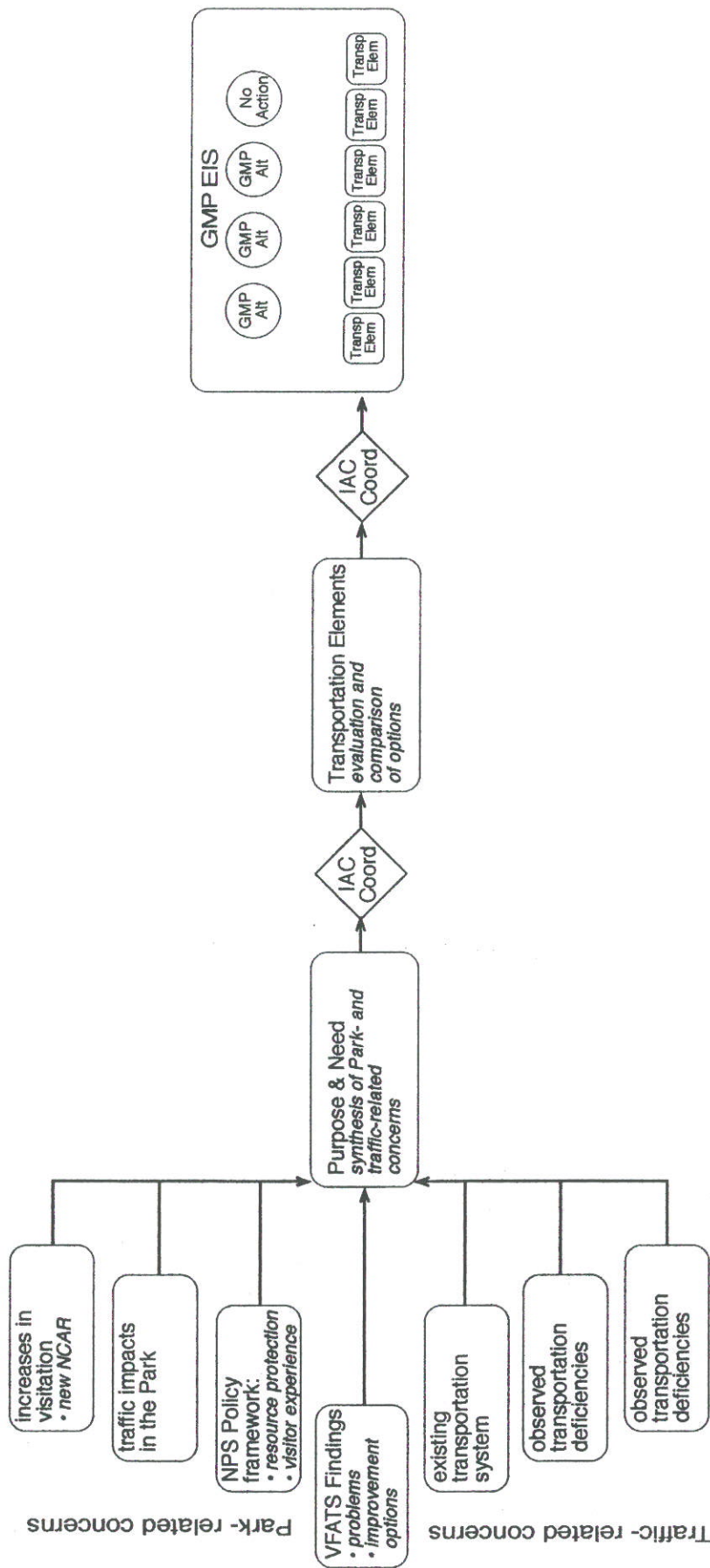
B. Recognizing future growth and its demands

Transportation planning for the area and the region is highly attentive to the increase in transportation demand for the Park and the surrounding communities. The Delaware Valley Regional Planning Commission (DVRPC), designated as the cognizant MPO (metropolitan planning organization), projects through their regional transportation model traffic growth through the Design Year 2030. It ranges from a 35% average on the expressways to a 60% average over a wide range of the local roadways. These are projected for a No Build condition (which assumes no future construction beyond that which is already programmed). In terms of traffic in the Park, October 2002 projections by DVRPC indicate that in Year 2030 No Build traffic will be 36% greater than current levels on PA 23 (through the center of the Park) 72% greater on PA 252 (along Valley Creek), and 75% greater on N. Gulph Rd. (just east the Park entrance). More detail on projected levels of traffic in Year 2010 and 2030 on roadways in the study area can be seen on the facing page. (The program for projecting future traffic in the area is presented in detail in Appendix 2: Traffic Forecasting Program for the GMP EIS.)

Attempting to address this growing transportation demand, PennDOT and FHWA are already underway with key infrastructure improvements, notably the reconstruction of the US 202/I-76/US 422 interchange complex and the proposed Replacement Betzwood Bridge paralleling the US 422 crossing of the Schuylkill River. Modernization of the US 422 interchanges with PA 363 and PA 23, (now being undertaken independently of this EIS) will also improve congestion conditions in the US 422 corridor, with a corresponding relief of the local road system including through traffic in the Park

Future demand has also been a major factor in transit planning efforts to develop a new regional transit network including: 1) the Schuylkill Valley Metro (running along the Schuylkill River and through the Park from Philadelphia to Reading); the Cross County Metro (alongside US 202) and the Route 100 Extension through the King of Prussia Mall. In terms of alternative transportation, the location and success of the Schuylkill River Trail anchors further plans to expand the network with additional multi-use facilities in both Montgomery and Chester Counties.

Sketch Diagram of the Needs Evaluation



Defining purpose and need for the Transportation Elements for the GMP EIS calls for a synthesis of Park-related and traffic-related concerns, as well as in successive steps of environmental review.

VI. Transportation Purpose and Needs

Source materials and observations from the above-referenced combination of Park, transportation and community perspectives have been used to define and synthesize the purpose and needs for the transportation elements in the GMP EIS.

These include (as discussed previously): the NPS policy framework for the Park; findings of the VFATS study; field observations; local and regional planning directions; projections by the Park and DVVRPC; and input from local officials and the public.

A. Purpose of the *Transportation Elements in the GMP EIS*

In the studies, plans, observations and consultation used as sources for the needs evaluation, transportation issues were seen as major factors in planning for the Park's future, as well as avenues for optimizing the Park's ongoing relationship with adjacent townships and its role in the region. As such, the following broad elements in the statement of purpose have been defined.

1. Statement of purpose:

The purpose of the transportation elements in the GMP EIS is to:

- help in meeting the Purpose and the Mission Goals of the Valley Forge National Historical Park for resource protection, visitor experience and opportunities for enhanced understanding
- help meet the increasing and evolving transportation demand related to future Park activities and construction of the new National Center for the American Revolution
- while helping to meet Park-related transportation needs, also recognize and complement where possible and appropriate the transportation needs of adjacent communities and of the region.

2. Governmental authority

The statement of purpose reflects the organic governmental authority and obligation designated to the NPS to undertake GMPs for each unit (e.g. park) in the National Park System in order to help the NPS, in consultation with the public, decide what resource conditions and visitor experiences a park should provide. The NPS is also required to prepare an EIS for the Park's GMP and, as transportation improvements have been evidenced as a major factor in GMP effectiveness, the transportation elements here are appropriately within the scope of this EIS.

3. Master plan consistency

The Valley Forge National Historical Park, for which the GMP is being prepared, is well recognized as a permanent, important component in both local and regional master plans. Existing and projected Park traffic is being included in DVVRPC's traffic projection planning. The transportation elements now being evaluated are not yet defined in sufficient detail to be included in all plans. However, no elements are known or suspected of being inconsistent with either local or regional planning.

B. Needs for the transportation elements in the GMP EIS

1. From the Park policy perspective

The basic purpose of “preservation of natural and cultural resources” and “opportunities for enhanced understanding” (Statement of Park Purpose) are underscored in the emphasis on conditions of resources being maintained or even improved (Mission Goal 1) and the importance of safety, accessibility and quality of the visitor experience (Mission Goal 2). This policy sets a strong framework for appropriately incorporating transportation improvements to help achieve the Park’s mission. Mission Goal 4 implies developing transportation improvements in collaboration with other entities who share related interests and concerns. Therefore, it can be seen that the transportation elements in the GMP EIS are called for to address and remedy the current transportation impacts on resources, visitor experience and interpretive operations.

As result, the policy directives driving the overall GMP EIS process can be seen as: 1) requiring efforts to reduce traffic impacts on resources, interpretive activities and operations that factor in the quality of the visitor experience; and 2) calling for transportation elements in the GMP EIS as a means to accomplish this.

The field observations and consultation indicated a range of traffic-related impacts which now affect the Park’s resources and activities to provide for the visitor experience. Without remedy, these can only worsen with increased traffic, visitation, and development pressures in the surrounding areas. The GMP planning, and EIS coverage will include measures to reduce traffic impacts with the better management of traffic, either by prohibition, relocation, or mitigation. Thus both the policy framework serves to establish the basis of need.

Therefore, direction from the policy framework, in combination with observed deficiencies and impacts, establishes the need for options to reduce and/or relocate traffic or to mitigate its impacts.

2. From discussion of current deficiencies

As noted in the VFATS and observation information presented in Section III, traffic creates a variety of impacts throughout the Park, affecting the preservation of resources and the quality of the visitor experience in the park. Such impacts can be expected to be aggravated with an increasing amount of traffic face to face with increased numbers of park visitors. Factors affecting safety must be considered where traffic converges with pedestrian, bicycle, equestrian, and interpretive activities.

Since the observed and documented deficiencies cover a broad range of problems, only approaches which address the traffic itself would seem to provide an effective remedy. Nonetheless, the observations help to define the specific needs for the transportation elements in the GMP EIS.

Therefore, the impetus from the policy framework, in combination with observed deficiencies and impacts defines the need for options to reduce and/or relocate traffic or to mitigate its impacts.

3. From projection of future demand

Transportation improvements to remedy or improve these deficiencies are needed now, and will be needed increasingly with future increases in traffic and visitation. Construction of the National Center for the American Revolution, and the intensified interpretive activities likely to attend it, will further underscore the need to remedy traffic impacts in the Park.

4. Statement of needs for the transportation elements in the GMP EIS

Observation and analysis of the traffic in the study area but outside of the Park has shown problems to be inter-related with those of the Park. Congestion in the intersections at the Park's entrances affect visitors' access to the Park and the overall quality of the visitor experience. The patterns and functions of Park-destined traffic conflict with through traffic.

While options to reduce the park's traffic impacts cannot be expected to solve all problems, effective solutions can't be achieved without consideration of the traffic problems of adjacent areas. This establishes an equity consideration in defining need—the need to weigh both Park and adjacent community interests.

The following statement of needs has been drawn from the policy framework, evaluation of existing conditions and deficiencies, and in looking ahead to future demands (as discussed previously).

The transportation elements in the GMP EIS are needed to:

- **Reduce current traffic congestion and impacts in the park**
- **Address factors which impact safety conditions**
- **Help remedy potential impacts of future traffic increases from growing Park and NCAR visitation, as well as development in surrounding communities**
- **Help remedy impacts which could impair access for the Park and the NCAR**
- **Minimize conflicts between through traffic and Park activities**
- **Limit vehicular/bicycle/pedestrian conflicts**
- **reduce constraints on alternative transportation opportunities.**

Appendices for:

An Evaluation of the Purpose and Need
for the
Transportation Elements
in the

General Management Plan/Environmental Impact Statement for the Valley Forge National Historical Park

- Appendix A: Initial Needs Evaluation Activities
- Appendix B: Traffic Forecasting Program for the GMP EIS
- Appendix C: Traffic Patterns and Crash Data
- Appendix D: Requirements related to Logical Termini
- Appendix E: Glossary of Terms

Appendix A. Initial Needs Evaluation Activities

1. Set Needs work program

Setting the needs work program for the transportation elements of the GMP required identifying Park needs which relate to the transportation elements, and then synthesizing them into the needs process already established for highway projects. This has been considered in:

- researching available data and defining what additional data would be required
- identifying the combination of planning, transportation demand, and Park- related factors which relate to the transportation elements in the GMP EIS
- documenting and presenting the needs in a fashion to convey that the needs relate to a combination of both Park and general transportation needs
- setting up interagency coordination to allow effective review, input and consensus on the transportation elements as part of the GMP EIS

Much of the data required for evaluating needs was available from the Valley Forge Area Transportation Planning Study (VFATS)—a broad based planning study undertaken jointly by NPS, PennDOT and FHWA in 2002 to identify transportation problems in and around the Valley Forge National Historical Park and outline options to address the problems identified. The study included ongoing coordination with adjacent townships and Montgomery and Chester Counties which included needs issues. Transportation planning studies underway on collateral have been developed or modified where appropriate to reflect current and future transportation patterns in the Park.

The VFATS study documentation, as well as the concurrent technical and coordination activities, have been used extensively in the current needs evaluation.

2. Scoping issues

The overall scope of the General Management Plan for the Valley Forge National Historical Park was presented by National Park Service representatives to the Inter Agency Coordinating Committee on May 20, 2003. The presentation indicated:

- how transportation issues and improvement options had been recognized as important to devising an effective GMP,
- the role of the GMP EIS with other transportation development activities in the area
- transportation elements would be addressed in the GMP EIS.
- the planned approach of evaluating and reviewing needs as a synthesis of Park-related and transportation-related concerns to meet NPS, DOT and PennDOT review criteria
- a preview of an interagency coordination schedule to coincide with GMP EIS scheduling needs .

3. Identifying Data Requirements

Much of the data required for the needs analysis is available in the Valley Forge Area Transportation Planning Study, collateral study and coordination activities, or in consultation with Park and transportation personnel. The following table indicates: area of needs study; type of data and source; and where additional data may be required and/or ultimately supportive in the ongoing review process.

Study category	Available information and source	Additional data
<ul style="list-style-type: none"> • Park transportation issues and needs 	<ul style="list-style-type: none"> • Park purpose, significance, mission and mission goals (NPS & GMP EIS team) • Park access and circulation patterns future visitation trends, traffic/resource and traffic/mission conflicts (NPS, Park staff, townships) 	<ul style="list-style-type: none"> • additional detail on future needs evolving from the ongoing GMP process
<ul style="list-style-type: none"> • Traffic/Highway Data • Origin/Destination and Travel Pattern Data 	<ul style="list-style-type: none"> • State highway network (PennDOT) • local street systems (DVRPC, counties townships) • current traffic volumes (PennDOT and DVRPC) • current transportation deficiencies (VFATS field observations, traffic analysis, consultation with townships and counties) • future No Build volumes (DVRPC) • Park visitation volumes and circulation patterns (NPS) 	<ul style="list-style-type: none"> • Year 2030 Build Volumes (DVRPC) will amplify No Build Volumes (now available)
<ul style="list-style-type: none"> • Public Transportation Data 	<ul style="list-style-type: none"> • current and future transit services (SEPTA, GVFTMA) 	<ul style="list-style-type: none"> • potential for future transit and shuttle service in Park evolving from GMP EIS (NPS)
<ul style="list-style-type: none"> • Land Use, Planning, Socioeconomic and Community Conditions 	<ul style="list-style-type: none"> • land use and zoning patterns (counties and townships) • neighborhood transportation issues, plans and needs (townships and DVRPC) • planned transportation improvements (PennDOT, DVRPC, local governments) • Park plans and activity forecasts (NPS) 	
<ul style="list-style-type: none"> • Travel Demand Reduction 	<ul style="list-style-type: none"> • transportation partnership initiatives (GVFTMA) 	
<ul style="list-style-type: none"> • Bicycle and Pedestrian Facilities 	<ul style="list-style-type: none"> • planning for alternative transportation (counties) 	

Appendix B: Traffic Forecasting Program for the GMP EIS

Forecasting future traffic flows on the Study Area's roadways is an important element in the GMP EIS program. All future forecasts are developed utilizing the certified regional model developed by the Delaware Valley Regional Planning Commission (DVRPC), the region's MPO. The Transportation Elements Purpose and Needs phase of the overall GMP EIS is predicated on current conditions and the forecasted 2010 & 2030 (Design Year) conditions for the "No Build" condition as required by the FHWA. The Preliminary Alternatives phase is reliant on forecasted 2010 and 2030 (Design Year) Build volumes.

Valley Forge National Historical Park (VFNHP) has a network of local roads, state routes, interstates and interchanges that traverse or immediately surround the Park. This variety of roadway classifications and the resultant diversity of traffic volumes, cause a conflict between commuters traveling through the Park in this heavily developed region and the recreational and historic users of the Park. The definition of the transportation needs of the Park discuss these conflicts and volumes in relation to the Park's mission.

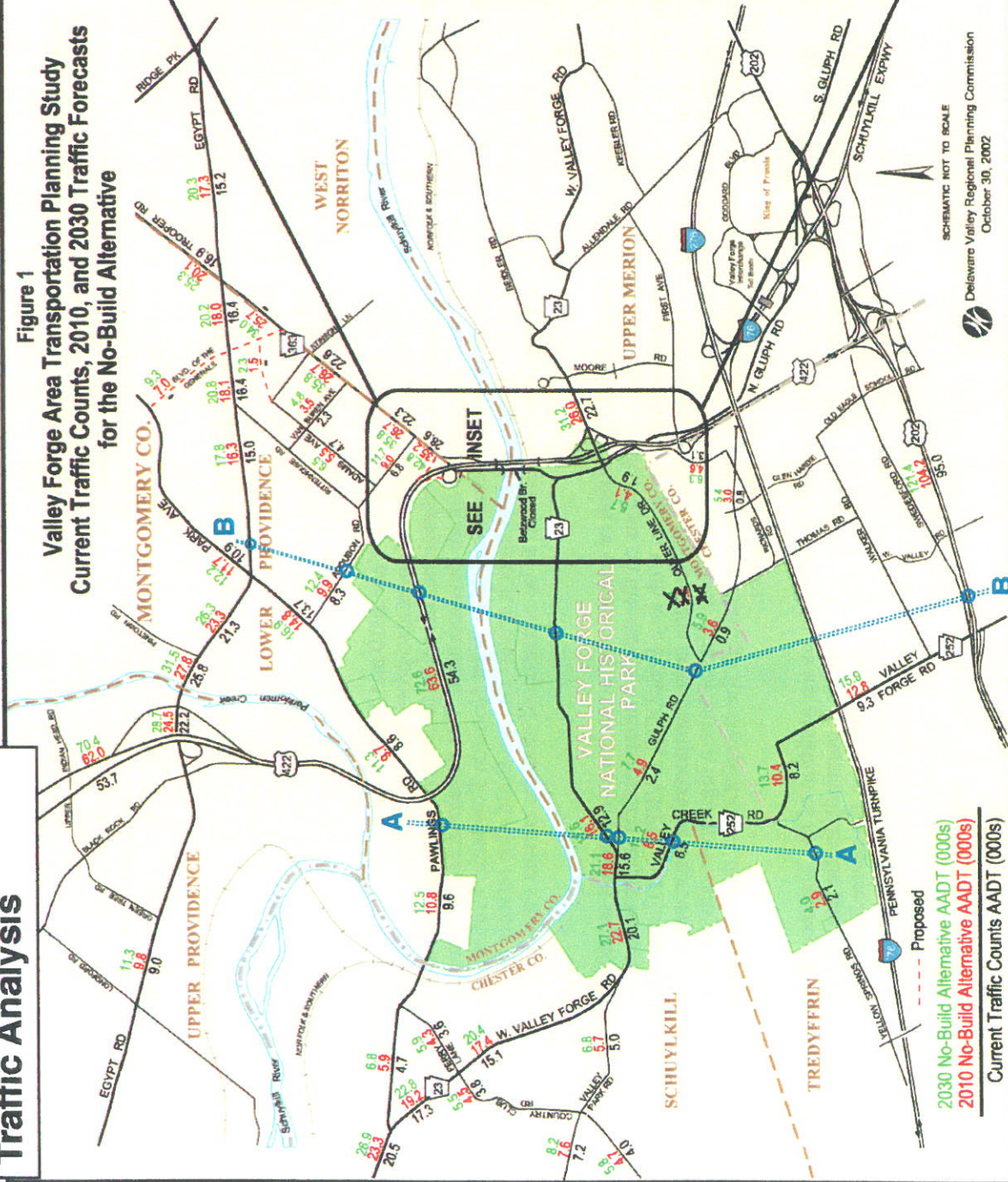
DVRPC has developed a No Build AADT forecast for Year 2010 and Design Year 2030 (October, 2002). This information is provided with the current traffic volumes also provided for comparison. This No Build forecast was developed utilizing the certified regional model with the approved population and employment growth rates along with the planned future development. The development includes the Riverview complex at Valley Forge now under construction in West Norriton Township with sole access via Trooper Road opposite the Park's Betzwood boat launch drive. The No Build also reflects the planned National Center for the American Revolution to be constructed near the current Park Visitor Center.

The No Build was also developed with the inclusion of certain transportation projects that would likely be completed by the Design Year 2030 due to their status on the state's Transportation Improvement Program (TIP). Based on a September 9, 2003 meeting with key PennDOT, DVRPC and County project program planners, the No Build forecasted volumes will include only transportation improvement projects in the final design or construction phase. The projects in these phases have a high probability of being completed and their preferred alternative has been selected through the completion of the environmental clearance and preliminary engineering phase of their project.

The revised No Build 2030 forecast for this endeavor still includes the addition of the Replacement Betzwood Bridge. The Replacement Bridge over the Schuylkill River is currently in the later stages of Final Design and is scheduled for start of construction within 2 years. However, the revised No Build will remove the proposed PA 363/US 422 west ramps, now on the TIP, from the previously defined No Build network. This action was taken for consistency reasons since no environmental or design action has yet been taken on this project. DVRPC will revise the current 2030 No Build forecast to remove these proposed ramps which were projected to carry 3.0 AADT (off-ramp) and 4.1 AADT (on-ramp) in the Design Year 2030.

Diagram of Screenlines Used in the Traffic Analysis

Figure 1
Valley Forge Area Transportation Planning Study
Current Traffic Counts, 2010, and 2030 Traffic Forecasts
for the No-Build Alternative



SCHEMATIC NOT TO SCALE
Delaware Valley Regional Planning Commission
October 30, 2002

The screenlines shown here are superimposed on a copy of the October 2002 DVRPC graphic showing its traffic projections for Year 2010 and Year 2030 "No Build" Scenarios. (The crossed out numbers along Outer Line Dr. are in question, and are, therefore, shown as deleted with the understanding of DVRPC.)

To assess the broader impacts of the No Build condition in Design Year 2030, a series of traffic screen lines were developed as shown on the facing map and tabulated facing the following page. Table x (2 north-south screen lines and 1 river crossing screen line).

The volume totals across the western Screen Line A-A shows a 58.2% AADT traffic increase in Design Year 2030 over current volumes. The heavier volume central Screen Line B-B shows a 32.8% increase while the river crossing Screen Line C-C shows a 40.3% increase. These documented increases reflect a worsening of traffic conditions across the Study Area and overall intensification of the currently identified needs. The removal of ramp volumes equate to less than 3.0% of the total Screen Line traffic across the Study Area.

Upon completion and consensus of the Transportation Needs for the GMP EIS, certain needs will be addressed through the break-out of two individual projects that have been initiated by the Pennsylvania Department of Transportation and the Federal Highway Administration. These two alternatives are outlined in a Programmatic Agreement between the National Park Service and FHWA, and have been referred to as the "River Crossing Complex". The first project is a modernization of the US 422/PA 23 interchange, along with the relocation and widening of North Gulph Road. The second project is the completion of the US 422/PA 363 interchange, along with the widening of US 422 from four to six lanes between US 202 and PA 363. The two projects have been separated from the responsibility of the GMP EIS, so that the alternative development, traffic analysis, environmental resource identification and impact quantification, will be done in the PennDOT Transportation Development Process.

Because these two projects are in such close proximity to the Park and have a direct bearing on regional mobility and traffic volumes through the Park, all subsequent planning and traffic analysis for the GMP EIS Park Options will include the "River Crossing Complex" as defined in the Programmatic Agreement (PA). These River Crossing Complex projects will be added to the No Build network to establish a GMP EIS Base Case condition. This Base Case condition will be the foundation which the Park Options are built on during the Preliminary Alternatives Evaluation. Consistent with the No Build forecast, the Base Case Design Year has been defined as Design Year 2030.

The traffic forecasting sequence is as follows:

1. Revise the October, 2002 No Build 2030 condition to remove the US 422 / PA 363 west ramps. Because the revisions affect a small percentage of the total traffic in the Study Area, the October, 2002 volumes have been used to develop the Transportation Needs for the GMP EIS. Upon receipt of the revised No Build volumes, the needs will be re-visited to ensure the conclusions drawn from the original No Build volumes are still valid. If any of the Transportation Needs is no longer valid, the document will be revised and the environmental review agencies will be briefed.
2. The Base Case 2030 Average Annual Daily Trips (AADT) will be modeled which adds the River Crossing Complex to the No Build condition.
3. Develop the No Build and Base Case 2030 AM & PM Peak Hour volumes since they are essential to defining the River Crossing Complex's geometrics and resulting impacts.
4. The regional model for the Base Case condition will be modified to provide the forecasts necessary to evaluate the traffic benefits and impacts for the range of "P" options outlined in the Park GMP EIS.

Valley Forge Transportation Implementation Phase

Screenline AADT Comparison for Range of Options

(Build AADT's Assumes Schuylkill Valley Metro (SVM), Cross County Metro (CCM) and Route 100 Extension are constructed (DVRPC assumes 0.8% to 1.8% traffic reductions with construction of the Metro projects.)

Screenline A-A

Route Name	Route ID #	Yr 2030 No Build	Yr 2030 **Minimum "Bookend"	Yr 2030 **Maximum "Bookend"	Current Volumes (1999)	% Increase 2030 No Bid/ Current	Change across Screenline A-A No build/Current Minimum "Bookend"/Current Maximum "Bookend"/Current Maximum "Bookend"/No Build	(AADT's)	(%)
Yellow Springs Rd.	(SR 1016)	4.0	3.8	3.5	2.1	90%	No build/Current	+ 19.5	58%
Valley Creek Rd.	(PA 252)	11.2	10.2	10.7	6.5	72%	Minimum "Bookend"/Current	+ 19.1	57%
Gulph Rd.	(SR3031)	7.7	6.1	5.2	2.4	221%	Maximum "Bookend"/Current	+ 19.7	59%
Valley Forge Rd	(PA23)	17.6	19.7	15.9	12.9	36%	Maximum "Bookend"/No Build	+ 0.2	0%
Pawlings Rd.	(SR 4004)	12.5	12.8	17.9	9.6	30%			
TOTAL		53.0	52.6	53.2	33.5				

Screenline B-B

Route Name	Route ID #	Yr 2030 No Build	Yr 2030 **Minimum "Bookend"	Yr 2030 **Maximum "Bookend"	Current Volumes (1999)	% Increase 2030 No Bid/ Current	Change across Screenline B-B No build/Current Minimum "Bookend"/Current Maximum "Bookend"/Current Maximum "Bookend"/No Build	(AADT's)	(%)
US 202	SR 0202	121.4	119.4	116.5	95.0	28%	No build/Current	+ 62.9	32%
Gulph Rd.	(SR3031)	7.7	6.1	5.2	2.4	221%	Minimum "Bookend"/Current	+ 58.7	30%
Valley Forge Rd.	(PA 23)	17.6	19.7	15.9	12.9	36%	Maximum "Bookend"/Current	+ 70.8	36%
US 422	(SR0422)	72.6	68.8	92.1	54.3	34%	Maximum "Bookend"/No Build	+ 7.9	3%
Audubon Rd.	(SR4041)	12.4	12.0	11.6	8.3	49%			
Egypt Rd.	(SR4002)	17.8	19.5	16.7	15.0	19%			
Park Ave		12.2	12.0	11.6	10.9	12%			
TOTAL		261.7	257.5	269.6	198.8				

Screenline C-C

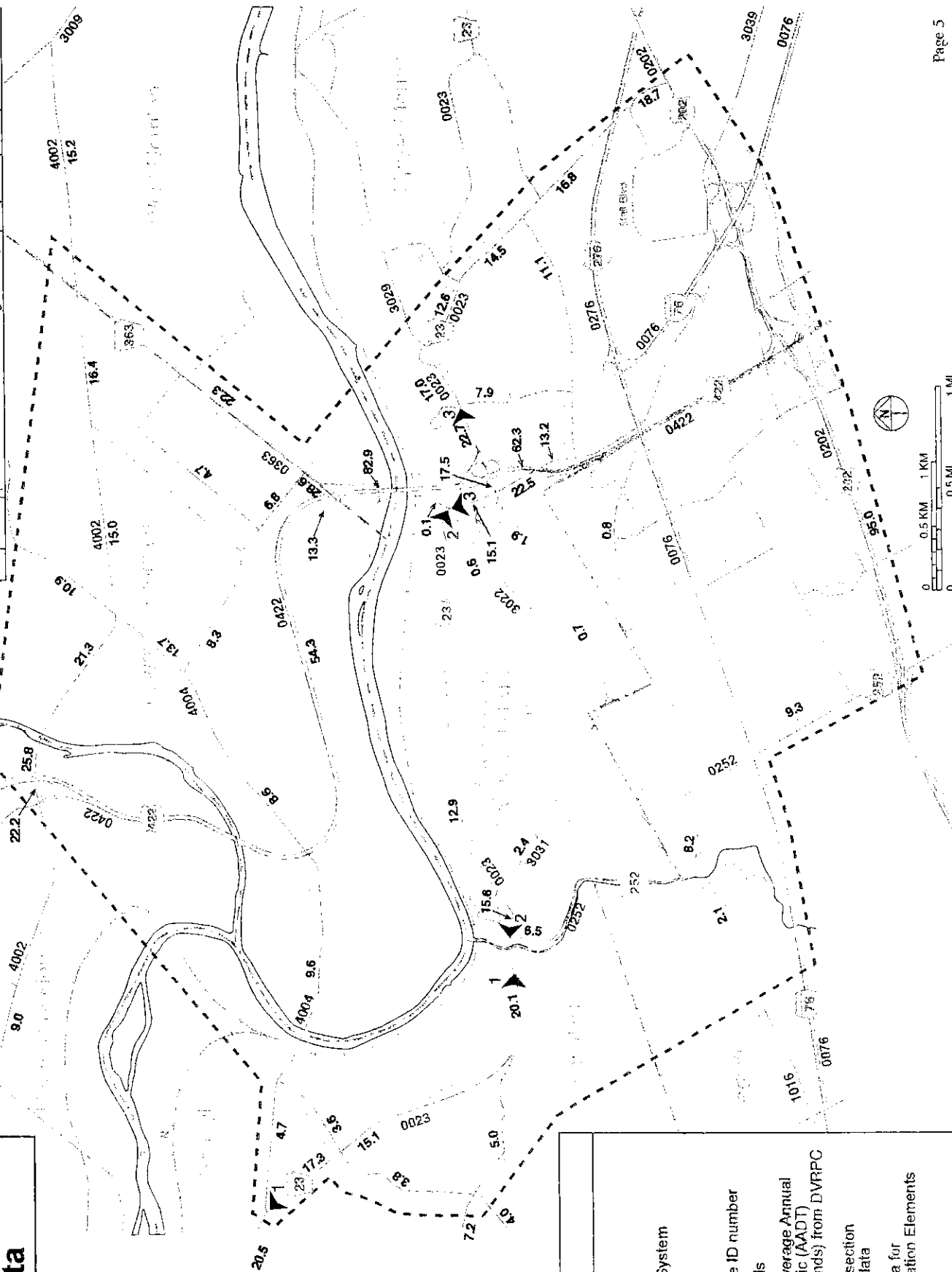
Route Name	Route ID #	Yr 2030 No Build	Yr 2030 **Minimum "Bookend"	Yr 2030 **Maximum "Bookend"	Current Volumes (1999)	% Increase 2030 No Bid/ Current	Change across Screenline C-C No build/Current Minimum "Bookend"/Current Maximum "Bookend"/Current Maximum "Bookend"/No Build	(AADT's)	(%)
US 422 Bridge		100.3	107.3	116.4	82.9	21%	No build/Current	+ 33.4	40%
Replacement Betzwood Bridge		16.0	0.0	17.1	0.0	n.a.	Minimum "Bookend"/Current	+ 24.4	29%
TOTAL		116.3	107.3	133.5	82.9		Maximum "Bookend"/Current	+ 50.6	61%
							Maximum "Bookend"/No Build	+ 17.2	15%

* Minimum "Bookend" is 2020 No Build network with the Replacement Betzwood Bridge removed

* Maximum "Bookend" is the 2020 No Build network with the DVRPC Phoenixville Study proposals added.

Appendix C: Existing Traffic Patterns & Crash Data

Crash Data for PA 23 in the Park				
ID#	Route	Section length	# of crash crsh/mi	Av. # of crsh/ million veh mi
1	PA 23	Pawlings Rd. to Orchard Ln.	59	6.1
2	PA 23	Valley Creek Rd. to County Line Rd.	18	1.5
3	PA 23	Outer Line Dr. to Old Valley Forge Rd.	26	9.0
(Crash data from 1-95 through 12-99)				



Appendix D: Regulatory Requirements for Logical Termini

The regulatory framework for assuring logical termini are found in the Code of Federal Regulations (23 CFR 771.111 (f)). The proposed Project must satisfy the following conditions to have logical termini:

- (1) connect logical termini and be of sufficient length to address environmental matters on a broad scope; and
- (2) have independent utility or independent significance, i.e., be usable and be a reasonable expenditure even if no additional transportation improvements in the area are made; and
- (3) not restrict consideration of alternatives for other reasonable foreseeable transportation improvements.

Appendix E: Glossary of Terms

2030 Base Case Alternative – A scenario developed by DVRPC to forecast future traffic conditions (in Design Year 2030) and allow comparison with and without specific projects under study. This scenario includes projects on the TIP and DVRPC's Long Range Plan.

Acceleration (and deceleration) lane- A paved auxiliary lane, including tapered areas, allowing vehicles to accelerate (and decelerate) when entering (or exiting) the through-traffic lane of the roadway.

Agency Coordination Meeting (ACM) – A monthly meeting sponsored by PennDOT and held with State and Federal environmental review and regulatory agencies. The goal of these meetings is to review, discuss and resolve environmental issues pertaining to transportation projects in Pennsylvania.

Average Annual Daily Traffic (AADT) - The total volume of traffic passing a point or segment of a highway facility in both directions for one year divided by the number of days in the year.

Brownfields – As defined by the US Environmental Protection Agency, it is an abandoned, idled, or under-used industrial and commercial facility where expansion or redevelopment is complicated by real or perceived environmental contamination.

Capacity - The capacity of a highway facility is the maximum hourly rate at which vehicles or persons reasonably can be expected to traverse a point or a uniform section of a lane or roadway during a given time period under prevailing roadway, traffic and control conditions.

Capacity Analysis - Capacity analysis is a set of procedures for estimating the traffic-carrying ability of facilities over a range of defined operational conditions. It provides tools to assess facilities and to plan and design improved facilities.

Commonwealth's Twelve-Year Highway and Bridge Program (1999-2010) – A responsibility of the Pennsylvania Transportation Commission and managed by PennDOT, the "12 Year Plan" is a program to identify and to allocate State resources for transportation improvements in a cohesive and coordinated manner. The program consists of a prioritized framework for planning design and construction of projects statewide, and is updated by the Commission periodically.

Congestion Management System (CMS) – a systematic process that provides information on transportation system performance and alternative strategies to alleviate congestion and enhance mobility of persons and goods.

Crossroads – Montgomery Crossroads Transportation Task Force was created to develop, encourage and promote improved regional transportation systems that: alleviate traffic congestion while minimizing negative economic impacts; promote economic development partnerships to manage growth; stimulate a favorable business environment; and maintain the health, safety and welfare of the communities with an eye to the future.

Delaware Valley Regional Planning Commission (DVRPC) – Established by a bi-state compact in 1965, this is the principal agency charged with planning for the future of Southeastern Pennsylvania and the adjacent counties of New Jersey. DVRPC provides continuous, comprehensive, coordinated planning for the orderly growth of the Delaware Valley. DVRPC is designated as the Metropolitan Planning Organization (MPO) by the Federal government.

DVRPC Long Range Plan - a document resulting from a regional or statewide process of collaboration and consensus on a region or State's transportation system. This document serves as the defining vision for the region's or State's transportation systems and services. In metropolitan areas, the plan indicates all of the transportation improvements scheduled for funding over the next 20 years.

Design Criteria – Highway design standards as established by the American Association of State Highway and Transportation Officials (AASHTO) and by State Department's of Transportation. Design Year 2030 – Current planning year, which is chosen to be approximately 20 years beyond completion of construction of a project.

Environmental Assessment (EA) – an interim decision document prepared for an action where the significance of social, economic, or environmental impact is not clearly established. If the action is determined to have significant impacts, and Environmental Impact Statement (EIS) is then prepared. If no significant impact is determined, a Finding of No Significant Impact (FONSI) is prepared.

Environmental Impact Statement (EIS) - a document, required under the National Environmental Policy Act, prepared for a major Federal action that is likely to have significant impact on the human environment. This document, undertaken by the sponsoring agency, summarizes the major environmental impacts, outlines issues, examines reasonable alternatives, and arrives at a Record of Decision (ROD), identifying the selected alternative for the project.

Federal Highway Administration (FHWA) – a branch of the United States Department of Transportation that administers the Federal-aid Highway Program, providing financial assistance to states to construct and improve highways, urban and rural roads, and bridges. The FHWA also administers the Federal Lands Highway Program that provides access to and within national forests, national parks, Indian reservations and other public lands. The FHWA is headquartered in Washington, DC, with field offices across the country, including one or more in each State.

Federal Transit Administration (FTA) – a branch of the United States Department of Transportation that is the principal source of Federal financial assistance to America's communities for the planning, development, and improvement of public or mass transportation systems. FTA provides leadership, technical assistance, and financial resources for safe, technologically advanced public transportation to enhance mobility and accessibility, to improve the Nation's communities and natural environment, and to strengthen the national economy. The FTA is headquartered in Washington, DC, with regional offices in Atlanta, Boston, Chicago, Dallas, Denver, Kansas City, New York, Philadelphia, San Francisco, and Seattle.

Finding of No Significant Impact (FONSI) – a statement indicating that, following appropriate review, a project was found to have no significant impacts on the quality of the human environment. Therefore, an environmental statement (EIS) will therefore not be prepared.

General Management Plan (GMP) a evaluation prepared for each unit of the National Park System in order to help the National Park Service (NPS), in consultation with the public, decide what resource conditions and visitor experiences a park should provide. It defines the basic philosophy of park management and provides broad guidance to park managers

Greater Valley Forge Transportation Management Association (GVFTMA) – Established in 1990 as a non-profit organization to offer a forum in which the business community and municipal, County and state officials can cooperatively address and seek a resolution of traffic-related problems affecting the Greater Valley Forge area. By enhancing mobility and safety, through the reduction of congestion and pollution, the TMA helps to promote the area's orderly growth, sustain its quality of life and ensure its continued economic vitality.

Level of Service (LOS) – A qualitative measure describing operational conditions within a traffic stream, generally in terms of such service measures as speed and travel time, freedom to maneuver, traffic interruptions, and comfort and convenience.

Six LOS are defined for each type of facility that has analysis procedures available. Letters designate each level, from A to F, with LOS A representing the best operating conditions and LOS F the worst. Each level of service represents a range of operating conditions and the driver's perception of those conditions. Safety is not included in the measures that establish service levels.

Logical Termini – To avoid the impacts of project segmentation, a project must have logical termini and must satisfy the following conditions: (1) connect logical termini and be of sufficient length to address environmental matters on a broad scope; and (2) have independent utility or independent significance, i.e., be usable and be a reasonable expenditure even if no additional transportation improvements in the area are made; and (3) not restrict consideration of other reasonable alternatives. The regulatory framework for assuring logical termini for projects is found in the Code of Federal Regulations (23 CFR 771.111 (f)).

Management prescriptions in a GMP are detailed statements which identify the kinds and levels of visitor use, management actions, and development that are appropriate for a park. They are the foundations for all subsequent decision-making in the park.

Metropolitan Planning Organization (MPO) – a forum for regional planning, collaboration, and decision making. MPOs are designated agencies for metropolitan areas larger than 50,000 in population that conduct regional transportation planning.

National Environmental Policy Act (NEPA) – a law enacted in 1969 that established a national environmental policy requiring that any project using Federal funding or approval, including transportation projects, examine the effects the proposal and alternative choices have on the environment before a Federal decision is made.

National Park Service (NPS) –A part of the U. S. Department of the Interior, the National Park Service is the Federal government entity that plans, owns, and administers the National Park System (which includes the Valley Forge National Historical Park, located in this Project's Study Area).

Park Mission and Mission Goals--A park's mission is a vision for the future and articulates, in broad terms, the ideas that the NPS strives to achieve. The mission goals articulate in broad terms the ideal conditions the park and its partners will strive to attain.

Project Development -- the phase a proposed project undergoes once it has been through the planning process. The project development phase is a more detailed analysis of a proposed project's social, economic, and environmental impacts and various project alternatives. What comes from the project development phase is a decision reached through negotiation among all affected parties, including the public. After a proposal has successfully passed the project development phase, it may move to preliminary engineering, design, and construction.

Schuylkill Valley Metro (SVM) -- A plan to develop new, high level transit service along the Schuylkill Valley between Philadelphia and Reading to serve transportation and economic development needs of the Schuylkill Valley and the region as a whole. The SVM is being developed by SEPTA and BARTA with State and Federal sponsorship.

Signalized Intersection - An intersection controlled by traffic signals.

Southeastern Pennsylvania Transportation Authority (SEPTA) --SEPTA is a public entity established and authorized to plan, design, build and operate mass transit services within a five county region of southeastern Pennsylvania with service extension in New Jersey and Delaware.

Statement of Park Purpose--language to state the reasons for which a park was set aside by congress as part of the National Park System. It provides the fundamental criterion against which the appropriateness of all plan recommendations and future operational decisions and actions are tested.

Statement of Park Significance--language that identifies the resources and values central to managing the park and it expresses the importance of the park to our national heritage.

State Transportation Commission -- The Commission, with public input, sets policy direction with respect to the development of the Commonwealth's Twelve Year Transportation Program.

Substandard -- A condition that does not meet the specified Design Criteria for an existing or proposed transportation facility.

Transportation Equity Act for the 21st Century (TEA 21) -- a law enacted in 1998, TEA-21 authorized Federal funding for transportation investment for the time period spanning fiscal year 1998 to fiscal year 2003. Approximately \$218 billion in funding was authorized, the largest amount in history, and is used for highway, transit, and other surface transportation programs.

Transportation Improvement Program (TIP) -- An improvement program prepared by the Metropolitan Planning Organization (MPO), usually developed on a 2-year cycle, that contains individual transportation improvements and projects. The program is biannually adopted by the State Transportation Commission as the blueprint for improving Pennsylvania's transportation system. The program is then submitted to the Governor, General Assembly and the Secretary of Transportation. All projects must be part of an improvement program to be implemented.

Upper Merion Transportation Authority – Incorporated in 1985, the Authority was created for the purpose of acquiring, holding, constructing, improving, maintaining and operating transportation related projects. The Authority is authorized to set rates and impose charges for such improvements as permitted by law.

Volume - The number of persons or vehicles passing a point on a lane, roadway, or other traffic-way during some time interval, often 1 hour, expressed in vehicles, bicycles, or persons per hour.

Weaving - The crossing of two or more traffic streams traveling in the same direction along a significant length of highway, without aid of traffic control devices (except for guide signs).