

1. Introduction

In mid-2006, with the expectation that the initial phase of Metrorail service from West Falls Church to Tysons Corner, Reston, Dulles Airport and Loudoun County would open for revenue service as early as 2011, Fairfax County recognized that there would be the need for detailed analyses to determine the appropriate improvements to support access to and from the rail stations. The County initiated the Wiehle Avenue/Reston Parkway Station Access Management Plans study to consider the current status and future needs in the vicinity of the two stations to provide pedestrian and bicycle access, to provide effective bus feeder service, and to deal with traffic projected in the area of the stations. A project team headed by Vanasse Hangen Brustlin, working closely with County staff and the Reston Metrorail Access Group (RMAG), a citizens group appointed by Supervisor Cathy Hudgins, conducted inventories of existing facilities, examined forecasts of the projected modal demands for 2030, identified current and projected deficiencies, developed principles for the priority to be given to each mode in developing solutions, and developed a prioritized program of recommended actions.

The County and the project team have worked for over a year to analyze the existing and projected future conditions for the Reston area with the introduction of Metrorail service that is anticipated. This report details the analysis and findings of the project team, the RMAG and the citizens who attended and participated in the public meetings. The recommendations and findings presented in this report are a continuation of the work presented in the Existing Conditions Report which was completed in June of 2007.

A. Purpose of the Study

The Station Access Management plan detailed in this report was developed to help accommodate new transportation patterns and volumes that are projected for Reston in the future. The primary goal of this plan is to provide access to and from the two Metrorail stations that are proposed for the Reston area at Reston Parkway and Wiehle Avenue. The Wiehle Avenue station is planned to be the last stop in the first phase of the rail line development which is currently planned for completion in 2013. The second phase of the rail project, which would extend the Metrorail line past Dulles Airport, will include the station at Reston Parkway. Once construction commences, the time period between these two phases is predicted to be small; only a few years by some estimates. However, in order to account for potential delays in construction of either phase of the rail line, this project uses a planning horizon of 2030, when both stations will be fully operational as mid-line stations. This project has the additional benefit of highlighting infrastructure improvements that are necessary or desired by community members throughout Reston. Many of the elements in the plan will benefit residents and employees of Reston regardless of the existence of Metrorail stations and should be considered for implementation on their own merits.

The introduction of two Metrorail stations in the Reston area will create new travel options for residents and employees of the area. The presence of the stations is expected to attract some people from outside of Reston who want to use Metrorail to access other regional destinations. The new service will contribute to a change in the travel patterns in the area as higher volumes of people seek access to Reston on a daily basis by any available mode. Commuter travel will play a large role in these changes as residents of the immediate and surrounding areas will be able to use Metrorail to access major employment centers in downtown Washington, DC and Tysons Corner. Employees in Reston will also be able to access their jobs on a daily basis from these Metrorail stations. Occasional use of the Metrorail

station for shopping, entertainment and other reasons will also be important during off peak hours. The changes in the transportation network will cause residents and employees of Reston to make their work trips using different routes and different modes in 2030 than they currently do, primarily due to the introduction of Metrorail service.

However, much of the change in travel patterns projected for 2030 will be unrelated to the new Metrorail stations, as population and employment levels in the Reston area and the Washington metropolitan region as a whole continue to increase over the next 25 years. The burden on the transportation network is expected to increase dramatically as improved accessibility and mobility in Reston is also likely to cause a change in the land uses in the areas around the new stations. As more people will find these areas highly desirable as residential and commercial locations, density of both residences and offices is likely to increase in the areas closest to the stations. As the whole region (and particularly Loudon County) continues to grow, travel through the Reston area is also projected to increase.

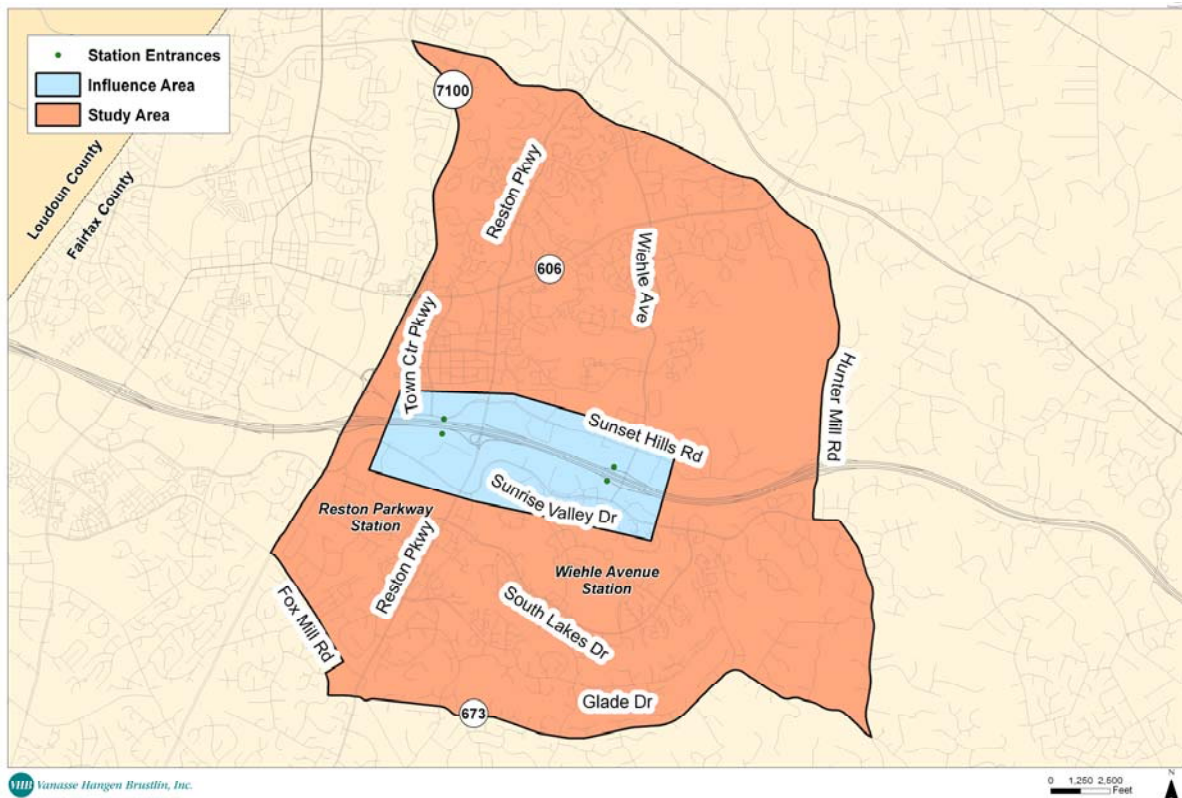
Congestion and safety for all modes of transportation will be major issues in the Reston area for 2030 unless a set of comprehensive actions are implemented to accommodate the projected growth in travel demand. This report details an array of strategies and projects that can be used to improve conditions for all travelers, residents and employees in Reston. Increased roadway capacity, travel demand management (TDM) strategies, additions to the network of pedestrian paths and spot safety improvements are all represented in these recommendations. The implementation of these recommendations will help ease congestion, improve safety and increase mobility and accessibility for Metrorail passengers and local residents and employees.

B. Scope of the Study

The Wiehle Avenue/Reston Parkway Metrorail Station Access Management Study was designed with the intention of providing access to the new Metrorail stations and around the station areas for all modes of transportation including private vehicles, buses, pedestrians and bicyclists. The study area for each of these modes is slightly different because people are able to access the stations from varying distances based on their selected mode of travel. For example, a pedestrian is typically willing to walk up to ½ mile to access a Metrorail station, while a driver may be willing to travel many miles to access the same service. A study area for this project was developed that includes the furthest extent of all of the travel modes, as shown in Figure 1-1. A more detailed analysis was conducted in the areas closest to the stations, as the transportation network in this Influence Area will have the highest travel volumes of all modes.

Four modes of travel will be competing for limited space, capacity and resources in the areas around the Reston stations. The strategies that would be ideal for each mode are often at odds with each other and projects will certainly have to compete for funding at the county and state level. For example, vehicular traffic congestion can often be mitigated by adding additional lanes and turn bays at intersections. However, these expanded intersections necessitate longer and more dangerous crossings for pedestrians. In an area with high levels of pedestrian traffic, longer crossings necessitate additional signal time devoted to the pedestrian phase. This in turn takes time away from the aforementioned congested roadways. In a busy community with significant levels of traffic in multiple modes like Reston, roadway widening must be weighed against the needs of other modes in order to develop solutions that provide a workable network for all system users.

Figure 1-1: Study Area and Influence Area



In order to arrive at the best set of solutions for each community a delicate balance between each of the modes must be established by evaluating the tradeoffs between specific recommendations. The project team has worked extensively on this issue with the appointed Reston Metrorail Access Group (RMAG) since the start of the project. Through a series of meetings, the RMAG and the general public worked with the project team to determine the community's priorities for improvements and how these tradeoffs should be considered. The ultimate decision, which has received significant support from community members is that in the station areas priority should be given as follows:

1. Pedestrians
2. Bicyclists
3. Transit Users (buses)
4. Private Vehicles (drivers and carpools)

Each recommendation included in this report has considered the needs of each of these four groups, such that the ultimate recommendations provide the highest level of accessibility to pedestrians and bicyclists and minimizes the effects of roadway improvements on the other groups. In effect, this prioritization methodology recognizes that some level of vehicular congestion in the area is unavoidable and that the safety and convenience of the other modes (especially the non-motorized modes) should be considered more important than reducing the level of congestion. Walking, bicycling and transit use are encouraged in Reston in 2030.

The recommendations included in this report represent the study team's best effort to accommodate the needs of all of the different modes. Where tradeoffs were apparent, the priorities developed by RMAG and the community were used to determine the best set of solutions. The recommendations are divided by mode in the report for ease of reference, however the complete set of solutions reflect the

priorities of the community. The final chapter integrates all of the different modal recommendations into one comprehensive plan.

C. Contents of the Report

This report contains sections on each of the potential station access modes: vehicular traffic, pedestrians and bicyclists, and transit. Different analysis methods were used to determine the recommended set of improvements for each mode; however each recommended action was considered from the perspective of all of the modes and weighed according to the priorities determined by the Reston community and RMAG.

a. Roadways

Chapter 2 includes the analysis of roadways in the study area that expands on the analysis conducted for the Existing Conditions Report. Projected travel demand in the study area was evaluated by investigating the estimated growth in residents, jobs and other travel in the region. The project team utilized a traffic micro-simulation tool called VISSIM that accounted for the complex interactions of traffic flow between different intersections when analyzing the vehicular traffic in Reston. The tool also accounts for the needs of pedestrians and buses by including them during simulation.

By 2030, the existing transportation network will not be able to accommodate all of the unconstrained projected peak-hour demand for vehicle travel at all intersections in the study area. Many more vehicles will want to use the roadways than can be accommodated using the existing facilities. Additional capacity, where compatible with current development and other community goals, may be desirable in order to mitigate gridlock and congestion. The analysis looks at the series of roadway improvements called for in the Environmental Impact Statement (EIS) in addition to a series of supplemental improvements designed to improve traffic throughput at the most congested intersections in the Influence Area. The effects of each of these potential improvements were analyzed using the simulation tool and the effects on pedestrians, bicyclists and transit passengers were also considered. Based on this work, a series of roadway projects is recommended including:

- A. New signal and turn lanes on Sunset Hills Road for access into the proposed Reston Parkway Metrorail station
- B. New left turn lane for westbound left turning movement at the intersection of Sunset Hills Road/Isaac Newton Square W
- C. Add a second left turn lane for northbound traffic at the intersection of Wiehle Avenue and the Station Entrance (between Sunset Hills Road and the Dulles International Airport Access Highway [DIAAH]) and provide a second inbound lane
- D. Add an additional left turn lane on the eastbound DIAAH ramps at Wiehle Avenue
- E. Improve the existing right turn lane for the eastbound Sunset Hill Road at Wiehle Avenue
- F. Improve the existing right turn lane for the westbound Sunrise Valley Drive at Wiehle Avenue
- G. Add northbound through lane on Reston Parkway from Sunrise Valley Drive to the on-ramp for eastbound DIAAH
- H. Improve the right turn lane for southbound Reston Parkway at Sunrise Valley Drive
- I. Provide a new connection over the DIAAH between Soapstone Drive and Isaac Newton Square W.
- J. Construct dedicated bus lanes on Sunset Hills Rd from Old Reston Avenue to Wiehle Avenue
- K. Isaac Newton Square West from Isaac Newton Square South to the station as an extension of the proposed Soapstone Connector.

- L. The Station Entrance (already planned for improvements as part of station construction) should be extended across Wiehle Avenue to the Private Driveway as far east as Samuel Morse Dr.
- M. Michael Faraday Court extension from the new roadway described in (L) north to the extended Roger Bacon Dr described in (N)
- N. Extension/improvements to Isaac Newton Square South from Isaac Newton Square West to Wildlife Center Drive.

Projects A-H are mitigation efforts listed in the Record of Decision (ROD) for the rail project. Projects K-N are expansions of extensions of existing private streets that will create an internal grid of streets in the Wiehle Avenue station area and relieve some of the congestion on the major roadways. The need for dedicated bus facilities is also addressed because the projected level of congestion in Reston will slow transit vehicles if they are forced to travel in general purpose lanes. Providing dedicated bus lanes during peak periods where possible will allow the buses to travel faster and will encourage more people to use transit instead of their private vehicles.

Planning level cost estimates have been developed for each of these projects. The total cost, including an allowance for right-of-way acquisition and other contingencies, is estimated to be almost \$70 million in 2007 dollars.

Even with these recommended actions, the areas immediately surrounding the stations will experience heavy congestion during peak periods. The full demand will not be accommodated and many travelers, particularly those who do not have an origin or destination within the study area, will find it desirable to change their route, their mode of travel or their time of travel. Policies and programs that encourage other modes of travel, including a comprehensive TDM program will be a key element in accommodating residents, employees and visitors in Reston.

b. Pedestrians and Bicyclists

Chapter 3 includes the construction projects and policy improvements that are recommended to improve pedestrian and bicyclist access to the proposed Metrorail stations. The recommended physical improvements are based on the extensive survey that was conducted in the area as part of the Existing Conditions Report. A set of general recommendations has been developed that should be applied to all roadways and intersections in the whole study area.

The level of pedestrian traffic estimated for the area was developed based on the mode share forecasts developed as part of the FEIS². Based on the origins and destinations of these pedestrians, the project team was able to develop a series of paths that connect these points of interest and estimates of the number of pedestrians and bicyclists who would be using each facility during the peak period. Based on the proposed roadwork network developed in the previous chapter, intersection infrastructure deficiencies and missing links in the pedestrian and bicycle networks along these paths were identified and recommended improvements were highlighted. Thirty-three intersections and six trail crossings were analyzed in detail with specific recommendations developed for each. In addition, missing trail segments and sidewalk sections were identified and the recommendations reflect the desire to complete the network of pedestrian and bicycle facilities in Reston. Bike lanes, currently absent in Reston, were also recommended for inclusion on several roadways.

² *Final Environmental Impact Statement and Section 4(f) Evaluation*, December 2004. <http://www.dullesmetro.org/community/impact_report.cfm>

Pedestrian and bicycle recommendations were developed to improve circulation and safety throughout the Reston community, not only for people accessing the stations directly. Internal trips within the Reston community are expected to account for a large portion of pedestrian and bicycle traffic. Access to and around the Reston Town Center was addressed, in addition to pedestrian and bicycle access across the DIAAH. In total, these recommendations are estimated to cost over \$27 million to construct.

Estimated costs were developed for each of the recommended pedestrian and bicycle improvements. Several features of each intersection including user safety, distance to the Metrorail stations and community input were used to prioritize these recommendations. Many of these recommended actions would be appropriate and necessary regardless of whether or not Metrorail comes to Reston, as pedestrian activity is still likely to grow in the area and should be encouraged to avoid intolerable congestion.

c. Transit and Feeder Bus

Chapter 4 addresses the need for expanded bus service to feed the new Metrorail stations and provide local access around Reston. This section details changes to the existing bus route structure that would provide better service to more residents and employees in Reston. The project team worked very closely with FAIRFAX CONNECTOR and Fairfax County staff to determine the new bus routings and developed a set of thirteen routes that connect the community to the new Metrorail stations. In addition to the needs of commuters, local bus service was also retained and expanded for those residents and employees who utilize the bus to make local trips within Reston. The proposed routes were discussed with the RMAG and modified as deemed appropriate.

Estimates of total bus ridership in the Reston area were developed as part of the FEIS. These ridership levels in addition to field observations of land use patterns were used to determine the necessary service frequencies on each of the recommended routes. Routes with higher ridership levels were recommended to operate at higher frequencies in order to provide adequate capacity. Bus frequencies were set as multiples of seven minutes (train frequencies) so that the buses would be able to match the arrivals of passengers on the Metrorail trains.

Estimates for the number of vehicles, drivers, mechanics and supervisory staff needed to operate this new system were developed based on the existing service, the estimated traffic speeds in 2030 and the necessary headways. It is estimated that an additional 14 buses will be necessary in 2030, which will require a corresponding increase in operational and maintenance staffing levels. The recommended service is estimated to cost an estimated \$15.2 million to operate for the year 2030 (in 2007 dollars). Capital costs are also estimated for 2030 including the purchase of new vehicles and the additional garage space that they will require. Improvements will also be necessary for many bus stops throughout the area.

d. Integrated Priorities

Chapter 5 includes an integrated and prioritized list of all the recommendations developed during the course of this study for all potential modes. The prioritization methodology that was used groups projects based on when they need to be completed: before the opening of the Wiehle Avenue station, before the opening of the Reston Parkway station or as soon as an opportunity becomes available. While prioritizing projects in order of importance, this chapter also discusses the reality of

implementation which dictates that some projects will be long-term solutions that cannot be implemented without significant study and analysis.

Implementation strategies for the recommended actions are also extremely important to the ultimate success of this project. As of this writing, funding for the Dulles Rail project is not certain, and the future, including the start of service date, is unsure. Many of the recommendations in this report will be necessary regardless of the existence of Metrorail stations in Reston as the area continues to grow. For example, because only a small portion of the vehicle trips projected for the area in 2030 will be caused directly by the presence of the Metrorail station, many of the roadway enhancement projects will be necessary anyway by 2030. Additionally, many of the bicycle and pedestrian facilities are recommended for implementation as soon as possible and will help to enhance the existing pedestrian orientation of the Reston community. Despite the obstacles presented to the Dulles Rail extension as a project, many of the projects detailed in this report should still be pursued by Fairfax County. Some implementation strategies, including potential funding sources are included in Chapter 5.

