REPORT OF THE
VIRGINIA DEPARTMENT OF RAIL AND
PUBLIC TRANSPORTATION

TECHNOLOGY AVAILABLE TO ADDRESS TRAFFIC PROBLEMS IN THE I-66 CORRIDOR

TO THE GOVERNOR AND
THE GENERAL ASSEMBLY OF VIRGINIA

HOUSE DOCUMENT NO. 53

COMMONWEALTH OF VIRGINIA
RICHMOND
2000

COMMONWEALTH of VIRGINIA

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December 13, 1999

The Honorable James S. Gilmore, III
Commonwealth of Virginia

Dear Governor Gilmore:

House Joint Resolution Number 715 and Item 535E of the 1999 Virginia Acts of Assembly requests the Virginia Department of Rail and Public Transportation to conduct a study of technology available to address traffic problems in the I-66 Corridor.

I am pleased to present the findings of this study which indicate that there are two technologies, not already considered by the I-66 MIS, that could provide significant benefits to the corridor. Bus Rapid Transit (BRT) and Futrex Incorporated's suspended monobeam system, called *System 21*, have the potential to provide high quality public transportation to the corridor at a relatively modest cost. A discussion of the technology utilized by each system is provided along with an estimate of when it could be implemented.

As always, let me know if you have any questions.

Sincerely,

Leo J. Bevon

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Preface

In response to House Joint Resolution (HJR) 715 and Item 535E in the 1999 Virginia Acts of Assembly, the Department of Rail and Public Transportation (DRPT) conducted a study to "*assess the technology available to address travel problems in the I-66 corridor and the suitability of such technology for implementation in the next 10 years*" (note: HJR 715 and Item 535E differ in terms of the implementation time. HJR 715 calls for implementation in the next 10 years and Item 535E calls for implementation in the next two years. This report addresses both timeframes).

Corey Hill (Senior Transportation Engineer, DRPT) served as the project manager for the study. The study group included Leo Bevon (Director, DRPT), Chip Badger (Public Transportation Division Administrator, DRPT) and Gary Kuykendall (Transportation Engineering Programs Supervisor, DRPT).

Contributions to this study were provided by Byron Waldman (President and Chief Executive Officer, Futrex Inc.), Thomas Waldron (Senior Vice President, Futrex, Inc.), James Tuten, PE (Vice President, Futrex, Inc.), the Volpe Center and the Federal Transit Administration..

EXECUTIVE SUMMARY

During its 1999 Session, the Virginia General Assembly passed House Joint Resolution (HJR) 715 directing the Department of Rail and Public Transportation (DRPT) to "*assess the technology available to address travel problems in the I-66 corridor and the suitability of such technology for implementation in the next 10 years.*" Similar language also appears in the 1999 Acts of Assembly, Item 535E (note: the only difference is the implementation timeframe, 2 years instead of 10 years. This report addresses both timeframes).

The study team examined two candidate technologies: *System 21*, a suspended monobeam system, and Bus Rapid Transit (BRT). Both technologies are capable of being implemented within the next 10 years and have the potential to serve as alternatives or supplemental systems to the recommendations adopted in the recently completed I-66 Major Investment Study (MIS). Although the assessment validates both technologies, further analysis is required and recommended to determine the benefits of each technology to the I-66 corridor and how these technologies could be implemented under various scenarios.

The report assesses each technology in terms of its development status, features, advantages, and feasibility. *System 21* is a conceptual suspended monobeam system capable of operating simultaneous two-way traffic on either side of a narrow triangular shaped beam. The system is prefabricated off-site for easy and quick implementation. Trains can operate in consists of one to ten vehicles at up to 70 mph and carrying potentially more than 20,000 passengers per hour, per direction. The system's tight 90-foot turning radius provides it with the flexibility to operate in urban settings and its 6-foot wide beam and modest sized support beams are unobtrusive.

The system is progressing towards development in January 2000 with the construction of a full-scale prototype. A quarter-scale "proof of concept" model has already validated the systems geometric and engineering principles. The development plan for this technology is discussed in this report and opportunities for implementation in the I-66 Corridor are examined in a general sense.

BRT is a relatively new concept to the United States that is being promoted through a Federal Transit Administration (FTA) demonstration program. Bus rapid transit (BRT) combines the quality of rail transit and the flexibility of buses. BRT service can operate on exclusive transitways, HOV lanes, expressways, or ordinary streets. A complete BRT system combines intelligent transportation systems technology, priority for transit, cleaner and quieter vehicles, rapid and convenient fare collection, and integration with local land use policy.

Virginia's Dulles Corridor is one of the premier test sites in the program. BRT can be used as a stand alone transit alternative or as in the Dulles Corridor project, a step leading to the implementation of rail. A discussion is provided on the similarities and differences between implementing BRT in the Dulles Corridor versus the I-66 Corridor.

INTRODUCTION

The I-66 corridor was originally proposed in 1956 as a 76 mile Interstate Highway link between Washington, D.C. and Interstate 81. Since its inception, the corridor has seen continuous improvements over the past four decades that have brought additional general purpose capacity, high occupancy vehicle lanes and public transportation services (including bus, express bus, heavy rail and commuter rail). However, the corridor's historical rapid growth has outpaced these capacity improvements.

In late 1995, DRPT and the Virginia Department of Transportation initiated a Major Investment Study (MIS) to evaluate potential transportation improvements along a portion of I-66 in Northern Virginia. The study encompassed a 25-mile long corridor centered on I-66 extending from the interchange of I-66 and I-495 in Fairfax County on the east to the interchange of I-66 and U.S. Route 15 in Prince William County on the west. This MIS built upon past planning efforts in evaluating the implementation of various transportation improvement alternatives in the corridor.

Following three years of analyzing a number of multi-modal alternatives, the I-66 MIS Policy Advisory Committee (comprised of local elected officials and a member of the Commonwealth Transportation Board) selected a Locally Preferred Transportation Investment Strategy. The elements of the strategy included the following:

- Extend Metrorail's Orange Line beyond the Vienna Station terminus to Centreville.
- Construct a two-lane, reversible, barrier separated high occupancy vehicle (HOV) facility between I-495 and the vicinity of the proposed Route 28 Bypass.
- Add 1 general purpose travel lane in each direction to I-66 between Route 50 and I-495.
- Expand bus transit, VRE and Metrorail services.
- Continue coordination with other major projects that might affect the I-66 corridor.

The technology assessment study team reviewed the strategies analyzed by the I-66 MIS and assessed technologies not considered by the MIS that could be used to improve the Locally Preferred Investment Strategy within the next decade.

NEED STATEMENT

The I-66 MIS found that additional transportation system capacity is needed to support the expected growth in both population and employment in the study area over the next 20-25 years. The current population of the I-66 Corridor MIS study area is estimated to increase 73 percent by the year 2020. Similarly, total study area employment is projected to increase 83 percent by the year 2020.

The net effect of these projected changes in population and employment is an expected increase in study area related work trips by approximately 79 percent. Moreover, the current transportation system in the study area is already being heavily utilized by existing travel demands.

The Locally Preferred Transportation Investment Strategy will provide capacity improvements that should absorb most of the increase in related work trips by 2020. However, it will not completely alleviate projected study area peak period traffic congestion in the year 2020. In other words, congestion in the year 2020 will not be any better or any worse than the current conditions if the I-66 MIS recommendations are implemented. Therefore, the technology assessment study team is examining available technologies (above and beyond those considered by the I-66 MIS) to meet the growing travel demands of the I-66 corridor.

TECHNOLOGIES ASSESSMENT

The technology assessment study team began its assessment with a review of the transit technologies considered by the I-66 MIS. The MIS examined different alternatives for commuter rail, heavy rail (i.e. Metrorail) and light rail. The group then took a broad sweeping look at other technologies applicable to the corridor that fit within the implementation parameters of Item 535E and HJR 715 (within the next 2 years and within the next 10 years respectively). The analysis concluded that two candidate technologies should be studied further, Suspended Monobeam Systems (such as Futrex Incorporated's *System 21*) and Bus Rapid Transit (BRT). Below is a description of the technologies and a discussion of their potential applicability to the I-66 corridor.

SUSPENDED MONOBEAM SYSTEMS - *SYSTEM 21*

System 21 is a conceptual suspended monobeam system capable of simultaneous two-way traffic by operating vehicles on either side of a triangular monobeam. The system, designed by Charleston, South Carolina based Futrex Incorporated, has completed its second phase of development and is generating attention on both national and international levels. If Futrex is able to secure funding for Phase III of its development plan, the first implemented *System 21* could occur as soon as 2002.

Development Plan

Phase I of Futrex's development plan for *System 21* involved years of research, conceptual design, preliminary engineering and evaluation. An important element of this phase was subjecting the system to critical review by members of the scientific and transportation communities, as well as governmental agencies. After a year-long independent evaluation, the National Bureau of Standards confirmed key elements of the system, which resulted in the project attracting an $80,000 Financial Assistance Award from the U.S. Department of Energy in 1989. This grant was used to finance several independent studies. The studies validated the system's suspension and structural design.

An extensive peer review process led to increased awareness of *System 21*and played an important role in marketing the system to the transportation industry.

In May 1996, Futrex successfully completed Phase II of their program, the construction and evaluation of a functioning quarter-scale model of the system. The project was completed at a total cost of $1.6 million, including $1.25 million in Federal funding. The "proof of concept" model was a critical step in the system's development, confirming the basic geometry and engineering principles underlying the technology. The model illustrated the alignment and interaction of the system's cars, guideway, station and switch in a cost effective manner. It also provided for completion of a significant amount of final design and engineering for Phase III, development of a full-scale prototype.

Futrex took another important step in Phase II by assembling a consortium that could provide the necessary skills and resources to take *System 21* through full-scale demonstration. The consortium currently includes Battelle Memorial Institute, Frederic R. Harris, Inc. and Charleston Marine Manufacturing Corporation and SYSTRA Consulting, Inc. These firms contribute expertise in design, engineering and manufacturing.

Phase III will focus on the construction and demonstration of a 1.25 mile full-scale prototype of *System 21*. This is another critical step because Futrex must demonstrate to end users the system's viability, operating efficiency and safety by constructing and extensively testing a fully operational prototype. Successful implementation of this phase will lead to commercial production of the system.

At least two sites for the prototype may be available in the Charleston, South Carolina area. The preferred site is adjacent to Charleston International Airport access road, along an alignment which would serve well as the first segment of a regional transit system linking major activity and population centers. Futrex is working with local officials and with the Charleston Area Regional Transportation Authority to plan for such a regional transit system, presuming success of the prototype. Preliminary site evaluation of the airport alignment has been completed, and final engineering, environmental, insurance and financial issues associated with the prototype easement should be finalized by January 2000. The anticipated cost of Phase III is $35-40 million (including corporate overhead, marketing expenses and financing activities). It will take 36 months to meet the goals established for the phase and certify that the technology is fit for commercialization.

Funding for the prototype will come from several different sources. Futrex plans on utilizing $6.2 million of Federal grant money it has received and $15-20 million of private capital it expects to raise. The balance of the funding needed is likely to come in January 2000 through a $20 million loan from South Carolina's State Infrastructure Bank.

Technology Features and Advantages

System 21 provides for simultaneous two-way traffic on a single elevated beam. The triangular guideway will be six feet wide and installed, on average, 16 feet above the ground, allowing clearance for vehicles and pedestrians while blocking out very little sunlight. The average foundations for support beams are 7' x 7' x 2'. The average beam span and column spacing is 84 feet and the minimum curve radius is 90 feet (similar to urban traffic intersections).

The system is designed to operate up to 70 mph in most urban settings (a future version should be capable of speeds over 100 mph for longer distance applications). Vehicle consists can range from one to ten cars. Each 28' vehicle is designed for up to 52 passengers (24 seated and 28 standing). The system can accommodate potentially more than 20,000 passengers/hour/direction, and trains may be able to operate at headways of 90 seconds. Train operation can be fully automated, or driver controlled with automated safety backup. A typical four car station requires a 12' x 120' landing at grade and island platform loading is standard although outboard vehicle doors to side platforms can be accommodated. Stations and vehicles are ADA accessible.

System 21 beams, columns and wayside components are pre-fabricated in a factory setting and shipped to the site for installation. Because the system is modular, and essentially "portable," it can be easily expanded into networks. The portability aspect may also allow *System 21* to be the first fully leasable transit system.

Vehicle evacuation features include vehicle-borne stairways and emergency slides, and a cantilevered, guideway-mounted walkway with deployable handrail (under development). Passengers will also be able to move from car to car to flee a hazardous or uncomfortable situation (i.e. too hot or too cold). Over waterways and busy highways, or at exceptionally high elevations, Futrex may introduce an open truss beam configuration which incorporates an emergency walkway internal to the beam.

System Costs

Futrex estimates that *System 21* capital costs will be $20-25 million per mile, including guideway, stations, power substations, vehicles, maintenance facility and train control (note: this does not include Futrex profit margins). Futrex believes that operating costs will be equal to, or lower than, that of other fixed guideway systems carrying comparable numbers of passengers/hour/direction.

System 21 in the I-66 Corridor

According to the I-66 MIS, the recommended extension of the Metrorail Orange line service from Vienna/Fairfax-GMU to the vicinity of Centreville, is projected to carry approximately 30,000 passengers per day. By increasing Metrorail's frequency of service from 6-minute headways to 3-minute headways and increasing the train size from six to eight cars per train on fifty percent of the trains, Metrorail's capacity would increase to approximately 15,400 passengers per hour (Note: Typical heavy rail systems like Metrorail are ultimately capable of carrying 40,000 + passengers per hour) The estimated capital cost of the approximately 8 mile extension is $657 million (includes rail cars). This averages out to a cost of $82 million/mile. Strictly for comparison purposes, *System 21* can carry potentially more than 20,000 passengers/hour/direction (operating on 90 second headways) at a cost of $20-25 million per mile (not including Futrex profit margins). Whether or not *System 21* is an appropriate alternative to Metrorail requires a more detailed analysis than this assessment.

System 21 may also have promise as a supplement to the I-66 MIS recommendation, instead of just an alternative. While the $1.2 billion in recommended improvements for the corridor will handle the 79 percent projected increase in travel demand for the year 2020, the investments will not improve the level of service significantly over the current conditions. *System 21* has the flexibility to serve as a feeder system to Metrorail in any of the proposed station location areas, which may increase transit ridership. Furthermore, it could potentially serve travelers in the Dulles and I-66 corridors by serving as a feeder to Tysons Corner, the 12th largest Central Business District in the U.S.

With any new transit technology however, seeing is believing. In that context, the study team identified several key areas of concern with *System 21*:

1) It is currently an unproven technology at full-scale. Futrex will address this in Phase III of its development plan and the results of the evaluation will largely determine the future of the technology.

2) Futrex is a relatively, new developmental company that must expand its consortium in order to commercialize and manufacture *System 21*. It currently does not have the necessary resources to implement the system. Again, this is a goal of their development plan that must be met.

3) Vehicle evacuation systems remain under development. Although Futrex has a number of ideas on how a vehicle could be evacuated, many of these ideas require design, engineering and testing to determine which methods provide the best results.

4) Smaller subsystems such as fare payment, traveler information and security have not been addressed at a detailed level. These subsystems are important to the everyday operation and function of the system. They can be complex to implement and require adequate testing.

5) Futrex does not want to be in the business of "*over promising*" and "*under delivering*." They are focused on the next phase of their development plan, the prototype, and are not ready to commit to potential system implementation timelines. They want to make sure the system is sound and well tested. Therefore it is difficult to gauge when *System 21* will be available for purchase.

The assessment did not turn up any fatal flaws to the potential implementation of *System 21* in the I-66 corridor. Futrex's progress with the prototype should be monitored closely and a more detailed analysis of *System 21* as an alternative or as a feeder to Metrorail should follow once the successful testing and evaluation of the prototype is complete.

BUS RAPID TRANSIT (BRT)

Bus rapid transit (BRT) combines the quality of rail transit and the flexibility of buses. BRT service can operate on exclusive transitways, HOV lanes, expressways, or ordinary streets. A complete BRT system combines intelligent transportation systems technology, priority for transit, cleaner and quieter vehicles, rapid and convenient fare collection, and integration with local land use policy.

BRT in the United States

On June 8, 1999, the Federal Transit Administration (FTA) announced the selection of ten communities to participate in the federal Bus Rapid Transit (BRT) demonstration program to show how combining planning and technological devices will allow buses to operate with the speed, reliability and efficiency of light rail vehicles at a fraction of the cost. The selected communities include:

- Boston, Massachusetts
- Charlotte, North Carolina
- Cleveland, Ohio
- Dulles Corridor, Virginia
- Eugene-Springfield, Oregon
- Hartford-New Britain, Connecticut
- Honolulu, Hawaii
- Miami, Florida
- San Juan, Puerto Rico
- Santa Clara County, California

BRT offers many of the features of a subway system – vehicle movements unimpeded by traffic signals and congestion, fare collection prior to boarding, quick passenger loading and unloading, efficient and reliable service -- but above ground and visible. Currently, successful BRT systems are operating in Curitiba, Brazil; Ottawa, Canada; and Orlando, Florida.

Technology Features and Advantages

There are several key concepts involved in making ordinary bus service into Bus Rapid Transit. Each concept can be realized by taking advantage of one or more BRT features.

Reducing Travel Time

All BRT projects seek to improve service by reducing travel time. The components of travel time include time getting to and from the transit stop, time waiting for the transit vehicle, and time in the vehicle. If a transfer is needed, there is also additional walking and waiting time.

A central concept in BRT planning is to give priority to transit vehicles, since on average they carry many more people than other road vehicles, and the goal should be to maximize person-throughput, not necessarily vehicle-throughput. One form of priority is to run service on exclusive rights-of-way such as busways and exclusive lanes on expressways. These techniques can greatly reduce in-vehicle travel time.

Another form of priority is to designate bus lanes on arterial streets. Providing traffic signal priority to transit vehicles can also speed operation on streets. Reducing the number of stops, providing limited-stop service, or relocating stops to areas where there is less congestion can also speed service, although potentially with the disadvantage of increasing walk time.

All of these techniques not only reduce in-vehicle time but by improving the reliability of service can reduce waiting time also. Since customers particularly do not like to wait for transit, reductions in waiting time can make service much more attractive. Automatic vehicle location systems can be used to manage bus service to manage the intervals between buses, thereby minimizing passenger waiting time. Improved transit stations can improve the experience of making a transfer, when the system design requires transfers (for example, among different transit modes).

Changing fare collection policies to reduce or eliminate on-vehicle fare purchase can speed boarding. Using vehicle designs that feature fewer steps and more or wider doors can also reduce dwell time.

User Friendly Service

Although faster travel is a key element in improving service and attracting more transit trips, transit will not be attractive to many potential riders unless it is more user-friendly. Better passenger information can make transit service easier to use. Providing real-time bus status information (a by-product of automatic vehicle location) can reduce customer anxiety while waiting. A unified system design, with colors and images coordinated between stops, vehicles, and print materials, can simplify the experience of using public transit.

Using marketing techniques can make the public aware of service improvements, and also help to improve the public image of buses.

Making land use policy more oriented to developing and maintaining pedestrian-friendly areas will improve and enhance the attractiveness of transit. In the long-run, land use policy coordinated with transit investments will help to make transit trips convenient by locating attractors conveniently adjacent to transit corridors and stations.

BRT Benefits

Reducing travel time will provide a benefit to all users of transit. In addition, faster service, combined with better information and better marketing to improve transit's image, will increase transit ridership. BRT can also help in the effort to promote transit-oriented land development. Understanding BRT features provides transportation planners the ability to offer a new transit option to the public which combines the ease-of-use of some rail service with the flexibility of bus service.

BRT in Virginia's Dulles Corridor

BRT is currently planned for implementation in Virginia's Dulles Corridor as part of the Dulles Corridor Rapid Transit Project. It is one of the premier projects in FTA's BRT program. The entire project is made up of four phases that includes the implementation of express bus service, BRT and heavy rail. A detailed description of each phase is provided below.

Phase I (1999-2001) began in Spring 1999 when Fairfax County essentially doubled bus service in the Corridor, including new express bus service. Service increased to the West Falls Church Metrorail Station and new service was added to Tysons Corner and the Monroe Street parking garage. The service is taking advantage of park and ride facilities built in the Corridor.

Phase II (2001-2003) of the project will further expand express bus service by providing 18 additional bus routes (12 in Loudoun County, 5 in Fairfax County, and one to Dulles International Airport). 46 new buses will serve eastern Loudoun County and Fairfax County to Tysons Corner and the West Falls Church Metro station.

Phase III (2003-2006) will implement a Bus Rapid Transit (BRT) system to provide high quality bus service as an interim step to rail. This phase provides four new BRT routes and 25 buses serving eastern Loudoun County, Dulles Airport, Reston/Herndon, Tysons Corner and the West Falls Church Metro station. At up to four locations, BRT stations will be built in the median (three of which are convertible to rail). A fifth station will be built at the West Falls Church Metro station and four stops will be built at future rail station sites. The BRT concept is expected to maximize use of the existing facilities at Monroe Street and Wiehle Avenue by creating stations at these locations.

Phase IVA (2006-2010) is implementation of rail service from the West Falls Church Metrorail Station through Tysons Corner, and BRT from West Tysons to Reston/Herndon, Dulles Airport and eastern Loudoun County.

Phase IVB (2010 +) will complete the rail extension from western Tysons to the vicinity of Route 772 in Loudoun County.

Each phase of the project is intended to build the transit market for the next phase. BRT is being used in the Dulles Corridor to build the market for the corridor's ultimate vision, rail.

System Costs

The BRT system envisioned for the Dulles Corridor has an estimated capital cost of $238 million (in year of expenditure $). The estimated annual operating and maintenance cost ranges from $40-50 million depending on the level of service provided. The system would operate the length of the corridor between 2003-2006 and from western Tysons to the vicinity of Route 772 between 2006-2010.

BRT in the I-66 Corridor

The I-66 MIS has an ambitious recommendation of investments with an estimated cost of over $1.2 billion (in 1998$). The Policy Advisory Committee for the I-66 MIS recommended the implementation of the proposed rail extension first, then high occupancy vehicle lane improvements and finally, single occupancy vehicle lane improvements. It is unlikely that all of the recommended improvements will be implemented within the next ten years due mainly to federal, state and local funding constraints brought on by other major capital projects in the region that are further along in implementation (i.e. Springfield Interchange Improvement Project, Woodrow Wilson Bridge Project, Dulles Corridor Rapid Transit Project).

Bus Rapid Transit could theoretically be implemented as part of a rail development program in much the same way that it is in the Dulles Corridor. The I-66 MIS recommendation calls for short term TSM/TDM improvements to Metrorail, Virginia Railway Express (VRE) and bus services. The improved bus services would be similar to the express bus services being implemented as Phase I and Phase II of the Dulles project. The improved express bus services would build the market for BRT in the I-66 Corridor, which would in turn build the market for the rail extension. Up to four stations could be built in the median where proposed rail stations may be located (Centreville, Stringfellow Road, Fair Oaks/Fair Lakes and Chain Bridge Road).

A preliminary review of the issues associated with BRT implementation in the I-66 Corridor revealed several obstacles experienced by the Dulles project, as well as other new obstacles not yet faced. The first obstacle to BRT in the I-66 Corridor is that it was not analyzed as an alternative in the I-66 MIS and is therefore not part of the recommended investment strategy. The Dulles Corridor MIS also did not analyze BRT and as a result had to conduct a detailed analysis to justify the investment in BRT. As a first step towards BRT in the I-66 Corridor, a similar analysis would need to be conducted to determine the benefits of BRT implementation and if justified, included as part of the recommended improvements for the corridor.

Station locations and the definition of the guideway for the BRT buses are new obstacles for BRT in the I-66 Corridor. Analysis by the I-66 MIS study team on locations for future Metrorail stations revealed problems with every desirable location for a station. The team concluded that a more detailed analysis of potential station locations should be conducted. The issue of rail station locations must be resolved prior to implementing BRT in order to build convertible stations that maximize capital dollars. The guideway for BRT buses is also a limiting factor because the only thing available is one single concurrent flow HOV lane in each direction (outside the Capital Beltway). This limits the speed at which buses can travel, the reliability of the service and the frequency of the service. These limits could be improved dramatically with the implementation of barrier-separated HOV lanes (as recommended by the I-66 MIS). If federal funding is available for the HOV barrier separated lanes prior to federal funding becoming available for the rail extension, BRT could become an extremely viable option. However, this would be a change in direction from the I-66 MIS Policy Advisory Committee recommendation and would require local commitment and support.

There are too many variables in BRT system design to estimate at this level of analysis what the capital or operating and maintenance cost may be for a BRT system in the I-66 Corridor. The study team is confident although in stating that it would likely be less than the Dulles Corridor system.

CONCLUSION

The assessment of *System 21* and Bus Rapid Transit has revealed no fatal flaws as a potential application to improve transportation problems in the I-66 corridor within the next 2 years or the next 10 years (although the assessment recognizes that implementing *System 21* within the next 2 years would be a challenge). In addition to the needed advance of each technology, implementation is largely dependent on the results of the I-66 NEPA analysis, the availability of federal funding, and the political will of the local jurisdictions in the corridor. Further analysis should be conducted for each concept at the appropriate time to address the safety, operational, land use and cost issues addressed in this assessment.

APPENDIX A

HOUSE JOINT RESOLUTION NO. 715

Requesting the Department of Rail and Public Transportation, in cooperation with the Department of Transportation, to assess the technology available to address travel problems in the I-66 corridor and the suitability of such technology for implementation in the next 10 years.

Agreed to by the House of Delegates, February 9, 1999
Agreed to by the Senate, February 23, 1999

WHEREAS, there is considerable congestion during commuting and noncommuting hours along the I-66 corridor from Route I-495 to Route 28; and

WHEREAS, the Department of Transportation has conducted a Major Investment Study (MIS) of the I-66 corridor from Route 234 to I-495; and

WHEREAS, the findings of the I-66 MIS indicate high levels of congestion in the I-66 corridor and that there will be a continually increasing demand for transportation facilities in the I-66 corridor for many years; and

WHEREAS, the I-66 MIS has recommended additional highway and rail construction between the Vienna rail station and Centreville; and

WHEREAS, the I-66 MIS recommendations involve estimated unfunded costs in excess of $1 billion and acquisition of additional rights-of-way, but their construction will not begin for at least six years; and

WHEREAS, there may be various alternative technologies that may be able to provide additional transportation facilities at a lower cost, more quickly, and without additional rights-of-way; and

WHEREAS, there is a desire to find solutions to the traffic congestion along I-66 and to meet north-south commute requirements that could be implemented earlier than the implementation of the recommendations of the I-66 MIS; and

WHEREAS, it has been proposed that a rail transit system be constructed along the Dulles corridor, augmented by a bus-based feeder system; now, therefore, be it

RESOLVED by the House of Delegates, the Senate concurring, That the Department of Rail and Public Transportation, in cooperation with the Department of Transportation, be requested to assess the technology available to address travel problems in the I-66 corridor and the suitability of such technology for implementation in the next 10 years. The Department shall complete its work in time to submit its findings and recommendations to the Governor and the 2000 Session of the General Assembly as provided in the procedures of the Division of Legislative Automated Systems for the processing of legislative documents.

APPENDIX B

THE 1999 ACTS OF ASSEMBLY – ITEM 535E

The Commonwealth Transportation Board shall allocate to the Department of Rail and Public Transportation $25,000 from transportation revenues to assess the technology available to address travel problems on Interstate 66 and to report on the suitability of that technology for implementation in the next two years.