Intelligent Transportation Systems FY 2012 Program Update

IBI Group

May 19, 2011

1. Introduction

This DRPT Intelligent Transportation Systems (ITS) Program Update builds upon DRPT's 2009, Intelligent Transportation Systems Strategic Plan which was developed to support the process of coordinating and promoting ITS deployment across the state. This plan supports DRPT's mission: to improve the mobility of people and goods while expanding transportation choices in the Commonwealth. Several of the goals established for achieving this mission are directly supported by the development of a coordinated ITS program. Specifically, a coordinated ITS program addresses the goals of "Seek the highest possible return on investment to maximize limited funding" and "Implement best practice management tools and techniques to improve customer service and accountability". The following figure illustrates how the Planning process and program updates are derived based on DRPT goals and agency needs.

The ITS Planning activities seek to:

- Identify transit ITS technologies and their applicability to Virginia transit agencies;

- Provide an evolving map of the deployment of transit ITS in Virginia; and

- Identify increased efficiencies, cost savings and greater benefits through increased coordination of transit ITS deployment in Virginia
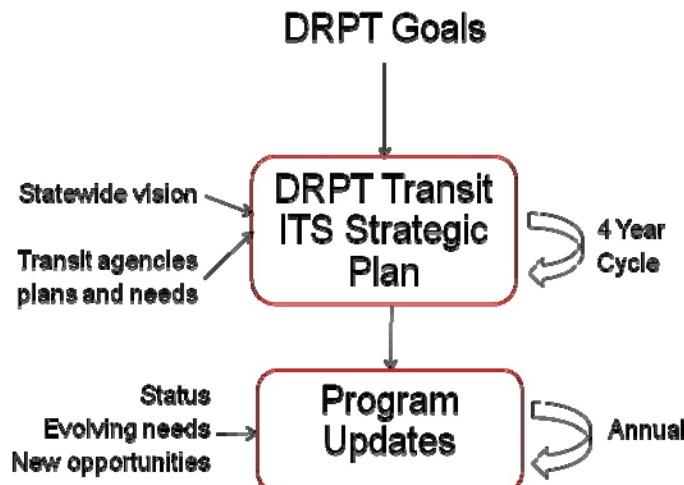
By undertaking the initial planning effort, DRPT seized the opportunity to take a lead role in this coordination effort, helping to facilitate the proliferation of interoperable systems among transit operators in the state. The plan considered the application of the key enabling transit ITS technologies which include:

- Computer aided dispatch / automatic vehicle location (CAD/AVL) for enhanced operations management and peripheral technologies such as transit signal priority to improve transit on-time performance;
- Various information systems on-board, in facilities, and through remote access (i.e. web, phone, smart phone) to improve customer awareness and accessibility;
- Passenger counters and scheduling software to improve reporting and service planning;

- Automated fare collection systems, and security surveillance systems to improve the attractiveness of transit service; and
- Maintenance management applications to improve the efficiency of fleet maintenance activity.

The adoption of these technologies provides the means to automatically monitor and report on the performance of the transit service to validate improvements, and introduce remedial measures as appropriate. A typical core technology that can provide benefits to the management and operation of a transit service as well as to its customers is the deployment of CAD/AVL to track the real-time location of the transit vehicles. Such systems enable advanced traveler information via a variety of media such as web, phone and text as well as performance monitoring and data collection for enhanced planning activity. The associated in-vehicle technology and communications can be leveraged for other security and management applications such as passenger counters and on-board cameras.

The effort to develop the Strategic Plan included reaching out to the transit agencies across Virginia via a survey and two workshops to determine the level of ITS deployment and their intentions in terms of future deployments. This outreach identified an extensive base of ITS deployment at many agencies, revealed opportunities for coordination between agencies and elicited their needs in terms of ITS deployment support.

As a result of this outreach and dialog, the ITS Strategic Plan incorporated a number of regional or state-wide initiatives which could be pursued with the cooperation of multiple transit and transportation stakeholders. DRPT implemented several of these activities which are providing ongoing benefits to multiple agencies in their deployments. These activities include development of a statewide forum, in collaboration with the ITS Virginia Association, for transit ITS networking and interaction; coordination with the statewide 511 program; a study on common wireless communications systems to assist agencies with meeting Federal regulations and identifying alternatives to support their ITS deployments; and establishment of a forum for reviewing technology standards and sharing transit ITS resources and materials. These activities have begun to establish a Transit ITS community within the Commonwealth that will help promote the deployment of ITS and provide support through shared lessons learned and exchange of advice and ideas.

The Strategic Plan provides a periodic snapshot on the direction of the ITS program and is ideally updated on a four year cycle to maximize the opportunities for coordination and helps set direction for DRPT's ITS cross cutting and support activities. However, agencies continue to expand their deployment of ITS technologies and their needs continue to evolve during this four year cycle. This Program Update therefore seeks to capture these changes in the context of the rapidly moving Transit ITS industry and capitalizes on the annual DRPT Grant cycle for Demonstration and Capital Grants specifically. By maintaining an up-to-date view of the needs and plans of the agencies through this update, DRPT can tailor support and coordination activities and make more educated decisions on the application of statewide resources including coordinated project opportunities and grant support for technology deployment through the Demonstration Program.

The work in this Program Update built on the initial Strategic Plan by performing a more in-depth outreach and data gathering exercise via seven regional workshops. These workshops included a needs gathering exercise, a needs based survey, an overview of the current state of the Transit ITS marketplace and promotion overall program coordination and the benefits of ITS deployment. The workshops provided direct interaction with 20 transit agencies that have or are planning to deploy ITS and who have a strong interest in deploying additional ITS technology in the near future. The workshops also provided a forum for regional interaction allowing agencies to learn about the technology activities and plans of their neighbors and providing experienced agencies an opportunity to share their experiences with agencies less far along the ITS deployment timeline. The deployment status snapshot presented in the ITS Strategic Plan has been updated with the data gathered during this exercise and is presented in Figure 1 on the following page. Cells highlighted in yellow indicate the anticipated FY 2012 expansion of the ITS program resulting from this Program Update. In the

majority of cases these grant requests were anticipated by the ITS plan allowing evaluation of these request from a strategically approved perspective.

This document provides a summary of the activities carried out and findings gathered during this Program Update work as follows:

- Program update activities – this section provides a summary of the workshops and agency support provided;
- Agency needs – provides the results of data gathering undertake at the workshop include survey results, agency needs and resulting grant applications.
- Program needs – this section provides information on the broader program opportunities that arose from this program update

ITS DEPLOYMENT PLANS (Within Next 6 Years)

Legend:
- Existing Deployment = tan/gray square
- Near-Term Deployment (1-2 years) = blue square (■)
- Mid-Term Deployment (2-6 years) = red triangle (▲)
- FY 2012 Projects = yellow highlight

TRANSIT OPERATOR	Large (300+)	Medium (100-300)	Small (<100)	Large (50+)	Small (<50)	Commuter Bus	Rail	CAD/AVL	APC	AVA	TSP	AFC	On-Board Cam	IVR	RT Web	Trip Plan	Info Mobile Device	Sched & Run Cut	Maint Mgmt	Driver Mgmt	Yard Mgmt	Info Displ	Sec Cam	Sec Alarm Button	ITS Expansion	ITS Planning
Alexandria Transit Company			x																			■			■(yellow)	
Arlington Transit			x	x									▲	▲	■	▲	■									
Bay Transit					x			■	■	▲			▲		■			■		■						■(yellow)
Blacksburg Transit			x		x											■						■	▲	▲	■(yellow)	■(yellow)
Blackstone Area Bus			x																				■			
Bristol Transit			x																							
Charlottesville Transit Service			x		x										■				■(yellow)		▲					
Danville Transit			x																							
District Three Public Transit			x					■											■							
Fairfax County DOT (Fairfax Connector)		x						▲	▲				▲		▲			▲			▲	▲	▲	▲		
Fairfax CUE			x						▲					▲												
Farmville Area Bus			x										■													
Four County Transit			x		x								▲													
Fredericksburg Regional Transit			x					■(yellow)						■(yellow)	■(yellow)		■(yellow)	■(yellow)				▲				
Greater Lynchburg Transit Company			x		x			■						■	■	■	■			■		▲				
Greater Richmond Transit Company		x		x								▲							■		▲		▲			
Greater Roanoke Transit Company			x		x			▲	▲									▲								
Greene County Transit, Inc.					x			▲				▲		▲		▲			▲	▲						
Hampton Roads Transit	x			x							■				■		■					■	■	■		
Harrisonburg			x		x									▲	■	▲	▲					▲	▲			
JAUNT Inc.					x							■	■	▲		▲			■			▲	▲			
King Street Trolley			x																							
Lake County Area Transit					x																					
Loudoun						x				■(yellow)				▲												
Mountain Empire Older Citizens Inc.					x																					
Petersburg Area Transit			x		x																					
PRTC OmniRide			x		x	x		▲									■								■(yellow)	
PRTC OmniLink			x					▲																		
Pulaski Area Transit			x		x																					■(yellow)
RADAR			x							■			▲						■							
STAR Transit			x																							
Town of Bluefield - Graham Transit			x																							
Town of Chincoteague						x																				
Virginia Railway Express							x															▲				
Virginia Regional Transit			x		x			▲	▲	▲		■	▲	▲	■	▲	■				■	▲	▲	▲		■(yellow)
Williamsburg Area Transport			x					■	▲					■	■		■	■	▲	▲		■				■(yellow)
Winchester Transit	x			x				▲	▲	▲								■								
WMATA	x			x			x															■				

LEGEND

Existing Deployment	(tan)
Near-Term Deployment (1-2 years)	■
Mid-Term Deployment (2-6 years)	▲
FY 2012 Projects	(yellow)

2. Program Update Activities

In order to gather information from a broad number of agencies across the state a number of regional workshops were undertaken. Locations were selected to give as many agencies as possible the opportunity to attend the workshops, share their experiences and needs and learn about some of the latest trends in the Transit ITS industry. All agencies were invited to participate and alternate dates and locations were provided to further encourage attendance. The following table identifies the final workshop locations and participants at each:

PROGRAM UPDATE ACTIVITIES	
Workshop location/date	**Participants**
Charlottesville **October 13, 2010**	Charlottesville Area Transit Fairfax County DOT (Fairfax Connector) Harrisonburg Department of Public Transportation
Blacksburg **October 14, 2010**	Greater Lynchburg Transit Company Mountain Empire Older Citizens Inc. Pulaski Area Transit RADAR Blacksburg Transit
Arlington **October 15, 2010**	Alexandria Transit Company Arlington Transit WMATA Virginia Railway Express
Fairfax **October 15, 2010**	Fairfax CUE Fairfax County DOT (Fairfax Connector) Loudoun County Office of Transportation Services
Richmond **October 25, 2010**	Greater Richmond Transit Company Lake County Area Agency on Aging Fredericksburg Regional Transit
Williamsburg **December 9, 2010**	Williamsburg Area Transport Hampton Roads Transit
Purcellville **December 21, 2010**	Virginia Regional Transit

The goals of the workshops were to:

- Explore the functionality and benefits of each area of transit ITS,
- Understand the agencies' needs, issues and opportunities relating to this technology area,
- Understand the agencies' current deployment or plans in this technology area,
- Identify the funding and grant opportunities available to support ITS deployment, and
- Determine where assistance can be provided to help the agency move closer to deployment.

The format of the workshops was tailored based on the needs of the agencies involved but generally used the following format:

- Agenda and purpose of meeting.
- Agency introductions including identifying technologies currently in place as well as current key issues being dealt with by each agency.
- Completion of a function needs based survey. This survey was designed to be technology independent and to allow agencies to rate their needs without identifying or rating specific ITS technologies. This kind of basic needs analysis is the first step in the Systems Engineering process that should be used by agencies deploying new systems to ensure that the selected technologies meet their organizational needs and can be integrated into the long term operations processes. The survey sought rating of needs in the following areas:

    1. Customers

    2. Drivers

    3. Dispatchers

    4. Planning & Management

    5. Maintenance & Security

The full survey instrument is provided in Appendix A.

- Review of trends in the ITS marketplace with a focus on areas that met needs identified through discussion or the survey responses.
- Discussion of the Systems Engineering process and why it is important to help ensure that the agency procures the right technology for their business and is able to utilize that technology to obtain the projected benefits.
- Discussion of the DRPT Demonstration Grant program including types of projects covered, application timing, and potential funding availability. The participants were encouraged to identify their level of interest in the program, what technology projects they may be applying for and if they needed support in order pursue technology deployment.

3. Agency needs

As identified in the workshop approach, a survey questionnaire was completed by the various participants to determine a rating of their needs in a number of functional and operational areas. The survey instrument focused on allowing agencies to rate their functional and operational needs rather than rating specific technological solutions. Overall 50 needs in the five categories were assessed using a scale of 1 to 5 as follows:
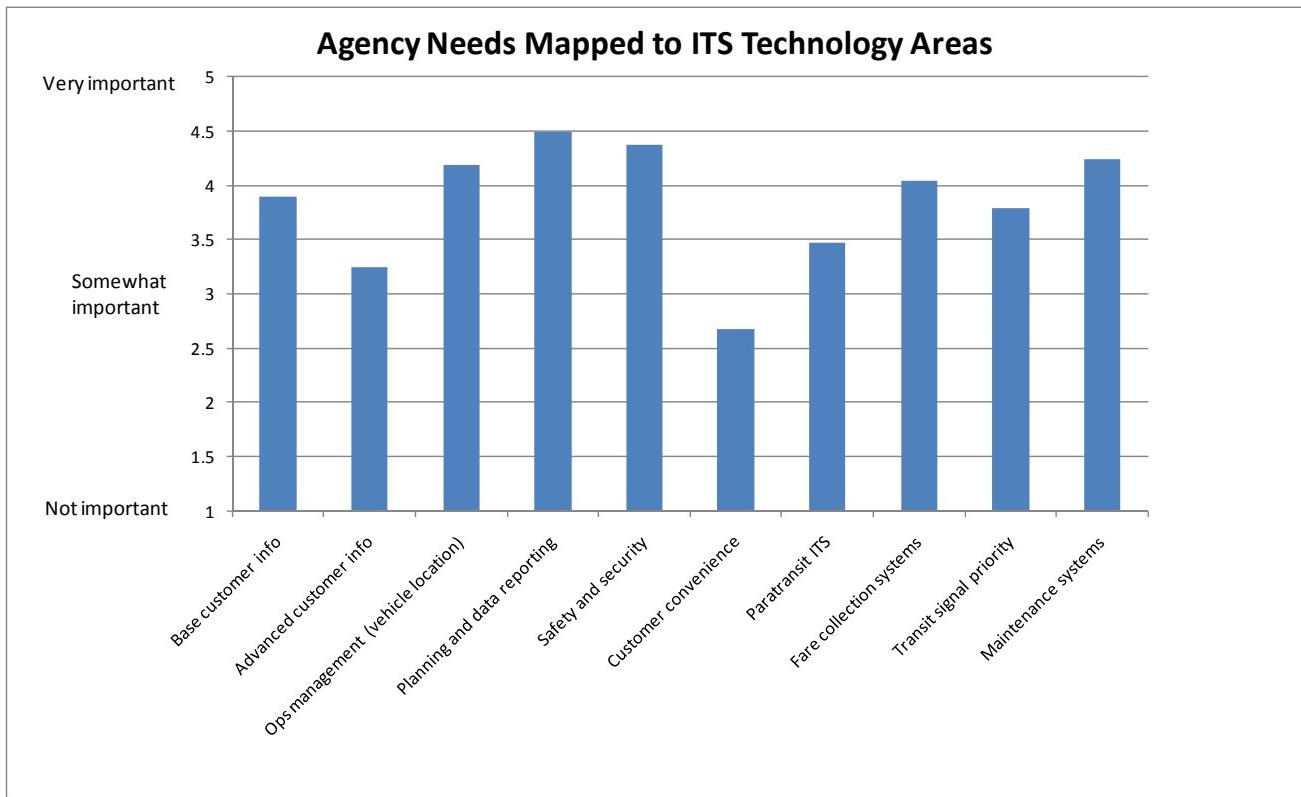
Not Important		Somewhat Important		Very Important
1	2	3	4	5
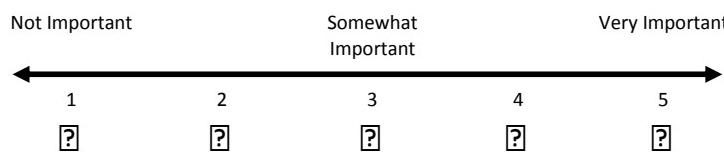
The following table illustrates the resulting rankings of these needs.

Rank	Stakeholder area	Need	Rating
1	Dispatchers	The ability to know where vehicles are in an emergency	4.84
2	Drivers	The ability for emergency services to quickly locate the vehicle in an emergency	4.82
3	Dispatchers	The ability to know if a vehicle is running late or early	4.80
4	Dispatchers	Knowing if there has been an unplanned service disruption	4.76
5	Dispatchers	The ability to know where vehicles are at all times	4.58
6	Maintenance & Security	Recording video inside a bus or rail car (for security or post incident re-creation for liability or safety concerns)	4.57
7	Planning & Mgmt	Having historical performance statistics and measures of how well the system is operating	4.55
8	Maintenance & Security	Recording video of the exterior (front and sides) of a bus or rail car	4.54
9	Planning & Mgmt	Having automated passenger counts of boardings and alightings by stop	4.52
10	Planning & Mgmt	The ability to electronically generate a schedule, runs and vehicle block information using a computer program	4.48
11	Dispatchers	The ability to know which driver is driving which vehicle	4.48
12	Planning & Mgmt	Having real-time performance statistics and measures of how well the system is operating	4.46
13	Planning & Mgmt	Recording actual vehicle on-time performance by route, trip and timepoint	4.46
14	Maintenance & Security	Having a black-box recording of a crash	4.43
15	Planning & Mgmt	Having comprehensive fare payment information	4.42
16	Drivers	Knowing if a bus is running late or early	4.36
17	Drivers	The ability to send a silent alarm and have dispatchers alerted to emergencies on the bus	4.32
18	Maintenance & Security	Automating the work order process	4.31
19	Drivers	Additional on-board and/or stop based security systems to improve driver sense of safety (e.g. cameras)	4.29
20	Dispatchers	The ability to electronically generate driver work assignment information using a computer program	4.26
21	Maintenance & Security	Being able to download at the end of the service day information about the drivetrain operating parameters	4.26
22	Dispatchers	The ability to re-route drivers around construction or an unplanned incident such as a water main break	4.25
23	Planning & Mgmt	Having real-time text or email alerts of major incidents	4.18
24	Maintenance & Security	Having the vehicle report in real-time STET critical conditions	4.14
25	Dispatchers	Ability to receive road status (construction/incidents) automatically through dispatcher systems	4.13
26	Customers	Additional on-board and/or stop based security systems to improve customer sense of safety (e.g. cameras)	4.10
27	Drivers	Automatic announcements of next stops (for sight and hearing impaired persons	4.08
28	Dispatchers	The ability to insert a trip, short turn a bus or train, or make service adjustments on the fly	4.04
29	Drivers	The ability of the fare system to automatically calculate the right fare with no driver intervention	4.04
31	Dispatchers	The ability to create an incident eport to document service interruptions / issues	4.00
30	Customers	Real-time information about the next bus or train available through a web page	4.00
32	Maintenance & Security	Real-time remote access to security video from the control room or nearby security vehicle	3.96
33	Drivers	The ability to send and receive electronic messages to dispatch or road supervisors via a mobile data terminal	3.93
34	Customers	An Internet web page that provides route planning information	3.91
35	Customers	Real-time information about the next bus or train at the stop or terminal	3.87
36	Customers	An automated telephone system that provides route planning information	3.85
37	Drivers	The ability to know how to navigate through detours and reroutes	3.84
38	Customers	Real-time information about the next bus or train available through an automated telephone system	3.81
39	Drivers	Having the traffic signals change if a bus is running late	3.79
40	Customers	Real-time information about the next bus or train available through a text message to a cellphone	3.74
41	Customers	Better information about transfers within your transit service	3.68
42	Customers	Automated notification of a reserved ride arrival (e.g. your ride will be there in 15 min)	3.50
43	Customers	Automated ride reservation system through web or automated phone system	3.45
44	Drivers	An electronic map display that shows alternative routes	3.34
45	Customers	Better information about transfers to other transit services	3.03
46	Customers	Real-time information about the next bus or train through on-line services such as Twitter or Facebook	2.94
47	Dispatchers	The ability to use text messages, rather than voice radio, to communicate with drivers	2.90
48	Customers	Better information about bike and non-motorized transportation options and connections	2.68
49	Customers	Public WiFi on the bus or train	2.68
50	Customers	Better information about park and rides	2.63

As can be seen from the table, the ability to detect and respond to emergencies and to real-time disruptions in service along with safety and security of the drivers and passengers are key needs that feature heavily in the top 10 needs of the agencies. Improved planning forms the next tier of needs followed by the needs of the agencies' customers. These needs match closely with deployment phasing adopted by many agencies. Initial deployments typically involve installation of vehicle tracking technologies and security cameras. These systems can then be built upon to provide improved planning data and detailed customer information systems.

By mapping each these needs to the general ITS technology areas that can help address the needs, a picture of the relative importance of the technologies can be built as follows:

Agency Needs Mapped to ITS Technology Areas

	Value
Base customer info	3.90
Advanced customer info	3.24
Ops management (vehicle location)	4.18
Planning and data reporting	4.50
Safety and security	4.37
Customer convenience	2.68
Paratransit ITS	3.46
Fare collection systems	4.04
Transit signal priority	3.79
Maintenance systems	4.23

This view of the results also illustrates that the application of enhanced operations management (through real-time bus tracking), planning software and reporting tools and safety and security technologies have the potential to address key needs of the agencies. Maintenance management technologies are also able to address a number of highly rated agency needs.

The workshops also identified specific areas where agencies needed additional support to take advantage of the benefits of ITS technologies. This support ranged from needs analysis through procurement support through grant funding for ITS deployment. The scope of this Program Update included resources to provide assistance to a number of agencies to help expand the program. These needs were therefore reviewed and direct support was provided to agencies as follows:

- Fredericksburg Transit – FRED had done some initial needs analysis to identify their next phase of ITS deployment which would include planning software, real-time bus tracking for computer aided dispatch and real-time passenger information. FRED indicated strong interest in applying for Demonstration Grant funding to deploy this technology but needed expert assistance to document their needs and map these to technology requirements. Assistance was therefore provided to perform the needs analysis, develop conceptual project budgets and assist with the grant application.

- Loudoun Transit – Loudoun had identified a need for automated stop announcement for which they planned to seek Demonstration Grant funding. Assistance was provided to validate their cost estimates.

- Harrisonburg – This agency was nearing completion of a procurement of a real-time bus tracking and information system and wished to ensure an effective contract was put in place. Expert support was provided to validate the pricing and identify the proposal clarifications that should be sought in order to develop relevant contractual terms. Harrisonburg stakeholders were also encouraged to visit a nearby facility that already had a system provided by the selected vendor.

- Virginia Regional Transit – VRT have several small and stove-piped ITS deployments but recognized significant benefits could be attained by a broader coordinated deployment. Assistance was provided to develop an ITS planning project scope and budget and prepare a Demonstration Grant application.

- Pulaski Area Transit – Pulaski have little deployed technology but are keen to identify which aspects of ITS can best meet their needs. Assistance was provided to develop an ITS Planning Project scope and budget which was used to prepare a Demonstration Grant application.

- Charlottesville Area Transit – Charlottesville already have significant technology deployment including a real-time bus tracking and information system. They have identified a need for improved maintenance management that could be achieved by application of a software system. Assistance was provided in reviewing the scope and cost estimate for this deployment which will be submitted for a Demonstration Grant.

- Williamsburg Area Transit Authority – WATA are in early stages of a project to expand the deployment of Transit ITS in their operations. The workshops provided support in their initial needs assessment and identified that additional funding was need to complete the full Systems Engineering planning process to ensure that the technology procured fits with their operations. Assistance was provided to develop the scope and budget for a Demonstration Grant to allow completion of the Systems Engineering process.

- Bay Transit – Bay Transit are in the process of procuring a Transit ITS system for their paratransit operation which will include central software, vehicle tracking and mobile data terminals on their vehicles. Through the programming efforts, expert technical review of their procurement documents was provided.

4. 2012 Program Applications

The outreach, workshops and Transit ITS expert support provided to the agencies was successful in encouraging an increased level of interest in the Demonstration Grant funding. A wide variety of grant applications were received ranging from agencies wishing to undertake thorough ITS planning prior to selecting technologies, through to agencies with established technology who are looking to expand or integrate their technologies. The following table provides a summary of the applications received for the ITS and safety focused Demonstration Program grants and the recommendations for inclusion in the 2012 program.

	PROGRAM APPLICATIONS		
Grantee	**Description**	**Amount**	**Initial Program Recommendation**
Williamsburg	Procurement support for ITS deployment	$70,500	Supported - continuation of Systems Engineering process
Alexandria	Extending existing AVL and traveler information to new BRAC buses	$164,350	Supported -expansion of current investment
Bay Transit	Additional funding to deploy complete ITS systems: Dispatching, vehicle location and mobile data terminals	$100,000	Supported - ensure most effective system is procured
Blacksburg Transit	Real time bus tracker	$47,500	Supported – expansion to current ITS
Blacksburg Transit	Communications options study for bus fleet	$43,700	Supported – planning activity to support continued utilization and expansion of existing ITS
Charlottesville	Maintenance asset management and real-time inventory	$156,158	Supported – identified operational benefits
Fredericksburg	Systems engineering approach to ITS deployment	$350,600	Supported – initial planning completed base system will meet customer needs
Loudoun	Hardware and software for each bus for automatic announcements	$380,000	Supported –upgrade to existing ITS
NVTC	Development of a device that acts as a portal for multiple bus ITS applications	$142,619	Not supported research and development project
Pulaski	ITS Planning and Systems Engineering	$54,150	Supported – planning process to support well engineered future deployment
PRTC	CAD/AVL Smart Bus replacement and farebox integration	$543,000	Supported – consultant support for system replacement plus ITS integration
VRT	ITS Planning and Systems Engineering	$75,000	Supported – planning process to support well engineered future deployment

5. Program needs

In addition to the specific needs identified for the participating agencies, the workshops also revealed a number of broader, crosscutting program needs. These needs include specific projects that could be undertaken for multiple agencies and more general support to promote information exchanges between agencies as follows:

- Statewide electronic payment platform – multiple agencies identified an interest in being able to deploy a smart card based electronic payment system to reduce the reliance on cash collection and offer improved customer service. However the cost of entry for a single agency can be a challenge, the cost to participate in the Northern Virginia / DC regional SmarTrip program is high and broader interoperability needs to be considered.

- Real-time data hub – As a greater number of agencies deploy real-time information systems, the pressure from third party developers to release the resulting data is increasing. Many agencies identified that they were indeed getting external pressure to provide electronic schedule and bus status information as part of their current or planned deployments. While agencies could pursue this individually, there are challenges relating to data usage policies, managing the remote access infrastructure and protecting this access point from cyber attack. For many smaller agencies these challenges can be insurmountable. Additionally, app developers would need to approach each agency separately in order to access data for Virginia. A coordinated project, potentially offering a centralized real-time data portal would ease the load on smaller agencies and potentially provide significant economies of scale for larger agencies.

- Ongoing support needs for the transit ITS community– The interaction at the workshops highlighted the importance of sharing lessons learned and advice between agencies. Many adjacent agencies were unaware of the technology deployment by their neighbors and the dialog between agencies resulted in the sharing of significant advice based on experience. The efforts surrounding the initial Strategic Plan and this Program Update along with the annual Transit ITS workshop started with ITSVA have begun to build a significant Transit ITS Community within Virginia. The support of this community can help to ensure that agencies, especially smaller agencies without dedicated resources can achieve more effective deployments and avoid missteps in selecting appropriate technologies and vendors.

- Ongoing ITS program outreach and update – The work undertaken to complete this program update provided a number of benefits to the agencies participating including the ability to learn from neighboring agencies who face similar issues and may have valuable technology experience. With the expanding ITS program across the different agencies, the need for coordination between the specific projects resulting from this program is increasing. A number of workshops to provide ongoing focused support to these agencies are needed to maintain the momentum created through this program update.

In order to address these needs, the following initiatives should be considered:

5.1 Initiative 1 - Multi-Operator Fare Collection System

Smart cards have become the fare collection technology of choice for public transit agencies seeking to move customers away from cash, collect improved ridership data, improve the customer experience, and tailor fare policies and pricing to segmented customer markets. As well, new technologies such as open payment cards and near field communications devices are on the horizon that offer additional opportunities for transit

agencies to reduce or eliminate cash, make fare payment more convenient for customers, and explore partnership and other options.

A major barrier to implementation for many small transit operators is the cost of implementing and operating such a system, particularly the cost of deploying and maintaining a complete back office system for each operator to process and report on the data. As well, individual transit operators typically do not realize the cost economies of scale that larger transit agencies or regional procurements do.

The goal of this project would be to specify, procure and operate a smart card and open payment fare collection system that any operator could easily participate in without the cost of procuring a full system solely for their own agency. Project elements would include:

- Identification of an initial group of public transit operators to participate in the project.

- Development of a concept of operations based on transit agency needs that describes how the system will work for individual agencies and their customers as well as what level of interoperability would be relevant between agencies.

- Development of a standard set of card data and system interface specifications to allow multiple vendors to provide equipment.

- Development of a standard set of reader/validator specifications, and procurement of equipment from a vendor for initial deployment along with an option for other agencies to "buy off" the contract.

- Deployment of a single back-end solution hosted by one of the operators. Web or workstation WAN interfaces would be provided to allow other operators to work off of that same back-end without the need to procure a costly back-end of their own.

- Procurement of cards, branded as needed for each of the operators.

- Development of interlocal agreements governing participation.

Term: Specifications and procurement: Near-Term (1-2 years)

Deployment and operation: Mid-Term (2-6 years)

Budget: Concept of operations: $50,000

Critical Partners: DRPT, WMATA, transit operators

5.2 Initiative 2 – Real-time Data Hub

Transit agencies around the world are beginning to make their schedule and real-time tracking data available through published interfaces to allow third parties to develop customer information applications. This has encouraged use of the data and has allowed innovative individuals and companies to create web applications, as well as applications (apps) for mobile devices and even third party electronic signs (such as scrolling LED bus arrival information in coffee shops.) As younger customers, who have grown up with technology, increase as a percentage of the ridership, there is greater pressure for agencies to make their data available. This is especially true where there are large university or college populations and there are many technically capable individuals who want to build their own applications for using the data.

In addition to developing the servers and communications necessary to support this data sharing, agencies also need to answer a number of questions and implement processes for items such as:

- What format, specifications and access methods should be used to make the data available?

- How frequently should data be made available?

- Do any agreements or licensing need to be in place to protect the agency, data consumers and/or customers?

- What control over the data needs to be maintained? E.g. require registration, track usage, throttle usage, ensure data is not misrepresented, etc.

- What are the storage, communication and reliability requirements for the central portal?

This project will investigate the issues above leading to the design, development and implementation of a single, central portal that agencies across the Commonwealth can utilize to make their data available to the growing developer community.

Term: Near-Term (1-2 years)

Budget: Concept of Operations $70,000

Critical Partners: DRPT, WMATA, transit operators

5.3   Initiative 3 – Virginia Transit ITS Community Support

DRPT has carried out several projects and supported outreach activities to help establish and promote the transit ITS community. The ITS Virginia Association, which supports the broader ITS industry, included a dedicated transit ITS session in its 2010 Annual Conference that was extremely well attended and provided an excellent forum for sharing ideas between the transit agencies, consultants and vendors. In collaboration with ITSVA, DRPT has also promoted an annual Virginia Transit ITS forum that was held in the fall of 2009 and again in 2010. Again, this forum provided an opportunity for agencies, vendors and consultants to get together to share information on current and planned projects and on the state of the transit ITS industry. DRPT also funded a project to investigate and promote the use of transit ITS standards, establishing a working group and an online resource for transit ITS information exchange.

These activities have begun to create a momentum and community for information sharing that will help to maximize the benefits from ITS deployments and to establish Virginia as a leader in transit operational efficiency and customer service enabled through the deployment of well engineered ITS solutions. To build on this momentum, DRPT needs to continue to support outreach and collaboration initiatives including:

- Annual transit ITS forum – held in the fall in collaboration with ITSVA.

- Operation of the online forum and repository for ITS resources and data exchange.

- Encouraging use of the Systems Engineering Process to ensure agencies procure the right technology for their operation and have planned for adequate long term maintenance and operation.

Term: Near-Term (1-2 years)

Budget: $0

Critical Partners: DRPT, ITSVA, transit agencies, transit ITS industry

5.4   Initiative 4 – FY 13 Program Update

In order to continue the momentum built by the Strategic Plan and FY 12 Program Update, additional outreach should be performed to monitor progress of the program, and promote continued expansion in the use of ITS to improve transit operations across the state. This activity would consist of at least four regional workshops that will promote interaction between those agencies actively deploying ITS as part of the program and also to help to further promote the deployment of ITS at those agencies considering the benefits. Workshops would be split regionally and by topic area to allow agencies facing similar issues to share issues, successes and lessons learned. The recipients of current grants will be urged to attend these workshops and the following topic areas will be covered:

- Agency progress in application of grant funds
- Open discussion on any issues arising from the projects
- Coordination between similar projects and agencies
- Updates on latest industry trends and how these could affect the current projects

Term: Near-Term (1 year)

Budget: $30,000

Critical Partners: DRPT, transit agencies