NVTC

NORTHERN VIRGINIA TRANSPORTATION COMMISSION

2021

Northern Virginia Regional Fare Collection Strategic Plan

Approved by the Northern Virginia
Transportation Commission
January 7, 2021

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Executive Summary

The 2021 Northern Virginia Regional Fare Collection Strategic Plan update, developed by the Northern Virginia Transportation Commission (NVTC) with Northern Virginia transit agencies, documents the vision for an enhanced regionally integrated fare collection system and identifies NVTC's role in supporting and coordinating implementation of fare collection initiatives in the region. While considerable progress and innovation was accomplished through implementation of the 2018 strategic plan, the need to meet new challenges and maintain state of good repair while modernizing the regional fare collection system continues.

Since 2018, there have been notable developments in the region including the Washington Metropolitan Area Transit Authority (WMATA) completing its Fare Payment System Vision and Strategy in 2020, expansion of mobile payments, and the onset of the COVID-19 public health emergency. The public health emergency presented multiple challenges for fare collection, including paused fare collection and implementation of safety measures like rear-door boarding and driver barrier doors. The crisis has also spurred innovation, accelerating regional implementation of fare payment technology including rear-door validation and mobile payments.

As such, the 2021 plan establishes the following actions for NVTC's support over the coming years:

Immediate (through calendar year [CY] 2021)

A. **Continue Farebox State of Good Repair**: NVTC and Northern Virginia transit systems will continue working with WMATA to implement the farebox state of good repair upgrade solution to mitigate end-of-life issues of the current bus fareboxes.
B. **Support Immediate Mobile Payment Needs**: NVTC will work with WMATA and the transit systems on implementation and promotion of the SmarTrip App and mobile wallet as a new self-service payment option. NVTC will also monitor local mobile ticketing activity for ways to minimize regional fragmentation.
C. **Facilitate Information Exchange on Installation of Bus Operator Safety Barriers**: NVTC will facilitate the exchange of information between transit systems on their experiences with installation of bus operator barriers, which is viewed by many as a prerequisite to resuming front door boarding and fare collection during the COVID-19 public health emergency.

Near-Term (through CY 2022)

D. **Coordinate and Support New Farebox Procurement and Implementation (Including Rear-Door Payment and All-Door Boarding)**: NVTC will represent the Northern Virginia's needs in WMATA's project for new bus fareboxes with standalone SmarTrip validators to enable rear-door payment and all-door boarding.

E. **Coordinate and Support Procurement of Off-Board Fare Collection System**: NVTC will support transit systems implementing off-board fare collection solutions for bus rapid transit services. Regional coordination is needed with WMATA, other regional partners and vendors for developing solutions that are cost effective and compatible with SmarTrip.

F. **Coordinate and Support Fare Capping Implementation Analysis**: NVTC will participate in planning discussions for regional back office systems upgrades to enable fare capping, as implementation requires technology and policy changes. Fare capping promotes equity and simplifies fares by allowing riders to "pay-as-you-go," automatically issuing a pass after meeting the fare payment equivalent of a daily, weekly or monthly pass.

G. **Monitor Mobile Payment Trends**: NVTC will gather input and data from transit systems on customer adoption rates and impacts of mobile payments on the regional fare collection system in order to guide future system enhancements.

H. **Coordinate, Support and Market New Fare Products and Programs**: NVTC will facilitate information exchange between transit systems and WMATA on new fare products offerings and programs to attract customers to transit.

Long-Term (beyond CY 2022)

I. **Coordinate and Support Expansion of Retail Network**: NVTC will represent the transit systems' needs in WMATA's planned project to expand the retail network that can be used by customers to load money to fare payment cards or accounts using cash.

J. **Coordinate and Support Planning for Contactless Open Payments**: NVTC will represent transit systems' needs in planning for contactless open payments, which would enable customers to use contactless bankcards and mobile wallets to pay for transit with a tap of the card or device they already have—just like they can at many retailers

K. **Coordinate and Support Upgrades to WMATA's Back Office System**: NVTC will represent transit systems' needs during WMATA's transition to a new SmarTrip back office system.

L. **Coordinate and Support Integration of VRE with SmarTrip**: NVTC will support the integration of Virginia Railway Express (VRE) into the SmarTrip program as part of WMATA's transition to a new back office system.

M. **Coordinate and Support SmarTrip App Enhancements**: NVTC will work with WMATA and transit systems to develop additional features, which will address customer and local transit system needs.

While this Strategic Plan update provides a proposed schedule, priorities and timelines will need to be regularly revisited and refined by NVTC as projects are implemented and evaluated to align with funding availability and updates to policy priorities.

1. Introduction

The Northern Virginia Transportation Commission (NVTC), in coordination with Northern Virginia transit agencies, developed this strategic plan to guide fare collection near-term initiatives for Northern Virginia from 2021 through 2022, while also identifying longer-term initiatives for beyond 2022. It establishes thirteen actions for NVTC's support to Northern Virginia transit agencies during enhancement of the regional fare collection system. This is the first update to the Northern Virginia Regional Fare Collection Strategic Plan ("the plan", or "Strategic Plan") adopted by NVTC in 2018. The original plan resulted in considerable progress on fare collection initiatives in the region. Moving forward, there remains the need to incrementally replace or upgrade the regional fare collection system as components near end of life, and to keep pace with customer expectations and changing technology.

This plan serves as a roadmap for supporting the study, development and implementation these upgrades. This plan was developed as a collaborative effort with regional partners, and the process included regional partner surveys and work sessions, as well as an extensive industry review. It establishes the vision, needs, and actions of NVTC's Regional Fare Collection Program. The actions of the plan will support and promote the enhancement of the fare collection systems used by the seven Northern Virginia transit systems and the Washington Metropolitan Area Transit Authority (WMATA). The following vision statement was developed by NVTC and the transit systems as a guide for decision-making in alignment with regional fare collection goals:

> **Regional Fare Collection Vision Statement:**
>
> Northern Virginia transit systems envision an enhanced regionally-integrated fare collection system with local flexibility to meet evolving customer expectations.

The intended audience of this plan includes leadership, planners, implementers and operators of transit fare collection systems in Northern Virginia.

In August of 2017, Northern Virginia's transit systems entered into a Memorandum of Agreement (MOA) for NVTC to coordinate upgrades and explore options and enhancements for the regional fare collection initiatives. This plan outlines the specific actions to be taken by NVTC and the transit systems through the MOA to advance fare collection in the region such as supporting and guiding improvement to the existing regional fare collection system.

NVTC manages federal, state, and regional funding for five local bus systems, WMATA, and Virginia Railway Express (VRE), which it co-owns. It also facilitates the planning and

development of transit systems in Northern Virginia and provides technical assistance to its member jurisdictions. As such, NVTC is working with the Northern Virginia transit systems to ensure current and future needs for regional fare collection are met and assist in coordination with the WMATA, the driving partner in regional fare collection, and other regional partners.

NVTC implements fare collection coordination through a Regional Fare Collection Working Group to gather needs and provide directions for improvements. The working group includes staff from the following transit systems:

- Arlington Transit (ART)
- City of Fairfax City-University Energysaver (CUE)
- Alexandria Transit Company DASH
- Fairfax (County) Connector
- Loudoun County Transit
- OmniRide
- VRE
- WMATA

Members of the group represent their respective transit system on fare collection and collaborate on ongoing activities and provided input to NVTC to develop this plan.

2. Background

The Northern Virginia bus systems (ART, CUE, DASH, Fairfax Connector, Loudoun County Transit and OmniRide) collect fares through the regional SmarTrip system managed by WMATA. SmarTrip, deployed by WMATA in 1999, is a smart-card-based fare collection system that also supports cash payment on buses. VRE uses an independent paper and mobile phone ticketing-based fare collection systems, but participates in the regional transit benefits program, SmartBenefits, which also is operated by WMATA and linked to SmarTrip. The system was expanded to other regional partners, with many Northern Virginia transit systems joining in 2006.

Figure 1: Fare Collection History
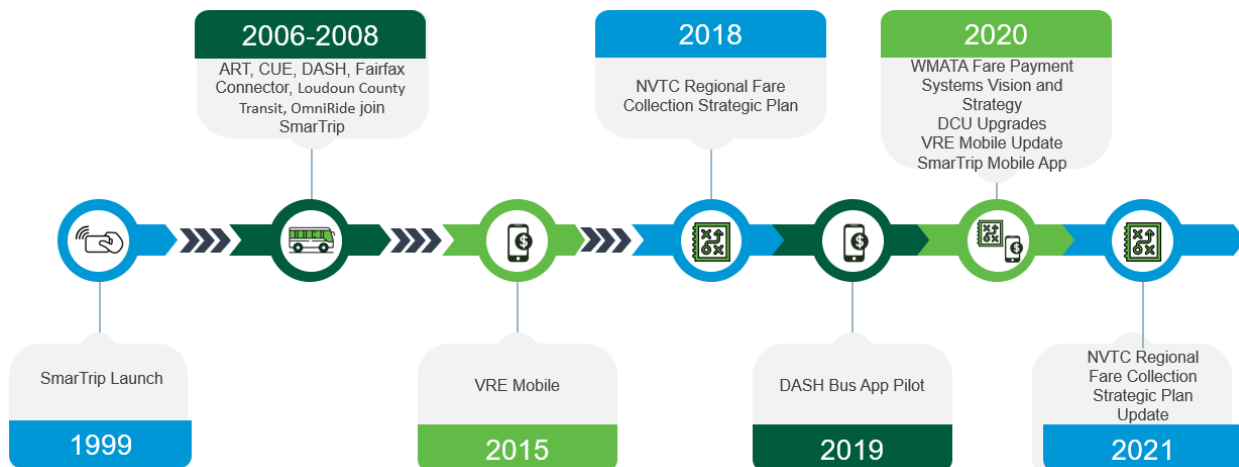
In 2018, the Strategic Plan was created to guide efforts on fare collection system across the region. This effort was necessary as the region was facing the following challenges:

- Obsolete equipment for the existing fare collection system
- Cost inefficiencies from uncoordinated enhancements
- Reduced ability to collect fares due to failing equipment
- Inability to expand revenue vehicle fleet due to unavailability of obsolete equipment for purchase
- Falling short of customer expectations for a convenient and modern fare payment experience

The plan identified activities required to deliver on the Northern Virginia vision statement, an integral part of which is supporting the local implementation of and providing guidance to the detailed implementation elements of WMATA's strategy. In addition, WMATA completed its

Fare Payment Systems Vision and Strategy (FPSVS) in 2020. Developed with input from NVTC and WMATA's regional partners, the document established long-term goals, vision and business objectives related to improving and modernizing fare payment operations and technology for the SmarTrip system. The WMATA FPSVS outlines the following guiding principles:

- Design for frictionless customer experience, access and equity
- Improve cost-effectiveness and reduce operational demands
- Promote open architecture for flexible and futureproof solutions
- Improve WMATA, partner and customer data and reporting

WMATA's strategy, which was inspired by NVTC's Strategic Plan, provides a phased approach for implementing the desired upgrades and changes to the system. The document provides the following major program phases:

- Equipment upgrades and replacement for bus and rail
- Fare equity and simplification
- New payment options and cash reduction
- Back office upgrades
- New consumer and institutional website

This Strategic Plan update also aligns with strategies and recommendations from the Washington Area Bus Transformation Project[1] including:

- **Recommendation 2A: Commitment to prioritize bus** – elements of this recommendation include establishing regional guidelines on bus priority treatments, such as off-board fare payment and all-door boarding to decrease dwell time at stops.
- **Recommendation 3B: Fare payment** – elements of this recommendation make paying for bus fares easier such as reduced fare options for low-income riders, a mobile solution to plan and pay for trips in one place, and development of regional passes that work across all providers and make bus fares clear and understandable.

This Strategic Plan update process included a survey and work sessions with regional partners, as well as an extensive industry review. Details of the update process were documented in a technical memorandum. In the survey, the transit systems were asked to respond with their level of interest and desired timeline for implementing potential fare collection enhancements. These potential enhancements were compiled from past regional planning efforts (original Strategic Plan, WMATA's Fare Payment Systems Vision and Strategy, Washington Area Bus Transformation Project) and strategies gathered through the industry review.

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[1]https://bustransformationproject.com/wp-content/uploads/2019/09/Bus_Transformation_Strategy_and_Recommendations_2019-09-05.pdf

3. NVTC Actions to Support Fare Collection Needs

This document serves as the first update to the 2018 Northern Virginia Regional Fare Collection Strategic Plan and reflects advancements made in the region and industry during that time. Like the 2018 Strategic Plan, the 2021 Regional Fare Collection Strategic Plan was developed by NVTC as a collaborative effort with regional partners. The actions for NVTC support are organized into immediate (through calendar year 2021), near-term (through calendar year 2022) and long-term (beyond calendar year 2022) timeframes, based on timelines provided by partners during plan development, and ordered based on NVTC priority. Actual implementation timelines are subject to change due to policy and funding considerations as well as WMATA's implementation timeline for actions in support of its projects. Overarching non-phased needs are also identified to be employed throughout future enhancements to the fare collection system.

3.1   Actions

To address unique transit partner needs and timelines, NVTC developed the following actions to support all transit systems in maintaining and enhancing fare collection within a framework of broader regional developments.[2]

Immediate Action (through calendar year [CY] 2021)

 A.   Continue Farebox State of Good Repair
 B.   Support Immediate Mobile Payment Needs
 C.   Facilitate Information Exchange on Installation of Bus Operator Safety Barriers

Near-Term Actions (through CY 2022)

 D.   Coordinate and Support New Farebox Procurement and Implementation (Including Rear-Door Payment and All-Door Boarding)
 E.   Coordinate and Support Procurement of Off-Board Fare Collection System
 F.   Coordinate and Support Fare Capping Implementation Analysis
 G.   Monitor Mobile Payment Trends
 H.   Coordinate, Support and Market New Fare Products and Programs

Long-Term Actions (beyond CY 2022)

 I.   Coordinate and Support Expansion of Retail Network
 J.   Coordinate and Support Planning for Contactless Open Payments
 K.   Coordinate and Support Upgrades to WMATA's Back Office System
 L.   Coordinate and Support Integration of VRE with SmarTrip

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[2] Timelines are subject to ongoing policy and funding considerations and are based on dates provided by partners during plan development.

M. Coordinate and Support SmarTrip App Enhancements

The following tables describe each action with the following parameters:

- Description with listing of tasks and activities
- Estimated timeframe
- Whether the action is linked to or dependent on WMATA activity
- Anticipated transit system role
- NVTC priority based on proposed role and anticipated impact
- Transit system priority based on survey
- Anticipated NVTC level of effort

<div style="border:2px solid green;">

A. **Continue Farebox State of Good Repair** *Immediate*
(through CY 2021)

</div>

Description:

Bus transit systems need support with coordination of installing, testing and commissioning of the fare collection Driver Control Unit (DCU) upgrade hardware as well as support for garage infrastructure and new replacement farebox procurement. NVTC and Northern Virginia transit systems will continue working with WMATA to implement the farebox/DCU solution to mitigate obsolescence of the current fareboxes.

NVTC Tasks and Activities:

- Coordinate WMATA support to transit systems during installation and configuration of the farebox upgrades and supporting garage infrastructure
- Provide technical review of plans and processes for supporting DCU operation (including software patching and updates) and coordinate transit system feedback
- Monitor progress of implementation of upgrades and share lessons learned between transit systems
- Identify mitigation strategies and support transit systems in exploring these strategies where schedule, scope, or cost risks occur
- Continue coordination with WMATA on farebox modernization procurement initiative

Link to WMATA: This action is related to WMATA Fare Payment Systems Vision and Strategy, which includes procurement of a complete new farebox solution based on the DCU strategy. WMATA will be responsible for testing future updates to the DCU solution and offering support to the transit systems during installation and configuration.

Role of Transit System(s): Participate in coordination efforts and share information on any issues or enhancements which would improve system performance.

NVTC Priority: ◑   **Transit Systems Priority:** ●

NVTC Level of Effort: ◐

Key:

○ = Very Low, ◔ = Low, ◐ = Medium, ◕ = High, ● = Very High

| **B.** | **Support Immediate Mobile Payment Needs** | *Immediate*
(through CY 2021) |

Description:

WMATA has launched the SmarTrip App that allows customers to manage their SmarTrip card(s) and pay fares using near-field communication (NFC)-based virtual cards on iPhone, Apple Watch, and Android phones (under development for future expansion). Bus transit systems will require support in promoting the SmarTrip App as an additional payment and self-service option as fare collection resumes. NVTC will work with WMATA and the transit systems on implementation and promotion of this new payment option on bus service.

Aside from SmarTrip, several Northern Virginia transit systems have ongoing interests in local mobile ticketing solutions (VRE Mobile, DASH Bus App pilot) when needs cannot be met by the SmarTrip App. NVTC will monitor this activity for ways to minimize regional fragmentation.

NVTC Tasks and Activities:

- Facilitate information exchange to prepare transit systems for acceptance of mobile payments from customers using SmarTrip App/mobile wallet
- Coordinate promotion of SmarTrip App and mobile payment for bus services between transit systems and WMATA
- Coordinate required bus technology upgrades to support mobile payments
- Assist transit agencies in identifying opportunities to incentivize mobile payments over ticket vending machine usage and onboard payment
- Monitor and coordinate with VRE Mobile enhancements
- Monitor and coordinate with local mobile ticketing projects (e.g., DASH Bus App, potential OmniRide deployment) and encourage a uniform regional approach to mobile payments
- Monitor mobile payments industry trends

Link to WMATA: This action is related to WMATA's strategy for new payment options. WMATA is leading the development and implementation of the SmarTrip App.

Role of Transit System(s): Participate in coordination efforts and promote SmarTrip App for mobile payments for transit in the region. Identify opportunities to incentivize mobile payments over ticket vending machine usage and onboard payment.

| **NVTC Priority:** | ◔ | **Transit Systems Priority:** | ◕ |

| **NVTC Level of Effort:** | ◔ |

Key:

○ = Very Low, ◔ = Low, ◑ = Medium, ◕ = High, ● = Very High

C.	**Facilitate Information Exchange on Installation of Bus Operator Safety Barriers**	*Immediate* *(through CY 2021)*

Description:

To ensure safety of operators and customers during and after the COVID-19 public health emergency, the bus transit systems in the region are installing transparent barriers between the customers and operators. NVTC will facilitate the exchange of information between transit systems on their experiences with installation of bus operator barriers, which is viewed by many as a prerequisite to resuming front door boarding and fare collection. Regular discussions on the subject and any other safety measures related to fare collection can help transit systems learn from others and potentially reduce costs through joint procurement.

NVTC Tasks and Activities:

- Facilitate coordination between transit systems to share resources and experiences as they move ahead with installation of bus operator barriers
- Monitor industry trends to identify other safety measures being undertaken to protect customers, operators and transit agency staff during fare collection-related activities
- Monitor timeline for resumption of fare collection across the region

Link to WMATA: This action is not dependent on WMATA activity.

Role of Transit System(s): Participate in coordination efforts and share information on measures being taken to ensure safety of riders and operators.

NVTC Priority:	◔	**Transit Systems Priority:**	◕
NVTC Level of Effort:	○		

Key:

○ = Very Low, ◔ = Low, ◐ = Medium, ◕ = High, ● = Very High

| D. | **Coordinate and Support New Farebox Procurement and Implementation (Including Rear-Door Payment and All-Door Boarding)** | *Near-Term* *(through CY 2022)* |

Description:

NVTC will represent the Northern Virginia's needs in WMATA's project for new bus fareboxes with standalone validators to enable rear-door payment and all-door boarding. This support will include reviewing technical documents provided by the vendor, collecting and providing feedback from the transit systems on the system design and testing, and coordinating fare inspection policy. Bus transit systems need also need support with coordination of procuring, installing, and configuring any new garage infrastructure needed to support the bus fareboxes.

NVTC Tasks and Activities:

- Coordinate, through all phases of WMATA activity, as a full partner including concept analysis, strategy development, planning, procurement, and contracting for new fareboxes with separate validators to facilitate all-door boarding
- Review and provide feedback on system design and testing documents
- Monitor progress of testing
- Support transit systems with development of an implementation plan
- Coordinate WMATA support to transit systems during installation and configuration of supporting garage infrastructure
- Explore and coordinate funding and contracting mechanisms for transit systems to purchase and install solution
- Support development of uniform regional policy for fare inspection of rear-door SmarTrip payment and all-door boarding
- Continue coordination with WMATA on farebox modernization initiatives

Link to WMATA: This action is related to WMATA's bus farebox strategy, which consists of a procurement and design for new bus fareboxes. WMATA is leading procurement, design review and testing.

Role of Transit System(s): Participate in coordination efforts, provide feedback on procurement and develop implementation plan.

| **NVTC Priority:** | ◑ | **Transit Systems Priority:** | ◑ |
| **NVTC Level of Effort:** | ◐ | | |

Key:

○ = Very Low, ◔ = Low, ◑ = Medium, ◕ = High, ● = Very High

E.	**Coordinate and Support Procurement of Off-Board Fare Collection System**	*Near-Term* *(through CY 2022)*

Description:

Transit systems implementing Bus Rapid Transit (BRT) services have identified a need for off-board fare collection solutions (platform validators, small footprint ticket vending machines, inspection devices) for those services. This includes Arlington County, City of Alexandria and Fairfax County. Since the SmarTrip program does not currently include appropriate equipment options, there is a need for regional coordination to work with WMATA, other regional partners and vendors for developing solutions that are cost effective and compatible with SmarTrip. NVTC will support these transit systems with procurement, system design reviews and coordination with WMATA to ensure system compatibility with SmarTrip.

NVTC Tasks and Activities:

- Continue quarterly Off-Board Fare Collection Working Group meetings to facilitate information exchange
- Coordinate with Maryland and District of Columbia transit systems and WMATA in developing a unified regional approach for off-board fare collection implementation
- Coordinate with WMATA to integrate regional solution with SmarTrip as appropriate
- Monitor WMATA's rail ticket vending machine project and represent regional needs in the ticket vending machine procurement
- Assist transit systems in the development of technical requirements
- Assist transit systems in issuing a request for proposal for off-board fare collection equipment
- Support development of unified regional policy for fare inspection
- Support the implementation of off-board fare collection

Link to WMATA: This action is not tied to a WMATA strategy or project but will require a leading role of WMATA as administrator of the SmarTrip system. WMATA's fare vendor project and strategy for new rail ticket vending machines is related to this action, and may potentially create a vehicle for transit systems to procure fare vending machines.

Role of Transit System(s): Participate in coordination efforts. Share information on technical requirements, procurement and implementation of the off-board fare collection system with the other transit agencies in the region.

NVTC Priority:	◑	**Transit Systems Priority:**	◕
NVTC Level of Effort:	◕		

Key:

○ = Very Low, ◔ = Low, ◑ = Medium, ◕ = High, ● = Very High

<table>
<tr><td>**F.**</td><td>**Coordinate and Support Fare Capping Implementation Analysis**</td><td>*Near-Term*
(through CY 2022)</td></tr>
</table>

Description:

Northern Virginia transit systems are interested in exploring implementation of fare capping, and WMATA has identified the project for future policy consideration. Fare Capping allows riders to "pay-as-you-go," automatically issuing a pass after meeting the fare payment equivalent of a daily, weekly or monthly pass. Fare capping could also help the region realize a Bus Transformation Project transit equity goal. Fare capping would provide fare equity, customer loyalty, and fare simplification as part of a broader back office upgrade. NVTC will participate in planning discussions prior to the region upgrading back office systems to enable fare capping, as it requires changes to fare collection technology and policy.

NVTC Tasks and Activities:

- Facilitate coordination and provide feedback to WMATA and transit systems in identifying technology and policy needs to support fare capping
- Facilitate coordination and provide feedback to WMATA and transit systems in evaluating costs and benefits of fare capping

Link to WMATA: This action is linked to WMATA's strategy for back office upgrades and transition to an account-based system. WMATA identified fare capping implementation as a future policy consideration in its Fare Payment Systems Vision and Strategy.

Role of Transit System(s): Participate in coordination efforts. Support WMATA in identifying technology and policy needs to support fare capping. Support WMATA and transit agencies in evaluating costs and benefits of fare capping.

NVTC Priority:	◑	**Transit Systems Priority:**	◑
NVTC Level of Effort:	◑		

Key:

◯ = Very Low, ◔ = Low, ◑ = Medium, ◕ = High, ● = Very High

Description:

NVTC will gather input and data from transit systems on customer adoption rates and impacts of mobile payments on the regional fare collection system. Findings, observations and needs will be included in discussions with WMATA and regional partners to support mobile payment enhancements to support local needs.

NVTC Tasks and Activities:

- Coordinate with transit systems and WMATA to gather usage data on SmarTrip App, DASH Bus App and VRE Mobile performance
- Review WMATA analysis of impact of SmarTrip App on ticket vending machine usage
- Synthesize performance data and share findings with regional partners
- Monitor mobile payments industry trends
- Identify potential future enhancements to the SmarTrip App to address local needs for mobile payments (institutional partnerships, fast and flexible fare product implementation)

Link to WMATA: This action is related to WMATA's strategy for new payment options. WMATA is leading the development and implementation of the SmarTrip App.

Role of Transit System(s): Participate in coordination efforts. Share information on mobile app performance and customer feedback.

NVTC Priority:	◕	**Transit Systems Priority:**	◕
NVTC Level of Effort:	◕		

Key:

○ = Very Low, ◕ = Low, ◑ = Medium, ◕ = High, ● = Very High

H.	**Coordinate, Support and Market New Fare Products and Programs**	*Near-Term (through CY 2022)*

Description:

NVTC will facilitate information exchange between transit systems and WMATA on new fare products offerings to attract customers to transit. Discussions will be geared towards learning about new fare products, marketing strategies for new products, policy needed for adoption and fare product management. This will help with identifying issues with introduction of new fare products and removing barriers to fare product management. One area of interest for several transit systems are new reduced fare or low-income fare programs.

NVTC Tasks and Activities:

- Coordinate with transit systems and WMATA to share information on new fare products and programs
- Support regional studies to research new fare products and explore feasibility and impacts of fare product offerings
- Identify compatibility of SmarTrip to accommodate needed fare products
- Coordinate with WMATA on potential back office enhancements to support fare product management
- Identify opportunities to provide more local transit system control of fare products
- Coordinate with WMATA to improve speed and ease of implementation, and local transit system flexibility in testing and implementing new fare products using SmarTrip

Link to WMATA: This action is not directly linked to a WMATA strategy or project. WMATA is the administrator of the SmarTrip system and any new fare product has to be tested and implemented through the WMATA AFC engineering team.

Role of Transit System(s): Participate in coordination efforts, support regional research studies and identify opportunities to optimize the system for greater control improving management of fare products.

NVTC Priority: ◔   **Transit Systems Priority:** ◔

NVTC Level of Effort: ◔

Key:

○ = Very Low, ◔ = Low, ◑ = Medium, ◕ = High, ● = Very High

I.	**Coordinate and Support Expansion of Retail Network**	*Long-Term* *(beyond CY 2022)*

Description:

As additional electronic payment methods are introduced, there will be a need to provide options for cash customers and to support the chosen payment methods adopted by those who are underbanked. One area of need is expanding and improving the retail network that can be used by cash customers to load money to fare payment cards or accounts using cash. There are limited retail locations in Northern Virginia where value can be added to SmarTrip cards. Cash digitization services will allow cash reloading of SmarTrip (physical or virtual cards) at an extensive retail network. NVTC will represent the transit systems' needs in WMATA's planned project to expand the retail network.

NVTC Tasks and Activities:

- Identify how regional transit systems can promote and coordinate expansion and mitigate barriers to expansion
- Work with WMATA to identify SmarTrip improvements needed to address barriers to retail expansion
- Review technical functionality and monitor WMATA's implementation of new Compact Point of Sale (CPOS) and Multi-Function Point of Sale (MPOS) devices
- Assist agencies in identifying opportunities for customer marketing, promotion and incentives to expand network
- Identify opportunities to continue to allow cash payment in support unbanked and underbanked customers

Link to WMATA: This action is related to WMATA's strategy for new payment options. WMATA will lead the retail expansion efforts and initiate contracts.

Role of Transit System(s): Participate in coordination efforts. Identify opportunities for customer marketing, promotion and incentives to expand network.

NVTC Priority: ◐	**Transit Systems Priority:** ◕
NVTC Level of Effort: ◔	

Key:

○ = Very Low, ◔ = Low, ◐ = Medium, ◕ = High, ● = Very High

J.	**Coordinate and Support Planning for Contactless Open Payments**	*Long-Term* *(beyond CY 2022)*

Description:

There is interest in expanding payment options through contactless open payments, which would enable customers to use contactless bankcards and mobile wallets to pay for transit with a tap of the card or device they already have—just like they can at many retailers. NVTC will represent transit systems' needs in planning for contactless open payments. Close coordination with WMATA will be required, and initiating planning early will provide enough time for transit systems to prepare for the updates and work on policies to support open payments to ensure timely deployment of this technology.

NVTC Tasks and Activities:

- Support WMATA and transit systems in identifying technology and policy needs to support open payments
- Support WMATA and transit systems in evaluating costs and benefits of open payments
- Support implementation of open payments

Link to WMATA: This action is related to WMATA's strategy for back office upgrades and transition to an account-based system. WMATA will lead the back office upgrade efforts that will enable acceptance of contactless open payments.

Role of Transit System(s): Participate in coordination efforts and support WMATA with development of this functionality.

NVTC Priority: ◑   **Transit Systems Priority:** ◑

NVTC Level of Effort: ◑

Key:

○ = Very Low, ◔ = Low, ◑ = Medium, ◕ = High, ● = Very High

| K. | **Coordinate and Support Upgrades to WMATA's Back Office System** | *Long-Term*
(beyond CY 2022) |

Description:

WMATA plans to migrate to an account-based system, by upgrading the existing back office infrastructure to support the new system. NVTC will represent transit systems' needs during WMATA's transition to a new back office system. The transition would enable features such as fare capping, open payments and flexibility to integrate new technologies in the future through an open architecture.

NVTC Tasks and Activities:

- Coordinate, through all phases of WMATA activity, as a full partner including concept analysis, strategy development, planning, procurement and contracting for back office upgrades
- Review technical documents, collect and share feedback from the transit systems and provide input to WMATA during the implementation process
- Identify mitigation strategies and support transit systems in exploring these strategies where schedule, scope or cost risks occur
- Coordinate necessary updates of local garage back office hardware and software
- Gather regional requirements for the implementation of regional data analytics/reporting platform
- Coordinate integration of VRE to the SmarTrip program

Link to WMATA: This action is related to WMATA's strategy for back office upgrades and transition to an account-based system. WMATA will lead the back office upgrade efforts.

Role of Transit System(s): Participate in coordination efforts and participate in development of the new back office system by providing feedback on technical documents and develop implementation plan.

NVTC Priority:	◑	**Transit Systems Priority:**	◑
NVTC Level of Effort:	◑		

Key:

○ = Very Low, ◔ = Low, ◑ = Medium, ◕ = High, ● = Very High

L.	**Coordinate and Support Integration of VRE with SmarTrip**	*Long-Term* *(beyond CY 2022)*

Description:

There is a need to facilitate ongoing discussions between VRE and WMATA to identify technology and policy needs to potentially integrate VRE into SmarTrip, especially as WMATA pursues SmarTrip system upgrades and modernization. VRE is the only Northern Virginia transit system that does not accept SmarTrip. However, SmartBenefits can currently be directed for payment of VRE fares, a process that VRE and WMATA are working on to make more seamless for the customer. For an integrated system that promotes regional multimodal travel, it would also benefit customers if SmarTrip could be used to pay VRE fares. NVTC will support the integration of VRE into the SmarTrip program. This would occur as part of the transition to an account-based back office system with open architecture to enable integration of VRE.

NVTC Tasks and Activities:

- Support WMATA and VRE in identifying technology and policy needs to integrate VRE into SmarTrip
- Seek the use of open architecture during the planning, procurement, design, implementation, and expansion of the new back office system that will enable third-party devices/system integration

Link to WMATA: This action is related to WMATA's strategy for back office upgrades and transition to an account-based system. WMATA will lead the back office upgrade efforts and support VRE.

Role of VRE: Lead development of concept and procure or modify system(s) for integration with the enhanced regional system.

NVTC Priority:	◔	**Transit Systems Priority (VRE):**	◕
NVTC Level of Effort:	◔		

Key:

○ = Very Low, ◔ = Low, ◑ = Medium, ◕ = High, ● = Very High

M.   Coordinate and Support SmarTrip App Enhancements

Long-Term
(beyond CY 2022)

Description:

As new technology is developed and customer preferences change, there will be a need to enhance the SmarTrip App to address unmet needs. This includes expanding institutional partnerships (for example, social service agencies), fast and flexible fare product implementation, and potential acceptance by VRE. NVTC will work with WMATA and transit systems to develop additional features, which will address customer and local transit system needs.

NVTC Tasks and Activities:

- Coordinate with transit systems and identify unmet mobile needs payment needs from the system and those expressed by their customers
- Coordinate with WMATA and express mobile payment needs of transit systems
- Work with WMATA and its app developer to find solutions to address needs
- Support promotion and marketing of app enhancements to customers

Link to WMATA: This action is related to WMATA's strategy for new payment options. WMATA is leading the development and implementation of the SmarTrip App.

Role of Transit System(s): Participate in coordination efforts. Share customer feedback on mobile app and work with WMATA on app enhancements. Promote use of SmarTrip app to customers.

NVTC Priority:	◔	**Transit Systems Priority:**	◔
NVTC Level of Effort:	◔		

Key:

○ = Very Low, ◔ = Low, ◑ = Medium, ◕ = High, ● = Very High

3.2 Cross-Cutting Needs and Guiding Principles

As a part of the strategic planning and survey process, several overarching needs were identified which should be considered while delivering NVTC support to meet the specific fare collection needs. These needs have been categorized as the following cross-cutting needs:

- **Increase ease of use and improve customer experience**: As customer preferences change and new technology is developed, there will be a need to improve customer experience and fine tune the system to increase efficiency and ease of use. Transit systems do not want the fare payment process to be a barrier to choosing to ride transit.

- **Keep pace with technology and customer expectations**: Transit systems need support with monitoring new technology and industry trends. One of the issues identified in the Washington Area Bus Transformation Project was that bus systems don't appear to be keeping up with the technology innovations. The mobility landscape is constantly changing with new products that impact all aspects of transit services and new payment technologies and platforms can impact customer expectations of fare payment options. There is a need for regular discussions between agencies and with agencies to develop solutions which will better serve the customers. NVTC has fostered exchange of information between agencies for ongoing projects will continue to support this need as a part of its long-term efforts.

- **Expand fare payment options equitably**: Transit systems need to ensure that options are made available to all customers as new fare payment options are introduced. Easy and ubiquitous cash payment options remain extremely important for most transit systems in the context of a general industry preference towards reducing cash collection activities to lower costs and improve efficiency. The region has advanced several options for customers to pay for transit which include expanding retail network and accepting prepaid cards to add value to SmarTrip accounts on WMATA SmarTrip app.

While the cross-cutting needs are not included in specific actions that follow in this section, they have been incorporated into guiding principles as follows:

- **Support updates of the regional SmarTrip fare collection system**: Maintain and enhance the regional multi-transit system fare collection system (SmarTrip) according to WMATA's Fare Payment Systems Vision and Strategy.

- **Support local transit systems in deploying fare collection solutions to meet local needs**: Identify ways to meet local needs through enhancement of the SmarTrip system to minimize fragmentation, promote a consistent customer experience and control regional costs while maximizing benefits.

- **Continue regional coordination between WMATA, Northern Virginia, District of Columbia and Maryland transit systems**: Continue information sharing through regular meetings of the Regional Fare Collection Working Group as well as through other regional channels such as WMATA's monthly regional SmarTrip meetings. NVTC

has been fostering coordination in the region and has an off-board fare collection working group to facilitate exchange of information and learnings between agencies and will continue to work on additional efforts to facilitate information on an ongoing basis for different aspects of fare collection.

- **Support WMATA's centralized role of operating a regional fare collection system and providing support services to regional transit systems**: Facilitate coordination of technical needs between transit systems and WMATA and provide tracking and oversight of development.

- **Maintain role of Northern Virginia transit systems in WMATA fare collection planning**: Ensure NVTC involvement in all stages of fare collection enhancements that impact the region including formulation of concepts, development of technical requirements, planning, procurement, and contracting and as a full partner with WMATA so that Northern Virginia transit systems and NVTC have full visibility into the WMATA fare collection initiatives.

- **Continue to identify opportunities to coordinate fare collection procurements**: Continue coordination of fare collection procurements among regional transit systems and the use of contract riders to allow transit systems in the region to benefit from regional pricing, consistency between systems, and economies of scale.

4. Resource Needs

The Strategic Plan is intended to help NVTC and the transit systems plan resources to support the implementation of fare collection upgrades. **Table 1** summarizes the relative technical assistance level of effort needed to carry out the actions of the Strategic Plan. The table also indicates which actions are fare policy-related and those that will require marketing resources to promote to customers. The funding strategy is to seek funds to support the implementation of the Strategic Plan through statewide public transportation grant programs. NVTC will help transit systems track regional cost estimates for enhancements.

Table 1: NVTC Level of Effort per Action

		Action	NVTC Technical Assistance	Fare Policy Related	Marketing Related
Immediate (Through CY 2021)	A	Continue Farebox State of Good Repair	◑ Medium		
	B	Support Immediate Mobile Payment Needs	◔ Low		X
	C	Facilitate Information Exchange on Installation of Bus Operator Safety Barriers	○ Very Low		
Near-Term (Through-CY 2022)	D	Coordinate and Support New Farebox Procurement and Implementation (Including Rear-Door Payment and All-Door Boarding)	◕ High	X	X
	E	Coordinate and Support Procurement of Off-Board Fare Collection System	◕ High	X	
	F	Coordinate and Support Fare Capping Implementation Analysis	◑ Medium	X	
	G	Monitor Mobile Payment Trends	◔ Low		
	H	Coordinate, Support and Market New Fare Products and Programs	◔ Low	X	X
Long-Term (Beyond CY 2022)	I	Coordinate and Support Expansion of Retail Network	◔ Low		X
	J	Coordinate and Support Planning for Contactless Open Payments	◑ Medium	X	
	K	Coordinate and Support Upgrades to WMATA's Back Office System	◑ Medium		
	L	Coordinate and Support Integration of VRE with SmarTrip	◔ Low	X	
	M	Coordinate and Support SmarTrip App Enhancements	◔ Low		X

○ = Very Low, ◔ = Low, ◑ = Medium, ◕ = High, ● = Very High

5. Progress and Impacts Since 2018

NVTC implementation of the 2018 Strategic Plan resulted in significant progress by regional partners on fare collection. In addition, there have been major changes in the fare collection industry. Moreover, the COVID-19 public health emergency presented new challenges for fare collection and has shaped considerations for safe fare collection operations. This section provides an overview of changes necessitating an update to the strategic plan.

5.1   Regional Progress

Regional progress resulting from NVTC support outlined in the 2018 Strategic Plan includes the following:

- **Farebox state of good repair support:** NVTC provided input on WMATA's farebox driver control unit (DCU) upgrade project to ensure regional needs are met, coordinated orders and funding for hardware kits and provided input to WMATA's new farebox procurement. WMATA completed design and testing of the DCU upgrade project with support from several Virginia transit systems and several upgraded fareboxes have been put into production in Virginia. WMATA also initiated a procurement for new bus fareboxes for the region and incorporated several recommendations from NVTC and other regional partners to enhance the solicitation.

- **DASH Bus App**: DASH launched a pilot of mobile ticketing in June 2019. NVTC organized a mobile ticketing industry day in 2018, assisted DASH in preparing specifications that ensure the platform could serve regional needs and be used by other transit systems in the region, assisted in evaluating proposals and coordinated with DASH and WMATA on SmartBenefits integration.

- **VRE Mobile upgrade**: VRE replaced its mobile ticketing system. NVTC provided regional requirements to VRE that ensure the platform could be used other transit systems in the region if needed in the future.

- **Off-Board/All-Door Fare Collection Working Group**: NVTC facilitated quarterly coordination meetings of regional partners planning to implement off-board and all-door fare collection solutions.

- **WMATA Fare Payment Systems Vision and Strategy**: WMATA developed this strategy document to provide a roadmap for WMATA's fare payment systems upgrades and was developed with input from NVTC and regional partners.

- **SmarTrip App**: WMATA developed and launched the app and mobile wallet in September 2020, which enables payment using iPhone and Apple Watch via virtual SmarTrip cards, as well as mobile account management. NVTC and reginal partners participated in demonstrations and testing.

5.2 Industry Progress

The fare collection industry has seen changes in technology, vendor business models, as well as preferences of customers, transit agencies and vendors since the 2018 Strategic Plan was approved. Fare collection equipment has evolved to accommodate the growing demand for electronic validation of mobile tickets, mobile payments and contactless credit/debit cards.

5.2.1 Farebox Technology

The next generation of fareboxes installed by several transit agencies across the country are being equipped with barcode and NFC readers. Mobile ticketing vendors are expanding from visual validation (showing the ticket to the bus operator) to hardware integration providing electronic validation on the vehicles. Alas, the pace of advancement of mobile ticketing systems has been slower than was anticipated several years ago and has not been as widely adopted as more conventional fare collection methods.

5.2.2 Account-Based and Open Payment Systems

Transit systems across the country are continuing to upgrade their fare collection back office software with a majority now moving to account-based systems. These systems support additional types of fare media and include features like fare capping, which can automatically upgrade customers to a pass product after they meet the fare payment equivalent of a daily, weekly or monthly pass. New back office systems are being designed on an open architecture to accommodate integration with other mobility providers and offer flexibility for the rapid changes in the industry. Several transit systems have leveraged NFC readers and upgraded central software to deploy open payments allowing fare payment by the tap of a contactless credit/debit card or mobile payment wallet such as Android or Apple pay.

5.2.3 Multipurpose Mobile Ticketing

In the area of mobile ticketing, there have been organizational restructuring and changes in business priorities with some new vendors entering the market. There is an increasing trend of combining mobile ticketing products with other mobility platforms, such as multimodal trip planning, that allow customers to plan their trip and pay their fares within a single app. Agencies are providing real-time information on their services through third-party apps like Transit App, Moovit and Google.

5.2.4 Lessons from Peer Regions

The industry review also included interviews with peers consisting of regional transit agencies or coordinating regional organizations similar to NVTC. Key takeaways from the interviews show benefits of regional collaboration that have also been experienced in Northern Virginia through NVTC's support. Some takeaways from the industry review include:

- Regional coordination of procurements reduce cost to allows transit agencies to obtain better pricing and benefit from economies of scale

- Regional coordination of fare collection improvements enhances customer convenience by providing a consistent experience across multiple transit systems

- Regional technical assistance allows local transit systems to focus their attention on their transit operations while keeping pace with fare collection improvements occurring in the region

The interviews also showed alignment of planned enhancements of the regional fare collection system with industry trends, including:

- Implementing mobile payments

- Analyzing impacts of customer adoption of mobile payments before implementing upgrades to more traditional fare collection hardware such as ticket vending machines

- Providing additional purchase channels to allow customers to buy from their preferred channel (e.g., via transit agency app, via third-party apps, online, at retail locations, at ticket vending machines)

- Upgrading to an account-based back office software

5.3 COVID-19 Public Health Emergency Impacts

Beginning in early 2020, the COVID-19 public health emergency presented new challenges for many aspects of public transit operation including fare collection. Many transit systems suspended fare collection during the public health emergency and implemented rear-door boarding for bus services to provide additional driver safety. Across the country, reduced revenues due to depressed ridership, paused fare collection, and reduced tax revenues, together with increased operating costs to protect workers and riders, are straining public transit agency budgets.

Operational challenges related to traditional fare collection revealed during COVID-19 include transit vehicle operator interaction with customers, customer interaction with shared fare collection equipment, manual requirements for cash handling by transit agency personnel and the need for flexible fare passes due to changing travel patterns. These factors have resulted in agencies pushing forward contactless fare collection and consideration of all-door fare payment.

While the public health emergency has created challenges, transit agencies have also been working on technology and policy innovation with new urgency. These include new fare technologies to provide rider confidence. As agencies are looking for solutions which make it safer for employees and for the rider to use transit with resumed fare collection, efforts have focused on installation of driver barriers. Agencies have place greater consideration on technology and processes which would help reduce interaction of riders with fare equipment.

Locally, COVID-19 has also accelerated fare payment technology and innovation. For example, WMATA accelerated their planned SmarTrip mobile app for the iPhone and Apple Watch and released the new "touchless" payment capability in September 2020, with plans for Android and Google Pay within a few months thereafter. The effort involved WMATA and regional partners upgrading readers and validators. The new mobile app also offers the capability for riders to pay without interacting with ticket vending machines.

Additionally, most regional partners implemented rear door boarding during the crisis, which facilitated speeding up rear-door validation, another planned project. In the new farebox procurement, WMATA had planned to add capability for future rear-door validation. Due to the public health emergency, WMATA accelerated the procurement of rear-door validators by several months. Additionally, regional partners are installing driver barrier doors to reduce contact between operators and passengers.

VRE is also developing a new mobile payment app that will include passenger-counting features to inform riders about train car occupancy so they can board a less-crowded car.

NVTC support is required to implement each of these initiatives. This progress in the region and industry, as well as changes due to the public health emergency, highlight a need for an update of the Strategic Plan.

6. Assessment

NVTC will continually measure progress and report to the transit systems as the actions of the 2021 Strategic Plan are taken. It will be important to achieve the plan goals while remaining flexible to changes in needs, technology and funding availability. NVTC will assess progress based on how the overall purpose and need of the Strategic Plan is being addressed. **Table 3** illustrates the annual assessment and reporting cycle that NVTC will use with support from the transit systems and WMATA is as follows, beginning upon implementation of this plan:

Table 3: Annual Assessment and Reporting Cycle

Quarter:	1	2	3	4
Provide a roadmap for advancing fare collection in the region				
• Complete and adopt 2021 Strategic Plan (Year 1) • Track actions from Strategic Plan • Report progress on actions to Commission and transit systems every six months; reflect changes to needs, technology and resource needs	●	Ongoing → ●		●
Provide input into WMATA fare collection modernization initiatives				
• Document and report quarterly to transit systems on coordination efforts with WMATA	●	●	●	●
Replace or upgrade the system as components near end of life				
• Gather input from each transit systems quarterly on completed replacements and upgrades; document schedule to reflect changes to needs, technology and funding	●	●	●	●
Keep pace with customer expectations				
• Monitor customer feedback gathered by transit systems	Ongoing →			
Keep pace with changing technology				
• Attend relevant industry conferences and report on findings • Produce best practice research, as needed, to reflect changes in technology	Ongoing → Ongoing →			

NVTC
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