



Customer Service and Operations Committee

Board Information IV-A

July 9, 2015

NEPP Pilot Results

Washington Metropolitan Area Transit Authority
Board Action/Information Summary

Action Information

MEAD Number: 201602 Resolution:

Yes No

TITLE:

New Electronic Payments Program

PRESENTATION SUMMARY:

Update on the New Electronic Payments Program (NEPP) Pilot Phase results and next steps.

PURPOSE:

To update the Customer Service and Operations Committee on the status of the New Electronic Payments Program including Pilot Phase activities, next steps and program benefits.

DESCRIPTION:

The New Electronic Payments Program (NEPP) 18-month pilot program began in February 2014. The pilot testing phase began February 23, 2015 and finished May 23, 2015 for Metrorail and Metrorail.

The purpose of the Pilot phase was to implement the fare collection system in limited operations to validate the system functions. Activities establishing the pilot test phase environment include:

- Install and configure the central data system to support test transactions on faregates, buses and parking validators.
- Install and configure 10 faregates, readers on 50 buses and two parking validators
- Operate the equipment and evaluate results of specific test criteria weekly, while identifying items for future consideration and improvement

Key Highlights:

- The pilot test phase was conducted for 90 days beginning February 23, 2015.
- Initial recruitment of 3,000 customer participants resulted in 400 active, registered customers which was less than planned.
- Bus and Rail systems were tested during the 90 days test period but Parking was not available due to delay in provider software.
- The Parking systems have been installed and are awaiting additional software revisions before testing to begin.
- System flexibility during the Pilot: The ApplePay payment application was released during the testing phase and incorporated into the pilot phase.
- A significant number of customer participants said WMATA is moving in the right

direction with this program.

Key Lessons from Pilot Phase

- Generally, the technology tested was found to meet expectations while future changes for smoother implementation were identified.
- New hardware “touch-points” - fare-gates, bus devices - will require expansive customer and employee education campaigns in transition.
- Test participants provided excellent feedback and developed very effective dialogue between customers and WMATA .
- Positive response from pilot participants affirming the NEPP direction.

Payment media testing identified technical improvements desired in the read-time of Government I.D media, certain contactless bank cards and mobile phones. These are evolving technologies and improvement is a reasonable expectation in the future deployment. System processing time of all media, after read time completed, met expectations.

Regional Coordination

WMATA will be the liaison for the Regional partners for NEPP applications. The NEPP was originally planned to have the Regional Partner Providers contract separately with the System Integrator for implementation services and devices. During the pilot phase discussions with the regional partners, it was determined it would be in the best interests of the NEPP program and the region to change this approach. As requested by the regional partners, the new approach will have WMATA developing the software and services implementation with the systems integrator while the regional providers will continue to contract with the systems integrator for purchase of devices and any additional support needed. The development of the specifics in implementing this approach are currently in process with timetable being developed for completion. This new approach will benefit the program and the region by improving efficiencies in development, testing and implementation of software and devices with WMATA assuming responsibility for those areas while working closely with the regional providers to ensure their requirements are met.

Background and History:

Metro's existing fare collection system is aging rapidly in the context of equipment and systems, has become costly to maintain and is severely limited in its flexibility to introduce new products and payments for its customers.

NEPP is a complete refresh of Metro's fare collection system software and hardware including new gates and vendors in the Metrorail system and electronic targets on-board Metrobus. Under the NEPP program, Metro will shift from an issuer of fare media to an acceptor of fare payments using a variety of International Standards Organization (ISO) approved contactless cards including new SmarTrip cards, bank-cards, Federal ID cards and smart phones/mobile devices equipped with Near Field Communications (NFC) payment capability. The NEPP systems and hardware will be standards-based and utilizing standards from the financial services and smart card industries among others.

The NEPP was envisioned to not only modernize the current equipment and systems but also to create the foundation necessary to implement the Momentum Strategic plan stated as “*Make it Easy and Intuitive to Plan, Pay, and Ride,*” while taking action to “*Pursue fare policies that are equitable and balance revenue needs with ridership growth.*”

Discussion:

The Pilot Phase

During the pilot phase test period weekly reviews were held for WMATA and Accenture to evaluate results of testing and identify opportunities for improvement and any exceptions to the expected results. Controlled tests were performed each week to measure throughput at the faregates. Controlled test were performed once each month to measure transaction time on the bus devices.

Pilot phase performance criteria were established including:

Pilot for 90 days to gather sufficient data and assure results

- Pilot period of 90 days provided continuous operation of the system, other than parking, and opportunity to gather data for other test areas

Payment Card Industry (PCI) compliance to ensure customer transaction security

- Systems were reviewed by a WMATA independent auditor and determined to meet the established standards of security based on the solution existing at the time of review; full parking solution may required additional PCI review

Equipment testing on bus, rail, and parking

- Equipment testing on bus and rail systems was conducted. Customer participant numbers were fewer than expected. While over 3,000 signed on to participate approximately 400 actually registered and participated in the testing.
- Parking systems were not tested during the pilot phase period as various software for gate operations were not available from the existing provider.

Assure fast customer flow and payment transaction times

- Controlled tests at rail stations and on buses were performed to determine if customer throughput and transaction times met expectations. These controlled tests were conducted by program team members using media types identified for the pilot phase (NEPP issued smart card, NFC equipped mobile phone, contactless credit card and two versions of government ID cards)

High accuracy and reliability for customer payment data

- The accuracy of transactions and reliability of the devices and systems was measured against the expected performance of 99.5% or 99.9% for various

measures. Fares needed to be calculated and reported accurately and devices needed to operate to the “uptime” standards determined. Generally performance was determined acceptable with some areas of concern are still being reviewed

Acceptance and processing of a variety of fare media types

- Media types specified for testing included NEPP issued smart card, NFC equipped mobile phone, contactless credit card and two versions of government ID cards. Some of these media, notably the contactless credit cards and NFC equipped mobile phones are not currently in extensive use due to either the recent introduction of the technology or limited distribution by providers in the U.S. These circumstances, along with the detail information needed to reconcile and review test results limited the readiness of customer participants to use these media types so testing was planned around internal team members using these media.
- Full testing and availability of the metrics above for parking remain open

The NEPP Costs and Benefits

Investing in the NEPP will provide the needed system upgrades to achieve a state of good repair while enabling the use of new technology to reduce costs and achieve revenue and ridership objectives.

Total Program Costs

Current program costs are budgeted at \$294 million for the life of the project including Contractor and WMATA costs. WMATA costs of \$109.7 million consist of internal labor - such as project management office, engineering, information technology and other internal staff time, consulting and other third party resources, equipment and materials, infrastructure readiness for the mezzanines which is primarily communications and some system power upgrades. Initial estimates excluded certain areas later identified such as space costs of data centers, PMO office and test lab renovation.

These costs do not include devices and implementation required for regional providers which is currently being developed as specific requirements are developed for these providers.

Project Savings

Savings are calculated as the project investment less estimated reductions in expected operating and capital costs over the project life. Projected savings through project life has decreased since review in 2013 due to some change in actual results from previous estimates and increased project costs such as electrical data cabling for mezzanines, farebox system replacement and 4G bus antennas. The Net Present Value (NPV) of operating and capital expenditures and savings related to the NEPP is currently estimated at \$12.8 million while the previous estimate in early 2013, prior to updating project costs was estimated at \$27.7 million. The NPV is calculated using a 5% discount rate.

Transition Planning

Recognizing that any transition to new systems will be disruptive to our customers planning has started to replace all fare-gates and vending devices, bus and parking devices as well as the many other activities such as implementing the expanded

retail network.

The current approach under review is to install a new NEPP reader on the existing legacy gates in addition to the existing SmarTrip reader for the transition period. This will allow gates to be used by those on either system in order to minimize disruption and crowding at the gates. The program would plan to use this “dual-reader” approach as customers move to the new system. Customer activity will be monitored and analyzed during transition to manage the installation of the new gates, which will be only useable with those on the new system. Buses and parking will operate duplicate systems for the transition period as well.

High impact marketing and communication plans will be developed to inform and assist customers in their transition to the new system. New forms of payment may be initially emphasized to encourage early adopters of the new technologies. Specific dates will be provided for transition time limits so customers can plan their activities to ensure they are prepared to shift to the new system. A SmarTrip “decommissioning” date will be established for to enable firm planning by customers and providers to switch to the new system. Transition timing will be integrated with Regional Provider implementation plans to ensure a coordinated schedules and clear communication to all regional customers.

NEXT STEPS

- Evaluation of pilot success metrics
- Parking completion prior to full deployment phase
- Planning and design for full deployment
- Regional provider integration planning

FUNDING IMPACT:

This is an information item only so no impact on funding	
Project Manager:	Tom Randall
Project Department/Office:	DGMO/NEPP

TIMELINE:

Previous Actions	January 2014 - Award to Accenture as System Integrator of New Electronic Payments System February 2014 - Notice to proceed for Pilot Phase issued February 3, 2014 February 2015 - Pilot Test period
Anticipated actions after presentation	July - Complete evaluation and assessment of Pilot phase Parking system testing July 2015 - Planning and Design for full deployment July/August 2015 - Regional Provider Integration planning



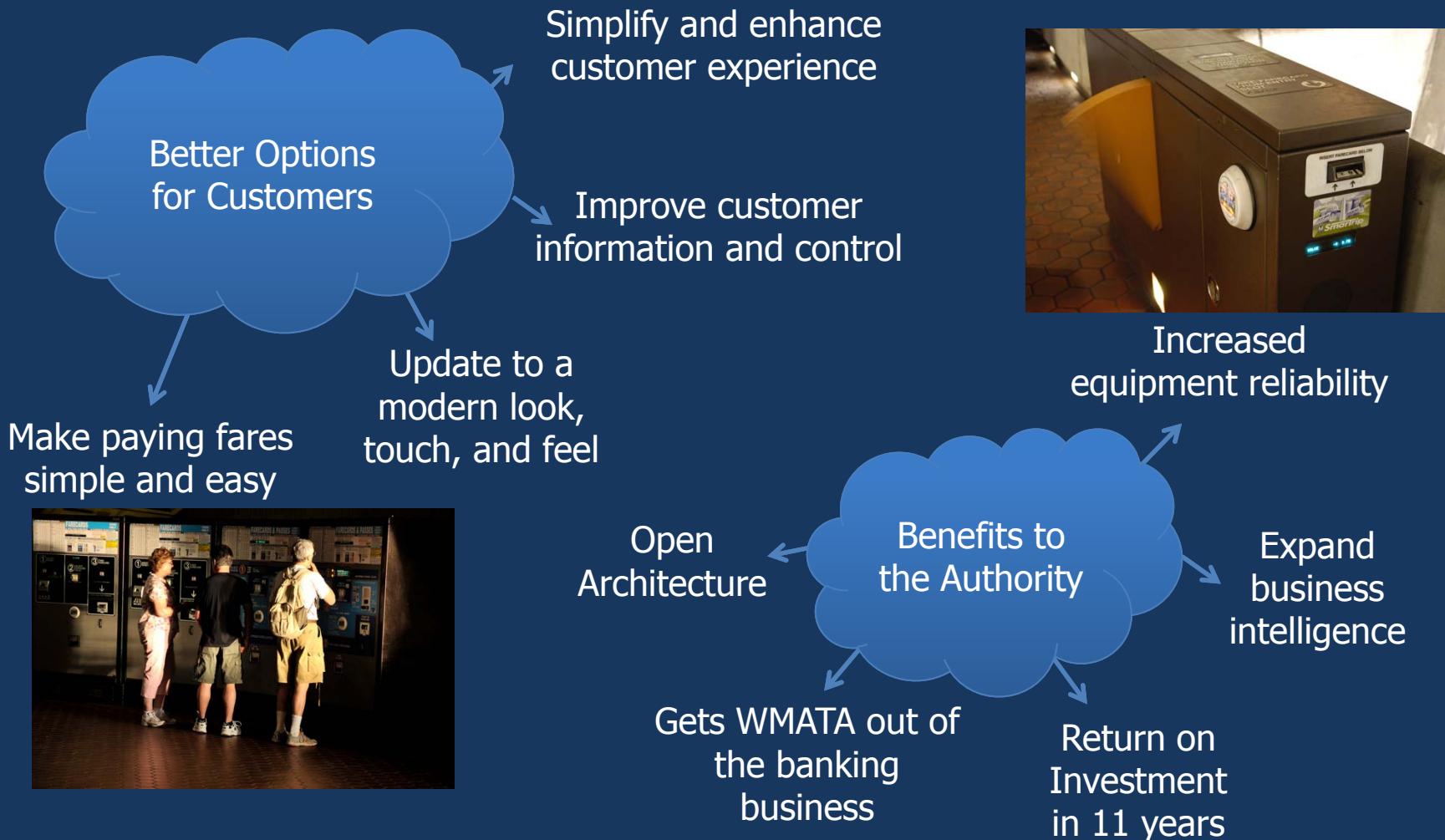
Washington Metropolitan Area Transit Authority

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Why the need for NEPP?





Original Program Goals

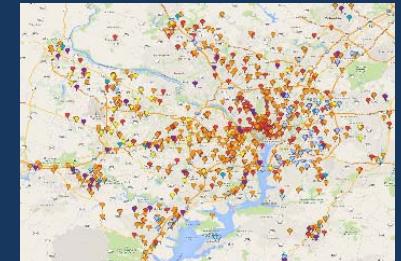
- Simplify and enhance the customer experience
- Paying fares becomes simple and easy
- Enable customers to choose among multiple payment forms
- Re-invest in fare payment devices and system entry
- Modernize the look of WMATA's "Front Door"
- Make riding Metro more appealing

Consistent from 2011 through today



Program Benefits

- Retail Network – 3,000 plus locations
 - >10x current retail
- New Web and Mobile presence
- New faregates, bus readers, fare vendors
- Improved Reliability
- New payment methods
 - NFC Phone, Bankcard
- “No Wait” – Account update





NEPP Exemplifies Best Practices

Transportation Research Board Report (2015)

Best Design Elements of Next Generation Fare Systems

- ✓ Unified Payment Strategy
 - Regional transit, parking, bike share
- ✓ Account-based
 - Secure central server, no information on card
- ✓ Open-payments
 - Most versatile, choices for customers
- ✓ Industry Standards-based
 - Non-proprietary, off the shelf solutions





Regional Role

- WMATA will be the liaison for the Regional partners for NEPP applications
 - Centralized contract for testing and management
 - Simplifies and consolidates activities
 - Efficiency in development, testing, implementation
 - Utilize successful past program structure
 - Good start with technical discussions

Shared foundation of Regional system



Pilot Program Overview

- Evaluate next generation technology in the WMATA environment
- Gather customer feedback for future integration
- Identify changes, behaviors and challenges
- Rail, bus, parking





Faregate Installation



Gallery Place
– Chinatown

7th and F
Streets
Mezzanine



Bus Installation

50 Buses in Pilot: typical installation





Parking Installation

Two parking lots will be included as part of the NEPP Pilot:

- Shady Grove North
- Suitland





Principal Pilot Criteria

Criteria

Planned

Actual

Pilot for 90 days to gather sufficient data and assure results

Pilot system in continuous operation

February 23 through May 23
Parking Pilot test pending

Payment Card Industry (PCI) compliance to ensure customer transaction security

Compliance to latest PCI standard

Partial Solution Certified PCI compliant
Parking system components need further review

Equipment testing on bus, rail, and parking

10 Rail faregates
50 Bus payment targets
2 Parking exit lanes

Bus and rail equipment installed, tested
Parking equipment installed, test pending

Review of final Pilot Phase documents and results, identifying gaps



Principal Pilot Criteria

Criteria

Planned

Actual

Assure fast customer flow and payment transaction times

Large “crowd” through faregates with a variety of media types
Bus fare payment using cellular wireless network

45+ passengers can move through gate per minute
Bus fare payments move quickly via network

High accuracy and reliability for customer payment data

Reviewed transactions against accuracy standards

Data, payment, and reliability accuracy looks positive; ongoing review of identified issues

Pilot measurements look promising with more results to be reviewed



Principal Pilot Criteria

Criteria

Acceptance and processing of a variety of fare media types

Planned

American Express, Visa, MasterCard
Government ID Card
NFC Phone
NEPP card

Actual

American Express,
Visa, MasterCard
Government ID Card
NFC Phone

- Softcard
- Google Wallet
- ApplePay

NEPP card
Parking fare media and mix pending evaluation

Adoption of evolving payment technologies during Pilot Test



Customer Feedback on Pilot

“I can't wait until I can pay with my phone but I love the new (target) on the bus.”

“I think the faster you can implement the NFC capabilities from smart phones the better it will be. You could incorporate Apple Pay to load money into the account so they would not have to use the website.”

“I would love to have the app available on my Android device.”

“The faregate operation is very smooth and rapid and the audible feedback of card acceptance is a significant improvement over the current gates.”

“Looking forward to having this at all stations!”

“At this point, its a slight upgrade from SmarTrip (better gates, automatic account deductions). However with ApplePay and the ability to use government transit funds, it would be great.”



Cost Summary

2013 NEPP Capital Costs	FY2011-22 Total
WMATA	\$65.2
Accenture	\$184.1*
	\$249.3

Current NEPP Capital Costs	FY2011-22 Total
WMATA	\$109.7
Accenture	\$184.1*
	\$293.8

2013 NPV: \$27.7 Million

\$(44.5)

Current NPV: \$(12.8) Million

5% discount rate assumed

* Timing and total amount will vary based on project schedule, selections and remedies

- *Identified project costs reduce present value of savings*
- *Benefits Analysis continues*
- *Model being established to monitor and report results*



External Coordination

- Regional partners
 - Regular meetings and discussions
 - Technical committees established
 - Bus systems architecture
 - Network communications and IT security
- Accessibility Advisory Committee
 - Briefings ongoing – last meeting May 2015
 - User interfaces for customers with disabilities
- Riders' Advisory Council
 - Briefings ongoing – last meeting April 2015
 - Pilot update



Transition Planning

- Add NEPP “targets” at all legacy bus, rail, and parking devices to maintain patron throughput
- Expand retail environment to provide access to a larger population
- Staged introduction:
 - Manage gate expansion with NEPP adoption
 - SmartBenefits user rollout
 - Promote fare tools – NFC card/phone
 - Regional transit partner integration



Transition Planning

- Metrorail
 - Legacy rail gates equipped with NEPP targets
 - At least one new NEPP aisle per rail mezzanine
 - At least one new full function fare vendor per mezzanine
- Metrobus
 - All buses equipped with NEPP and SmarTrip targets
- Parking
 - All parking lanes with NEPP payment target
- Global
 - Expanded retail reload network in place
 - Transition customers to NEPP payments, then roll out additional gates
 - Assist regional partners with implementation



Next Steps

- Pilot test completion and open items
 - Bus and Rail
- Parking System testing
 - Evaluation and analysis
- Regional Partners integration planning
- Planning and design for full deployment



Project Timetable

Today ↴

2014 2015 2016 2017 2018 2019 2020 2021

Pilot

June 2015 - End of Pilot Phase

||| Design / Build / Test

||| Phased Deployment

||| System Transition