FAYETTEVILLE NC

AMERICA'S CAN DO CITY

FARE MEDIA STRUCTURE ASSESSMENT

FINAL DRAFT

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SECTION 1. INTRODUCTION

Fayetteville Area System of Transit (FAST) is a part of the community fabric, offering an accessible and efficient mode of transportation for Fayetteville area residents. As FAST continues to evolve to meet the needs of riders, it is important to consider expanding fare payment choices. Expanding fare payment choices may include embracing new technology to improve efficiency, convenience, and security for both riders and bus operators.

This Fare Media Structure Analysis evaluates potential fare media scenarios while exploring phasing options for FAST to become a cashless transit agency. Furthermore, the analysis provides a comprehensive overview of how different fare media policies/scenarios might impact both FAST and its passengers. The findings will offer insights into the potential benefits and trade-offs of each scenario.

ORGANIZATION OF THIS REPORT

This document includes five sections, including the Introduction.

Section 2 gives an overview of FAST's existing service and fare options. For context, it includes existing peers' payment options.

Section 3 summarizes the available fare payment technologies. It also explores the benefits and challenges associated with each technology.

Section 4 provides a technology evaluation, which gives a holistic assessment of each previously presented form of technology.

Section 5 recommends fare technology and the associated phasing.

SECTION 2. CONTEXT

FAST's service began in 1976. FAST's mission is to improve the quality of life by connecting Fayetteville's residents, workers, visitors, and places with a highly-valued safe, efficient, reliable and innovative transportation.

EXISTING FAST SERVICE

FAST currently operates 17 routes seven days a week. On weekdays, service operates from 5:30AM to 7PM, on Saturdays from 7:30AM to 7PM, and on Sundays from 9AM to 7PM. Additionally, FASTTrac! provides paratransit service to those who are unable to use the fixed-route system.

EXISTING FARE STRUCTURE

FAST suspended all fares in March 2020 due to the COVID-19 public health emergency and reinstated fares on July 1, 2023. The regular fare of $1.25 for adults and youths and a discount fare of $0.50, for those who are eligible, were reintroduced. Table 2-1 shows the existing FAST fare structure.

Table 2-1: FAST | Existing Fare Structure

Fares	Adult	Discount	Youth
Adult	$1.25	$0.50	$1.25
One-Day	$3.00	$1.50	$2.00
5-Day	$11.00	$5.50	$11.00
30-Day	$40.00	$17.00	$30.00
Summer Fun*	N/A	N/A	$15.00

**Unlimited trips from June 1st to August 31st for youth ages 18 years or younger.*

FAST also offers students attending Fayetteville Technical Community College (FTCC), Fayetteville State University (FSU), Miller-Motte, and Methodist University the opportunity to purchase a Student Semester Pass. The Student Semester Pass offers unlimited rides after paying the designated fee during a semester when presenting a valid Student ID.

FAST FARE PAYMENT OPTIONS

Currently, FAST riders can purchase passes on the bus, at the FAST Transit Center, and at select Carlie C's locations. Additionally, riders can purchase a one-way trip using cash upon boarding the bus.

PEER AGENCIES

FAST identified ten peer agencies in 2022 through their Transit Development Plan (TDP) process. The full TDP can be found HERE. The peers from the TDP are shown by national and regional categories. The geographic peers were added to this analysis due to their geographic proximity to FAST.

- National
  - Fort Wayne Public Transportation Corporation (FWPTC)
  - Tri-State Transit Authority (TTA)
  - Wave Transit System (WTS)
- Regional
  - Asheville Transit System (ATS)
  - Clarksville Transit System (CTS)
  - Metropolitan Transit System (METRA)
  - Durham Area Transit Authority (Go Durham)
  - High Point Transit System (HPTS)
  - Cape Fear Public Transportation Authority (CFPTA)
  - Winston-Salem Transit Authority (WSTA)
- Geographic
  - GoRaleigh
  - GoTriangle
  - Greensboro Transit Agency (GTA)

When reviewing FAST peers' fare payment policies, the following information was found (Tables 2-2 through 2-3).

Table 2-2: FAST TDP Peer Agencies | Fare Payment Options

Peer Agency	Urban Area Population[1]	Cash Accepted on Bus or Counter?	Cashless Incentives	Additional Fare Media
Winston-Salem Transit Authority (WSTA)	416,394	Counter	None.	Paper tickets
GoDurham	391,371	N/A[2]	None.	Fare free until June 2025.
Fayetteville Area System of Transit (FAST)	333,366	Both	None.	Paper passes
Fort Wayne Public Transportation Corporation (FWPTC)	329,170	Bus[3]	Change cards no longer issued. Fare capping[4] for passengers using mobile tickets as a price incentive for riders to migrate to Token Transit.	Token Transit App, online purchasing
Wave Transit System (WTS)	328,610	Both	Allows free transfers when using fare types other than cash.	MyWAVE swipe card, MyWAVE App
Asheville Transit System (ATS)	312,618	Both	None.	Ticket book, paper passes
Cape Fear Public Transportation Authority (CFPTA)	260,170	Both	None.	RideMICRO App
Metropolitan Transit System (METRA)	249,510	Both	None.	One-way tickets, swipe cards
Tri-State Transit Authority (TTA)	199,133	Both	None.	Token Transit App, loadable "Value Cards"
Clarksville Transit System (CTS)	183,798	Both	None.	Paper passes, Token Transit App

[1] *Source: FAST TDP*

[2] *Before fare suspension, all passes could be purchased at the Durham Station with cash or credit card. One-day passes could be purchased on the bus, but exact change is required. Single ride fare was $1.00 or $0.50 for a discounted single ride fare before fare suspension.*

[3] *Eliminating Genfare Fareboxes from vehicles in 2025.*

[4] *Fare capping is a practice that allows riders to pay full fare until they reach a specified threshold, such as the monthly pass price. Subsequently, riders either pay a discounted amount or do not have to pay for additional rides.*

Table 2-3: Geographic Peers | Fare Payment Options

Peer Agency	Urban Area Population[1]	Cash Accepted on Bus or Counter?	Cashless Incentives	Additional Fare Media
GoRaleigh[2]	1,106,646	Both	Fare capping is applied when paying fares with card or app.	Umo Smartcard, Umo Mobile App
GoTriangle[2]	396,118	Both	Fare capping is applied when paying fares with card or app.	Umo Smartcard, Umo Mobile App
Fayetteville Area System of Transit (FAST)	333,366[3]	Both	None.	Token Transit App
Greensboro Transit Agency (GTA)[2]	248,111	Both	Fare capping is applied when paying fares with card or app.	Umo Smartcard, Umo Mobile App

[1] *Source: National Transit Database (NTD)*

[2] *Not a TDP peer agency, but since they are area providers, the information is provided for context/reference.*

[3] *Source: FAST TDP*

SECTION 3. AVAILABLE FARE PAYMENT TECHNOLOGIES

Technology continues to develop to offer more options to riders and transit agencies. Some transit agencies are exploring technology options to support alternative cashless fare payment systems. Cashless fare payment systems improves boarding efficiency, improves driver safety, and relieves some administrative staff duty of reconciling cash fares. Converting to a cashless fare payment system would involve both a technological change for FAST and cultural shift for riders.

If FAST decided to implement a cashless fare payment system, administrative efforts that were spent collecting and tracking fares could be reallocated to other needed services, such as marketing. Accepting cash fares demands labor to collect the fares from the vehicles, sort and count the fares, and deliver any cash fares to the bank, among other tasks. The collection of cash also burdens the driver to ensure correct fare amount possibly slowing the boarding process, which can affect on-time performance.

According to American Public Transportation Association (APTA), approximately 150 major city transit agencies are considering implementing a contactless fare payment system. As more transit agencies explore implementing cutting-edge technology, equity and accessibility should be considered.

Available research shows that approximately 30% of riders still pay cash while boarding buses (Golub, et al.). Additionally, research reports that approximately 14% of riders have no access to formal banking services. This suggests that there may be a need to consider multiple options to ensure FAST is accessible to all.

The following explores the benefits and challenges of different alternative cashless fare payment system technology.

SMARTPHONE APPS

According to APTA, transit agencies have continued to incorporate technology, including smartphone apps that allow riders access to mobile ticketing. FAST has already partnered with mobile ticketing app, Token Transit, to allow students who are eligible to purchase Student Semester Pass to do so through the app.

Smartphone apps can enhance convenience and increase access to those with access to a smartphone. By enabling payment through its smartphone app, FAST would allow passengers to pay for the trip before boarding, eliminating waiting time which could possibly improve on-time performance.

FAST could host a standalone smartphone app that allows riders to pay for a pass and receive real-time updates on bus routes, making it a one-stop shop for riders looking to access information about FAST. Alternatively, FAST information and payment options for all passes could be added to the existing Token Transit app or the Fayetteville, NC mobile app for residents and visitor convenience.

BENEFITS

There are many benefits to expanding mobile ticketing through smartphone apps. As technology has developed, it now allows smartphone users to use their device as a digital wallet. The smartphone app could allow riders to link their existing digital wallet to pay for their trip. While this is an extra convenience for riders, it also could allow FAST to introduce fare capping. Fare capping is a practice that allows riders to pay full fare until they reach a specified threshold, such as the monthly pass price. Subsequently, riders either pay a discounted amount or do not have to pay for additional rides. According to the National Center

for Mobility Management, research suggests that fare capping may increase ridership. This strategy may also increase equitable access to FAST as riders can plan and budget for the maximum they would pay in a month without having to formally purchase a specific pass first. Including a smartphone option may also be appealing to visitors who do not want to have to go to a specific location to purchase a physical pass.

Furthermore, adding mobile ticketing through a smartphone app can add appeal to riders who value technology, like younger generations. According to research conducted by Golub, et al., smartphone ownership among riders is over 80% for all groups other than the Baby Boomer generation (those born between 1946 and 1964). Additionally, adding new technology can encourage riders who stopped using FAST during the COVID-19 pandemic due to health concerns to return with contactless payment.

Although there are many benefits for FAST riders, FAST administrative staff will also benefit from not having to collect and deposit cash. Furthermore, a smartphone app would reduce the cost of designing and printing passes.

CHALLENGES

Equitable access to fare payment is a concern due to technology ease and access. The generation that reports having less access to smartphones may have increasing reliance on transit due to their diminished ability to drive or desire to not have to have to maintain a vehicle. Furthermore, unbanked passengers tend to have lower income and may depend on transit to access lifeline trips. Relying solely on smartphone apps may exclude transit-dependent riders.

While research shows that the majority of riders own smartphones, approximately 20% of riders are concerned about reaching data limits and 30% of riders reported that they rely on public Wi-Fi to connect to the internet (Golub, et al.). Additionally, some riders may not want to store payment information on the smartphone app. FAST may also consider if there is a cost associated with a credit card processing charge.

In addition, FAST may have to upgrade the farebox technology to have the capability to scan or validate the mobile app pass.

TICKET KIOSKS

Ticket kiosks allow riders to purchase paper passes or reload fare cards typically at a standalone machine. These machines are usually found strategically placed at major transfer facilities, popular stops, or sometimes local shops or public facilities.

PAPER PASSES

Similar to the smartphone app, riders can purchase paper passes from a ticket kiosk before they board the bus, which can improve on time performance.

Benefits

Ticket kiosks are accessible to all riders and are typically available 24 hours a day, seven days a week. This allows riders to access all of the fare options without needing any additional technology and still being able to use cash. Adding a ticket kiosk would eliminate the cash fare payment on the bus and the operator having to reconcile the proper cash fare payment.

Challenges

Paper pass payment method is rigid and not as convenient as riders also must go to a specific ticket kiosk to purchase passes. Riders may not frequent the locations where fares are purchased and may have to make a trip just to purchase paper passes.

Although this payment method allows riders access to a physical card and an option to possibly pay with cash, riders who use FAST regularly will have to visit the kiosk many times. Each visit would generate paper passes that are not reusable, which is not environmentally friendly or supporting of sustainable initiatives.

Purchasing and maintaining the machines can also be an additional cost to the agency. Depending on the functionality of the kiosk (simple fare options vs. advanced features), the cost to purchase a ticket kiosk alone can be thousands of dollars.

SMART FARE CARDS OR RELOADABLE FARE CARDS

Smart fare cards or reloadable fare cards are increasingly becoming popular across transit agencies around the US. They are reloadable plastic cards that resemble and function as a paper pass but are not meant to be temporary or disposable. Riders can obtain a card and continue to reload it with multiple passes. As the smart fare card or reloadable fare card is account based, riders can pay via debit card, credit card, or pre-paid gift card. Furthermore, like the smartphone app, smart fare cards or reloadable fare cards can support fare capping.

Benefits

Smart fare cards or reloadable fare cards are more sustainable as it is assumed that a rider only needs one card and will continue to reload it as they use FAST services. This payment method is also equitable as it could allow riders to pay for rides at designated locations with cash, but board the bus with the fare pre-loaded. Additionally, riders could benefit from fare capping, which could increase ridership.

FAST could provide a variety of electronic pass options that can be connected to a rider's bank, credit card, or pre-paid gift card. This provides convenience, payment security, increase in accessibility, and reduces cash collection/counting expenses for the agency. The agency also benefits from streamlined payment collection, improved data collection, and improved accounting.

Challenges

Although the smart fare cards are more equitable, the smart fare card shares similar location inconveniences as the paper tickets. Furthermore, while it may encourage riders to use digital payment, it would not entirely decrease the need for collecting cash at the specified locations.

Employing this payment methodology may also demand substantial capital investment as FAST may have to replace or retrofit all of its farebox machines to be able to accept the payment.

TAP AND GO

A new, popular contactless fare collection technique that could be introduced with new or upgraded fareboxes is "Tap and Go." This allows riders who do not want to purchase their fares through an app to still pay a fare electronically by tapping their debit card, credit card, or pre-paid gift card on the farebox machine.

BENEFITS

This fare payment methodology can support tourism by allowing visitors and tourists to pay electronically without needing to download an app or figure out where to buy a pass or carry cash.

Furthermore, this contactless payment methodology may attract new riders that are hesitant to use the service due to touch-based health concerns.

CHALLENGES

This fare payment methodology could present significant equity issues for unbanked passengers who may not have the option of linking directly to a bank account or credit card.

Like other payment methodologies, implementing this may include purchasing new fareboxes to keep up with the latest technology which can also be an expensive capital cost.

SECTION 4. TECHNOLOGY EVALUATION

After the fare payment technologies were reviewed, an evaluation framework was developed to assess practical applicability and support implementation.

EVALUATION CRITERIA AND METHODOLOGY

A qualitative methodology was developed to evaluate the technologies previously presented. The five equally weighted evaluation categories identified to prioritize the technologies are shown to the right.

SCORING

Each technology was evaluated using the criteria shown to the right. The following is the three-tier scoring system used, indicating the scale of support for each technology by criterion:

- Very Favorable
- Moderately Favorable
- Challenging

Table 4-1 presents the results of the evaluation.

Table 4-1: Technology Evaluation

Fare Payment Technology	Equitability	Quality of Life Improvement	Financial Feasibility	Ease of Implementation	Impact on Safety
Smartphone Apps					
Paper Passes					
Smart/Reloadable Fare Cards					
Tap and Go					

Key: Very Favorable | Moderately favorable | Challenging

SECTION 5. RECOMMENDATIONS

If FAST transitions to a cashless fare payment system, it is recommended it uses a phased approach over a 3-year pilot with a combination of fare payment technologies. This will allow all existing riders to adjust while also attracting new riders with additional convenience.

PHASE 1 (2026)

During the first transition year, FAST should consider introducing reloadable smart fare cards and ticket kiosks at strategic locations, including the FAST Transit Center (FTC), Carlie C's, shopping centers in West Fayetteville, and other primary destinations as indicated by FAST survey respondents including Walmart, Food Lion, CVS, and Walgreens locations within the FAST service network. FAST should continue to establish fare partnership programs with higher education centers, local public high schools, and major employers. This program would allow an agency or institution to pre-pay fares so students or employees can use FAST by showing a student or employee card. This program could also bolster stable fare revenues.

At the beginning, the smart fare cards would be introduced in addition to the paper passes and FAST would still accept cash on the bus when purchasing paper passes or reloading a smart fare card. Introducing smart fare cards can be advertised as environmentally-friendly, which may attract environmentally-conscious riders. During the transition to cashless fares, FAST should partner with additional locations to allow riders to reload smart fare cards. This may include additional grocery stores, public places like libraries, higher education centers, or other popular local places. This added convenience will help riders transition to smart fare cards.

It is also recommended that FAST either begin utilizing the Token Transit app for all bus passes, procure a different mobile payment app, or should interface with Fayetteville's existing mobile app in anticipation of going cashless. Additionally, FAST should introduce free public Wi-Fi at the FTC to support and encourage riders using mobile app payments. If FAST's existing fareboxes are not able to accept contactless payment, FAST should explore procuring and replacing the fareboxes on all vehicles.

PHASE 2 (2027)

After riders are familiar with smart fare cards, FAST should cease issuing paper fares and transition solely to smart fare cards if a physical pass is needed. Riders should be informed that there is a fee to replace smart fare cards. FAST should accept cash for reloading the smart fare cards, but alternative digital payment methods should be encouraged. The transition from paper passes to smart fare cards can be incentivized by giving riders a free day pass or free transfers between routes when they load the smart fare card digitally. If FAST implements electronic fare payment, it has the option to implement fare capping or a discounted rate for digital payment. The discounted rate could be a temporary incentive in this phase to encourage riders to transition to digital payment. This strategy may be a great incentive and useful to assist riders in the transition to cashless fare payment.

When new FAST contactless fareboxes are installed, Tap and Go payment option can be accepted and advertised as an additional convenience. In the last 6 months of the second phase, if FAST is planning to launch a new app or interface with the existing Fayetteville app, it should advertise and encourage riders to download and utilize it for fare payment. Simultaneously, FAST should introduce riders to Federal Communications Commission's income-based Affordable Connectivity Program (ACP), a program

which allows qualifying households to receive a free smartphone and service. This, along with the free public Wi-Fi, will help support riders' transition to mobile app payment. FAST should also consider introducing fare capping to incentivize riders to transition to digital payment methods.

PHASE 3 (2028)

FAST should begin the final phase to transition to a cashless fare payment system on the buses. At the beginning of the phase, FAST should advertise that by the end of the year, cash will not be accepted when boarding the bus. To support unbanked passengers, the smart fare cards can be reloaded at partner locations or at ticket kiosks that accept cash. In the last phase FAST will have multiple fare options for riders, including smart fare cards, Tap and Go, and a mobile app payment. This transition will reduce the revenue handling burden of collecting cash on the bus on administrative staff.

Furthermore, in this phase, FAST will assess if progress towards cashless payment when boarding the bus is still warranted. FAST will also leverage the TDP update process to align the results of the cashless reassessment with the TDP efforts.

REFERENCES

Golub, A., J. MacArthur, C. Brakewood and A. Brown. *Applying an Equity Lens to Automated Payment Solutions for Public Transportation.* NITC-RR-1268. Portland, OR: Transportation Research and Education Center (TREC), 2021.