# FOURSQUARE ITP
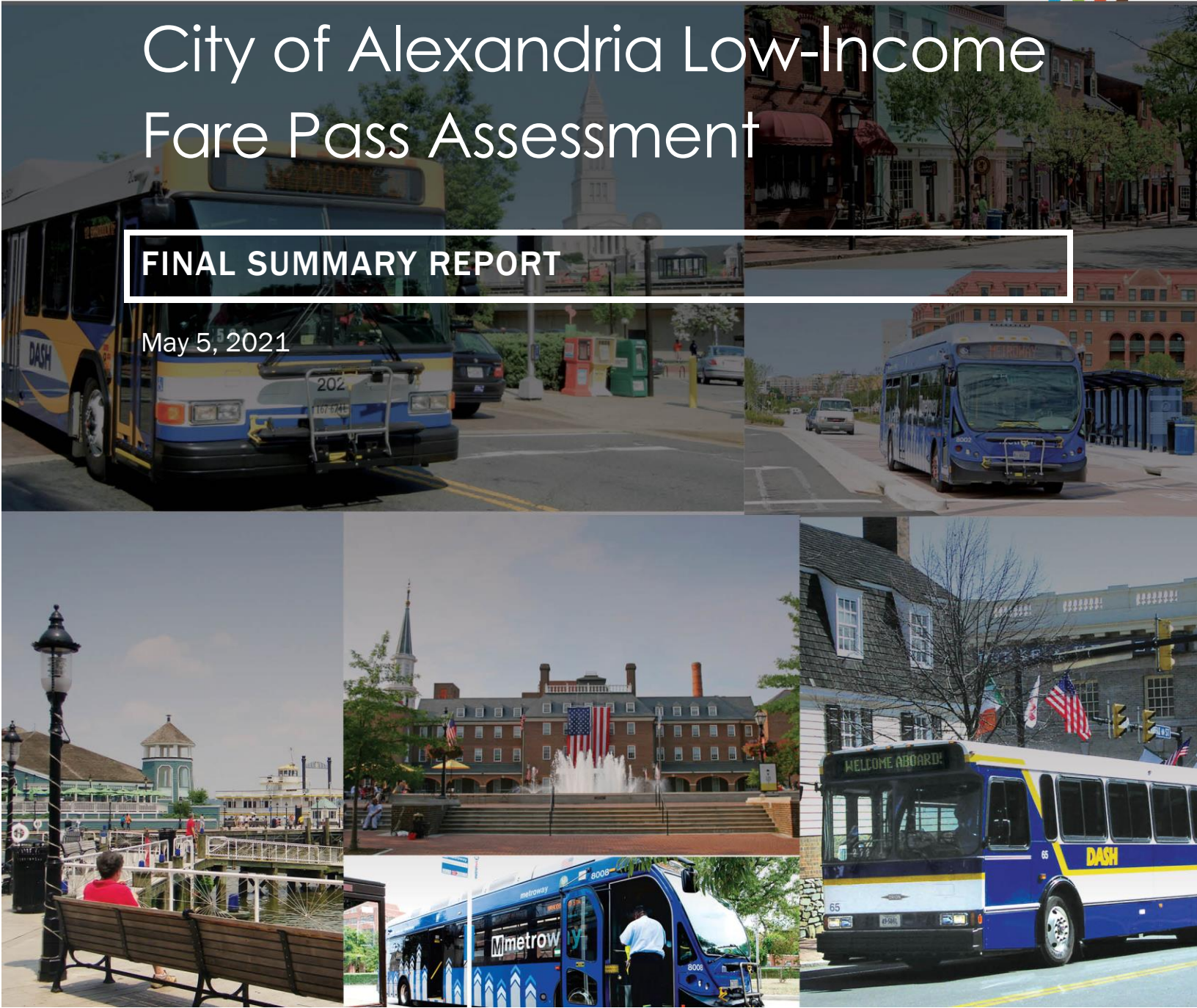## INTEGRATED TRANSPORTATION PLANNING

# City of Alexandria Low-Income Fare Pass Assessment

## FINAL SUMMARY REPORT

May 5, 2021

Prepared for:

Metropolitan Washington **Council of Governments**

TLC

CITY OF ALEXANDRIA · VIRGINIA

## Executive Summary

The City of Alexandria, in partnership with the Metropolitan Washington Council of Governments (MWCOG), initiated a study to understand options, and their impacts, for making public transit more affordable for low-income residents. Recognizing that transit affordability has an equity component, and that the topic is of interest to many jurisdictions, the study also provides a potential model for other jurisdictions to build upon and could support other fare affordability initiatives in the region.

Through an initial screening process, the study team identified three fare program scenarios for evaluation:

- **Scenario 1: Free fares for all riders on DASH services.**
- **Scenario 2: Free fares for low-income residents on DASH and WMATA services** (Metrobus and Metrorail).
- **Scenario 3: Half-price fares and passes for low-income residents on DASH and WMATA services.**[1]

This summary report includes the high-level findings from the study, which included a literature and case example review, interviews with City staff and regional partners, projections for ridership and costs for each of the program scenarios, and development of program evaluation and marketing recommendations. These are detailed in two technical memoranda produced as part of the study.

**The study found that free fares for all DASH riders (Scenario 1) would benefit the most people (including all low- and moderate-income DASH riders), result in the largest increase to DASH ridership, and have the lowest administrative cost and complexity.** Although the free DASH scenario is identified as having the most benefits for the City of Alexandria, there are additional factors relating to regional contributions to WMATA and the SmarTrip program, and regional fare consistency that should be considered between the City of Alexandria and its regional partners. It should also be noted that this study does not contemplate the regional financial implications of any future scenarios in which WMATA or other regional partners transition to fare-free service.

Free fares for low income riders on both DASH and WMATA (Scenario 2) would be the most expensive option but would also provide the largest benefit to qualifying low-income riders (fewer than in Scenario 1), who would be able to ride on DASH and WMATA services for free. Scenario 3 (Reduced fares for low income DASH/WMATA riders) would be the least expensive but would also provide a more modest benefit to low-income residents. Based on the removal of the administrative and cost burdens associated with managing a low-income fare program and collecting fares, and the number of people Scenario 1 would benefit relative to its cost, the project team concludes that Scenario 1 would produce the greatest overall benefit for low-income transit riders in the City.

## Program Administration

Program administration costs and logistics would be minimal under Scenario 1, with free fares for all DASH riders, but are relevant in Scenarios 2 and 3, which both include transit benefits for eligible low-income residents. The City's Transportation and Environmental Services (T&ES) Department would be responsible for overall program management, including coordination with WMATA and DASH staff. The City's Department of Community & Human Services (DCHS) would have a key role in ongoing program administration, including

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[1] Under Scenario 1, the benefit would be accessible to all DASH riders, including over 18,000 residents who qualify for SNAP benefits and over 33,000 residents who earn less than 200 percent of the FPL. For Scenarios 2 and 3, low-income residents are those from households that are eligible for the federal Supplemental Nutrition Assistance Program (SNAP); in most cases, their households earn less than 130 percent of the federal poverty level (FPL). For the analysis, it was assumed that over 8,000 individuals would receive the benefit under Scenarios 2 and 3 beginning in the program's second year (participants would be gradually added during the first year).

program outreach, eligibility verification, fare media distribution, and customer service. The eligibility requirements for the low-income programs outlined in Scenarios 2 and 3 would be identical to other DCHS programs like SNAP for ease of verification and administration.

## *Case Study Review Findings*

The study included a review of case examples to gain a better understanding of the scope, design, and effectiveness of similar fare programs. Key findings from the review included:

- Tying eligibility to participation in other low-income benefit programs simplifies the certification and administrative processes.
- Existing fare discount programs typically target those earning between 125 and 200 percent of the Federal Poverty Level (FPL).
- Community organizations can effectively assist in marketing fare programs to low-income riders.
- In Boston, a pilot program found that low-income people who were given a 50 percent discount on fares took 30 percent more trips.
- A sample of ridership increases from agencies that eliminated fares ranged from 25 to 205 percent, with most agencies experiencing increases of 25-60 percent.
- Some fare programs targeting low-income riders had relatively low adoption rates. This finding implies that there is considerable value for such programs in keeping barriers to participation as low as possible, and ensuring effective marketing to targeted populations to make them aware of the program.

> **Despite riding transit more frequently, low-income riders are less likely to purchase flat-rate passes for transit usage. They also travel shorter distance and make more transfers.**

The findings from this review were incorporated into the program design for the scenarios, administration and marketing recommendations, program evaluation recommendations, and ridership and cost projections.

## *Ridership Projections*

Ridership was projected for a "Baseline Scenario" (i.e., continuation of the status quo) and each fare program scenario for Fiscal Years (FY) 2022 to FY 2025. All the scenarios, including the Baseline, take into account planned changes in DASH service levels resulting from the Alexandria Transit Vision (ATV) implementation, reductions in ridership due to the pandemic, and WMATA's anticipated rail-to-bus transfer discount starting in FY 2023. Anticipated ridership impacts of the three fare scenarios vary based on: the applicable or eligible population (all riders or low-income residents), the services the fare program would cover (DASH or both DASH and WMATA), and the level of fare reduction (free or half-price). They also take into account riders' likely switches between DASH, Metrobus, and Metrorail services depending on their relative prices. **Table 1** shows projected ridership for all scenarios from FY 2022 to FY 2025.

> **Free fares for all riders on DASH (Scenario 1) is projected to result in the largest ridership increase compared to the Baseline Scenario.**

*Table 1: Estimated Ridership on DASH and WMATA Services for All Scenarios, FY 2022–FY 2025*

| Scenario | FY 2022 | FY 2023 | FY 2024 | FY 2025 |
|---|---|---|---|---|
| **Baseline Scenario** | | | | |
| DASH Ridership | 2,303,000 | 3,720,000 | 4,698,000 | 5,220,000 |
| **Total Transit Ridership in the City (DASH + WMATA)** | **4,396,000** | **7,501,000** | **9,332,000** | **11,221,000** |
| **Scenario 1: Free fares for all DASH riders** | | | | |
| DASH Ridership | 2,837,000 | 4,579,000 | 5,778,000 | 6,424,000 |
| **Total Transit Ridership in the City (DASH + WMATA)** | **4,920,000** | **8,372,000** | **10,429,000** | **12,479,000** |
| Total Ridership Increase Rate over Baseline | 11.9% | 11.6% | 11.8% | 11.2% |
| **Scenario 2: Free fares for low-income residents on DASH and WMATA services** | | | | |
| DASH Ridership | 2,434,000 | 4,060,000 | 5,127,000 | 5,697,000 |
| **Total Transit Ridership in the City (DASH + WMATA)** | **4,648,000** | **8,153,000** | **10,139,000** | **12,153,000** |
| Total Ridership Increase Rate over Baseline | 5.7% | 8.7% | 8.7% | 8.3% |
| **Scenario 3: Half-price fares and passes for low-income residents on DASH and WMATA services** | | | | |
| DASH Ridership | 2,381,000 | 3,924,000 | 4,956,000 | 5,506,000 |
| **Total Transit Ridership in the City (DASH + WMATA)** | **4,547,000** | **7,892,000** | **9,816,000** | **11,780,000** |
| Total Ridership Increase Rate over Baseline | 3.4% | 5.2% | 5.2% | 5.0% |

## Cost Projections

Similar to the ridership projections, the cost projections include comparisons of the fare program scenarios to a Baseline Scenario and are based on numerous assumptions. Costs accounted for in the projections include:

- Foregone fare revenue (farebox revenues not collected due to fares being eliminated or partially eliminated; could vary significantly if actual ridership is significantly different from projections).
- Capital and operating costs of collecting fares.
- Administration and marketing costs, including the cost of fare media.

The cost projections assume that most of the administration of the program under any scenario will be conducted as part of the regular duties of current City staff. The assumptions used to identify the amounts the City would reimburse WMATA for program participants' use of WMATA services under Scenarios 2 and 3 are based on available data and information and an initial conversation with WMATA staff; however, they are subject to negotiation. Scenario 2 assumes all SNAP recipients will receive a monthly unlimited pass, which could result in high costs if the City would be responsible for reimbursing WMATA for the passes regardless of actual pass usage. (However, there could be "opt-in" mechanisms implemented to address this possibility.) If the program were to be implemented as a pilot, data on usage rates could inform negotiations regarding pass reimbursement amounts paid to WMATA by the City.

**Table 2** shows total costs for each scenario from FY 2022 to FY 2025. Scenario 2 is projected to have the highest costs *if* participation in the program is maximized, although the cost difference between Scenarios 1 and 2 is anticipated to decrease throughout the four-year period. This is due to the fact that, between FY 2022 and FY 2025, following the pandemic, ridership on DASH is anticipated to recover significantly. As a result, this means that the costs (primarily foregone fare revenue) of Scenario 1 will increase. By contrast, cost projections for Scenarios 2 and 3 are not as dependent on system ridership and assume relatively steady participation rates throughout that period, leading to more stable program costs through FY 2025.

*Table 2: Total Cost by Scenario, FY 2022–FY 2025*

| Scenario | FY 2022 | FY 2023 | FY 2024 | FY 2025 |
|---|---|---|---|---|
| **Baseline** | | | | |
| **Total (Cost of Collecting Fares)** | **$449,000** | **$466,000** | **$483,000** | **$498,000** |
| **Scenario 1: Free fares for all DASH riders** | | | | |
| DASH Foregone Fare Revenue | $2,623,000 | $3,912,000 | $4,961,000 | $5,512,000 |
| Other Program Costs (Marketing) | $16,300 | $5,500 | $5,600 | $5,800 |
| Total | $2,639,000 | $3,921,000 | $4,970,000 | $5,521,000 |
| *Scenario 1: Net Increase over Baseline* | **$2,190,000** | **$3,455,000** | **$4,487,000** | **$5,023,000** |
| **Scenario 2: Free fares for low-income residents on DASH and WMATA services** | | | | |
| DASH Foregone Fare Revenue | $724,000 | $1,170,000 | $1,477,000 | $1,641,000 |
| Payments to WMATA | $2,745,000 | $4,393,000 | $4,393,000 | $4,393,000 |
| Other Program Costs (Marketing + Cost of Collecting Fares) | $503,000 | $501,000 | $517,000 | $533,000 |
| Total | $3,972,000 | $6,067,000 | $6,390,000 | $6,570,000 |
| *Scenario 2: Net Increase over Baseline* | **$3,523,000** | **$5,601,000** | **$5,907,000** | **$6,072,000** |
| **Scenario 3: Half-price fares and passes for low-income residents on DASH and WMATA services** | | | | |
| DASH Foregone Fare Revenue | $317,000 | $469,000 | $592,000 | $658,000 |
| Payments to WMATA | $965,000 | $1,544,000 | $1,544,000 | $1,544,000 |
| Other Program Costs (Marketing + Cost of Collecting Fares) | $503,000 | $504,000 | $520,000 | $536,000 |
| Total | $1,785,000 | $2,517,000 | $2,656,000 | $2,737,000 |
| *Scenario 3: Net Increase over Baseline* | **$1,336,000** | **$2,051,000** | **$2,173,000** | **$2,239,000** |

Analysis performed as part of this study indicated that increased ridership on the DASH system is not likely to result in the need for significant additional operating expenditures (i.e., adding more drivers, vehicles, or trips) outside of those service improvements that are already recommended by the FY 2022 DASH Transit Development Plan (TDP) to satisfy higher demand between FY 2022 and FY 2025 under any of the scenarios. Based on similar programs in other cities identified for the literature review, it is not anticipated that the program would result in a noticeable decrease in traffic in the City. The study did not evaluate the administrative costs to WMATA associated with implementing the fare program under Scenarios 2 and 3; such costs are assumed to be accounted for in the reimbursement payments from the City to WMATA.

## Findings & Recommendations

The cost and ridership findings for each scenario are summarized in **Table 3** for FY 2025. Annual ridership and cost projections are available for FY 2022 through FY 2025 in Technical Memorandum 2.

*Table 3: Projected Ridership and Cost Summary by Scenario, FY 2025*

| Scenario | DASH Ridership (Trips) | All Transit Ridership in the City (DASH + WMATA Trips) | Net Cost Increase over Baseline | Potential Beneficiaries (Low-Income* Program Participants) |
|---|---|---|---|---|
| **Baseline Scenario** | 5.2 million | 11.2 million | - | - |

| Scenario | DASH Ridership (Trips) | All Transit Ridership in the City (DASH + WMATA Trips) | Net Cost Increase over Baseline | Potential Beneficiaries (Low-Income* Program Participants) |
|---|---|---|---|---|
| Scenario 1: Free fares for all DASH riders | 6.4 million (23% increase) | 12.5 million (11% increase) | $5.0 million | 15,000-20,000[2] |
| Scenario 2: Free fares for low-income riders on DASH and WMATA | 5.7 million (9% increase) | 12.2 million (8% increase) | $4.3 million - $6.1 million | 5,000 – 10,000[3] |
| Scenario 3: Half-price passes and fares for low-income riders on DASH and WMATA | 5.5 million (6% increase) | 11.8 million (5% increase) | $1.6 million - $2.2 million | 5,000-10,000 |

*Those from households with incomes at or below 130 percent of FPL.*

Uncertainties remain regarding ridership levels in future years, as well as participation and usage under Scenarios 2 and 3, which could have significant implications for the cost to the City of implementing the program (for this reason, net cost increases have been shown as ranges in the table). These costs could also vary based on how many trips participants take on WMATA (versus DASH) services. These uncertainties could be alleviated by a combination of: (1) implementing the program as a pilot first, enabling collection of data to inform the City's understanding of costs; (2) capping the number of program participants; and (3) implementing an opt-in mechanism such that the City would only compensate WMATA for passes actually used on the WMATA system. There is also the option for the City to implement versions of Scenarios 2 and 3 that initially cover just DASH services in the short-term and expand the program to WMATA at a later point in time.

**Table 4** summarizes key advantages and disadvantages of each scenario, encompassing both quantitative and qualitative characteristics.

*Table 4: Summary of Scenario Advantages and Disadvantages*

| Scenario | Advantages | Disadvantages |
|---|---|---|
| Scenario 1: Free fares for all on DASH | ■ Easiest for the City to implement<br>■ Benefits the largest number of residents, including many who are just above typical low-income thresholds<br>■ Easiest to access for participants<br>■ Enhanced operational performance and reduced travel times<br>■ Lowest cost relative to number of residents (low-income and total) served<br>■ Greatest increase in ridership (11% in FY 2025) and associated environmental benefits<br>■ Highest savings due to not collecting fares ($450,000 in FY 2022)<br>■ Could reduce expenses owed to WMATA by the City. | ■ Relatively high net cost ($5.0 million in FY 2025)<br>■ Does not enhance affordability of WMATA services<br>■ May reduce ridership revenue to WMATA, as riders may switch from a paid service to a free service.<br>■ Offers less support for an integrated regional transit network, as envisioned in recent regional plans[4]<br>■ Loss of employer-subsidized fare revenues through SmartBenefits (10-12% of fare revenue in FY19) |

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[2] The City of Alexandria is home to roughly 33,000 residents from households earning less than 200 percent of the FPL. The range provided above is an estimate for the amount who might ride free DASH service based on previous ridership surveys.
[3] As a reference point, there are 8,425 total SNAP participants in the City of Alexandria who could qualify for this program.
[4] Such plans include the Washington Area Bus Transformation Project. For more information, see: https://bustransformationproject.com/.

| Scenario | Advantages | Disadvantages |
|---|---|---|
| **Scenario 2: Free fares for low-income residents on DASH and WMATA** | ■ Highest level of benefit for participants, with free access to both DASH and WMATA services<br>■ Consistency between regional providers allows for a more integrated regional bus network. | ■ Highest net cost *if* participation level is high (up to $6.1 million in FY 2025)<br>■ Fewer program beneficiaries compared to Scenario 1<br>■ Greater administrative burden for the City and participants |
| **Scenario 3: Half-price fares and passes for low-income residents on DASH and WMATA** | ■ Provides more affordable access to both DASH and WMATA services<br>■ Lowest net cost (up to $2.2 million in FY 2025)<br>■ Consistency between regional providers allows for a more integrated regional bus network. | ■ Lower level of benefit to participants<br>■ Fewer program beneficiaries compared to Scenario 1<br>■ Greater administrative burden for the City and participants<br>■ Lowest increase in ridership (5% in FY 2025) and associated environmental benefits |

While each scenario has its advantages and disadvantages, any of the three would have a significant and positive impact for low-income City residents. In addition, the program has potential to build momentum around investment and innovation in fare programs to enhance equity throughout the region.

Based on the removal of the administrative and cost burdens associated with managing a low-income fare program and collecting fares, and the number of people who benefit relative to its cost, the project team's conclusion is that Scenario 1 (Free DASH fares) would produce the greatest overall benefit for the city's low-income transit users.

# City of Alexandria Low-Income Fare Pass Assessment

STUDY OVERVIEW AND FINDINGS

# About the Study

- Initiated by The City of Alexandria with funding from the Metropolitan Washington Council of Governments.

- Conducted between November 2020 and March 2021.

- Primary purpose: Understand options, and their impacts, for making public transit more affordable for low-income City residents.

- Study elements:
  - Literature and case example reviews.
  - Interviews with the City and regional partners.
  - Projections of ridership and costs for each three program scenarios.
  - Development of program administration, evaluation, and marketing recommendations.

# Study Goals

- ✓ Make transit more accessible for City residents who struggle to afford the cost of fares.

- ✓ Enhance equity and access to opportunities in the City.

- ✓ Maintain or enhance operational performance of the DASH system while maintaining or increasing bus operator safety.

- ✓ Minimize the administrative burden of implementing and sustaining a fare program.

- ✓ Advance regional coordination to increase the affordability of public transportation for low-income residents throughout the region.

# Key Literature and Case Study Review Findings

- Existing fare discount programs around the U.S. **most commonly provide a 50 percent** discount and serve riders earning between 125 and 200 percent of the federal poverty level.

- **Tying program eligibility to other low-income benefit programs** simplifies the administrative process.

- **Community-based** organizations can effectively assist in marketing discount fare programs.

- Some fare **programs targeting low-income riders had relatively low adoption rates**, so there is value in effective marketing and in keeping barriers to participation as low as possible.

- A sample of **ridership increases** from agencies that **eliminated fares** ranged from 25 to 205 percent, with **most agencies experiencing increases of between 25 and 60** percent.
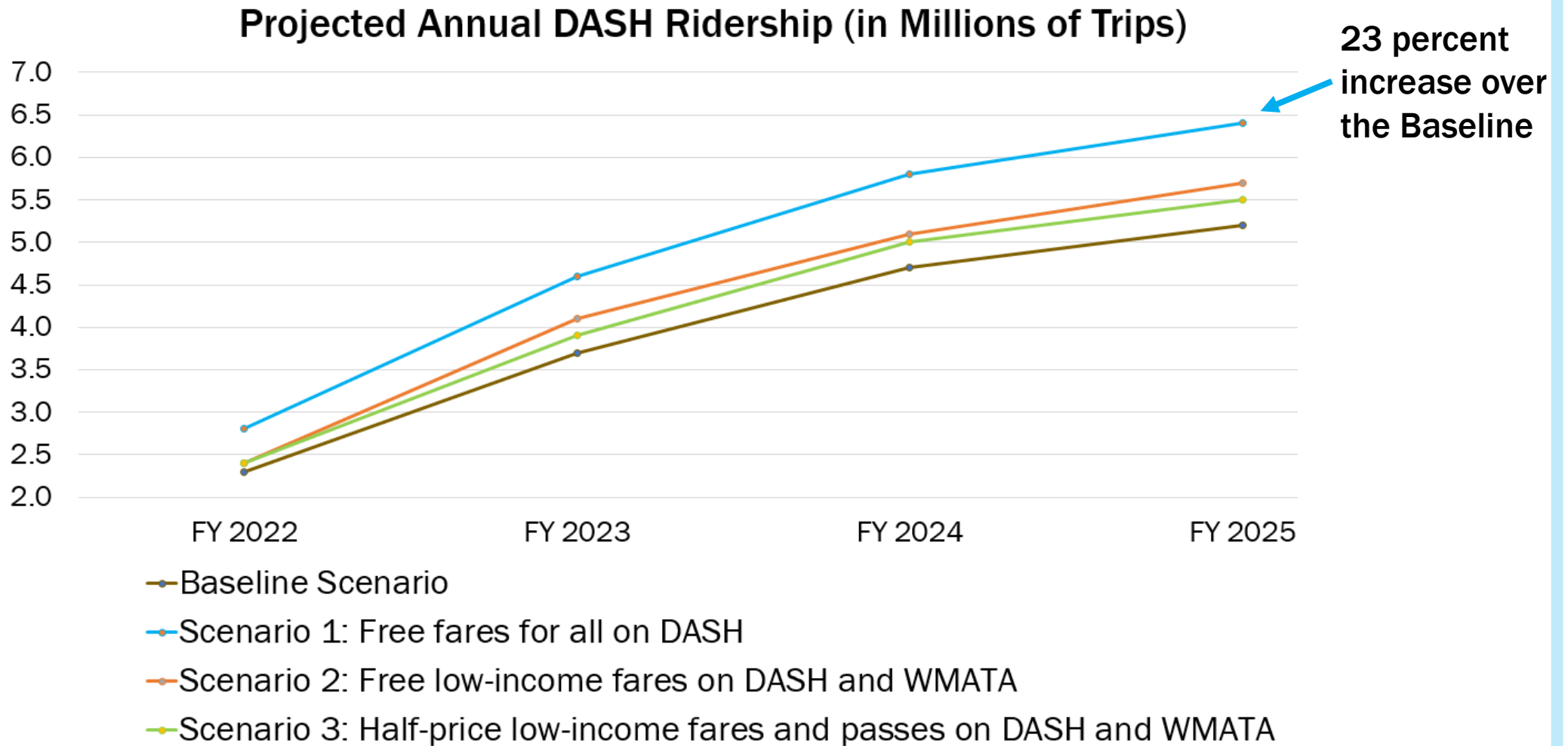
# Scenarios Evaluated in the Study

- ## Scenario 1:
  Free fares for all riders on DASH services.

- ## Scenario 2:
  Free fares for low-income residents* on DASH and WMATA services (Metrobus and Metrorail).

- ## Scenario 3:
  Half-price fares and passes for low-income residents* on DASH and WMATA services.

*"Low-income residents" are assumed to be all Supplemental Nutrition Assistance Program (SNAP) participants in the City (approx. 8,500 people). The City has approximately 18,100 residents who qualify for SNAP benefits based on income, and 33,200 residents with incomes at or below 200 percent of the poverty level.
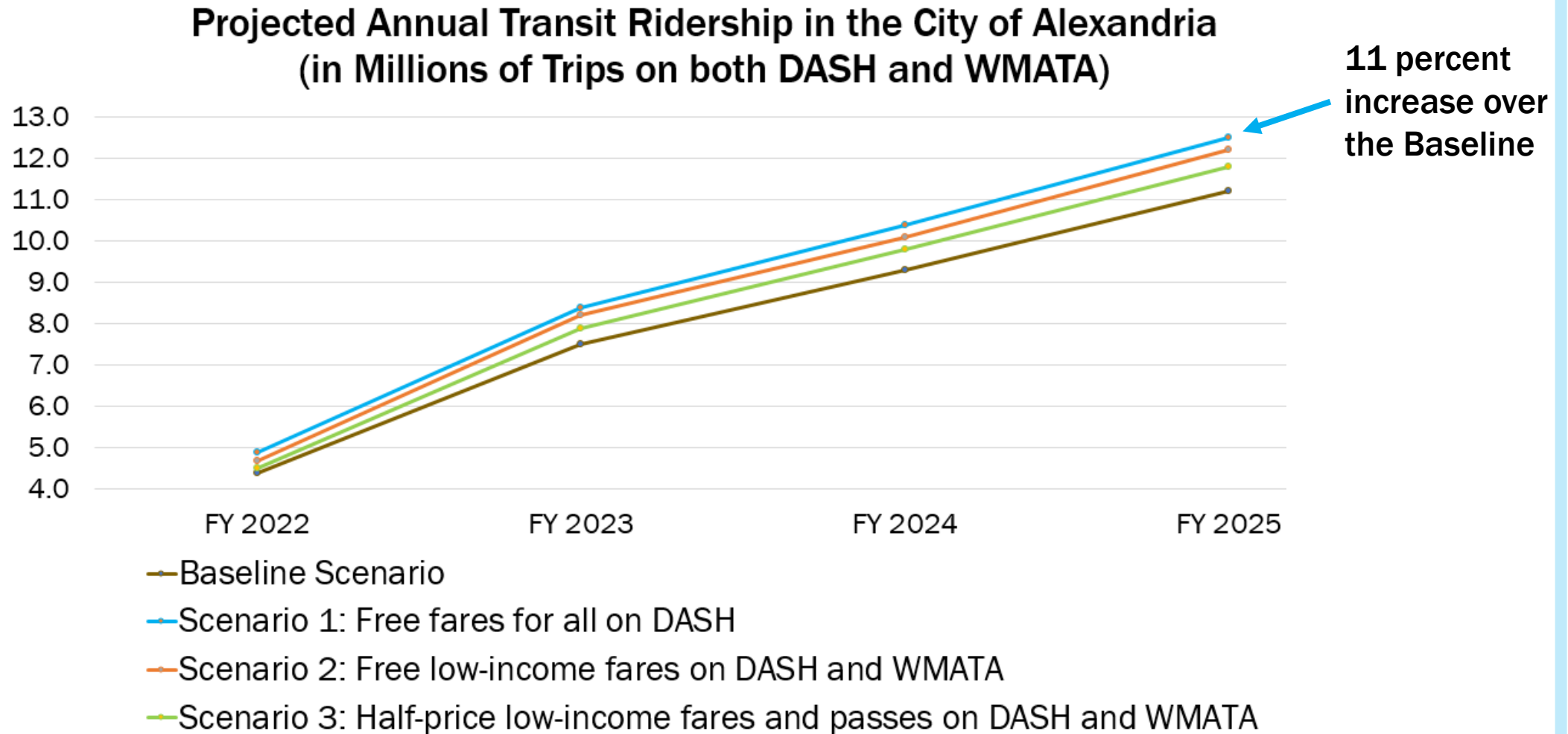
# Ridership Projections

- Ridership was projected for a "Baseline" scenario and for each fare program scenario for FY 2022 to FY 2025.

- All the scenarios, including the Baseline, take into account:
  - Anticipated ridership reductions (and recovery) due to the pandemic.
  - Planned changes in DASH service levels resulting from Alexandria Transit Vision (ATV) implementation.
  - Starting in FY 2023, WMATA's anticipated rail-to-bus transfer discount.

- Anticipated ridership impacts of the fare scenarios vary based on:
  - The eligible population (all riders or low-income residents).
  - The services the fare program would cover (DASH or both DASH and WMATA).
  - The magnitude of fare reduction and resulting cost savings (free or half-price).

- The ridership projections also account for riders' likely switches between DASH, Metrobus, and Metrorail services depending on the services' relative prices and interchangeability.

# DASH Ridership Projections



**Projected Annual DASH Ridership (in Millions of Trips)**

23 percent increase over the Baseline

Legend:
- Baseline Scenario
- Scenario 1: Free fares for all on DASH
- Scenario 2: Free low-income fares on DASH and WMATA
- Scenario 3: Half-price low-income fares and passes on DASH and WMATA

# Ridership Projections for DASH and WMATA Services in the City of Alexandria



**Projected Annual Transit Ridership in the City of Alexandria (in Millions of Trips on both DASH and WMATA)**

**11 percent increase over the Baseline**

Legend:
- Baseline Scenario
- Scenario 1: Free fares for all on DASH
- Scenario 2: Free low-income fares on DASH and WMATA
- Scenario 3: Half-price low-income fares and passes on DASH and WMATA

# Cost Projections

- The cost projections also include comparisons to a Baseline Scenario.

- Costs accounted for in the projections include:
  - Foregone fare revenue (i.e., fare revenues that would normally be collected with full fares).
  - Payments from the City to WMATA (under Scenarios 2 and 3).
  - Capital and operating costs of collecting fares, including fare media for participants.
  - Administration and marketing costs (with most administration done by current staff).

- In reality, costs for Scenarios 2 and 3 could vary significantly depending on program participation rates.

- An analysis indicated that even the highest ridership increase (experienced under Scenario 1) is unlikely to necessitate more service than is planned.

# Cost Projections

| Scenario | FY 2022 | FY 2023 | FY 2024 | FY 2025 |
|---|---|---|---|---|
| **Baseline** | | | | |
| Total (Cost of Collecting Fares) | $0.4 million | $0.5 million | $0.5 million | $0.5 million |
| **Scenario 1: Free fares for all DASH riders** | | | | |
| Total Costs (Including Foregone Fare Revenue and Marketing) | $2.6 million | $3.9 million | $5.0 million | $5.5 million |
| *Scenario 1: Net Increase over Baseline* | **$2.2 million** | **$3.5 million** | **$4.5 million** | **$5.0 million** |
| **Scenario 2: Free fares for low-income residents on DASH and WMATA services** | | | | |
| DASH Foregone Fare Revenue | $0.7 million | $1.2 million | $1,477,000 | $1,641,000 |
| Payments to WMATA* | $1.3 – $2.7 million | $2.0 – $4.4 million | $2.0 – $4.4 million | $2.0 – $4.4 million |
| Total Costs (Including Marketing + Cost of Collecting Fares) | $4.0 million | $6.1 million | $6.4 million | $6.6 million |
| *Scenario 2: Net Increase over Baseline** | **$2.4 – $3.5 million** | **$3.8 – $5.6 million** | **$4.1 – $5.9 million** | **$4.3 – $6.1 million** |
| **Scenario 3: Half-price fares and passes for low-income residents on DASH and WMATA services** | | | | |
| DASH Foregone Fare Revenue | $0.3 million | $0.5 million | $0.6 million | $0.7 million |
| Payments to WMATA* | $0.4 – $1.0 million | $0.7 – $1.5 million | $0.7 – $1.5 million | $0.7 – $1.5 million |
| Total Costs (Including Marketing + Cost of Collecting Fares) | $1.8 million | $2.5 million | $2.7 million | $2.7 million |
| *Scenario 3: Net Increase over Baseline** | **$0.9 – $1.3 million** | **$1.4 – $2.1 million** | **$1.5 – $2.2 million** | **$1.6 – $2.2 million** |

*Range shown represents cost for between 5,000 and 8,450 program participants.*

# Scenario 1 (Free Fares on DASH): Key Take-aways

| Advantages | Disadvantages |
|---|---|
| ■ Easiest for the City to implement.<br><br>■ Benefits the largest number of residents, including many just above typical low-income thresholds.<br><br>■ Easiest program to access for participants.<br><br>■ Better service performance and lower travel times.<br><br>■ Lowest cost relative to number of residents served.<br><br>■ Greatest increase in ridership (11% in FY 2025) and associated environmental benefits.<br><br>■ Highest savings due to not collecting fares ($450,000 in FY 2022).<br><br>■ Could reduce expenses owed to WMATA by the City. | ■ Relatively high net cost ($5.0 million in FY 2025).<br><br>■ Does not enhance affordability of WMATA services.<br><br>■ May reduce ridership revenue to WMATA, as riders may switch from a paid service to a free service.<br><br>■ Offers less support for an integrated regional transit network, as envisioned in recent regional plans.<br><br>■ Loss of employer-subsidized fare revenues through SmartBenefits |

# Scenario 2 (Free Low Income Fares): Key Take-aways

| Advantages | Disadvantages |
|---|---|
| ▪ Highest level of benefit for participants, with free access to both DASH and WMATA services.<br><br>▪ Consistency between regional providers allows for a more integrated regional bus network. | ▪ Highest net cost if participation level is high (up to $6.1 million in FY 2025).<br><br>▪ Fewer program beneficiaries compared to Scenario 1.<br><br>▪ Greater administrative burden for the City and participants. |

# Scenario 3 (Half-Price Low Income Fares): Key Take-aways

| Advantages | Disadvantages |
|---|---|
| ■ Provides more affordable access to both DASH and WMATA services.<br><br>■ Lowest net cost (up to $2.2 million in FY 2025).<br><br>■ Consistency between regional providers allows for a more integrated regional bus network. | ■ Lower level of benefit to participants.<br><br>■ Fewer program beneficiaries compared to Scenario 1.<br><br>■ Greater administrative burden for the City and participants.<br><br>■ Lowest increase in ridership (5% in FY 2025) and associated environmental benefits. |

# Summary of Findings

- Any of the three scenarios would have a significant and positive impact for the lowest income riders in the City.

- Scenario 1, free fares for all on DASH, best achieves the stated goals for this study at moderate cost:
  - **Benefits the largest number of riders**, including over 33,000 City residents with incomes below 200 percent of the poverty level, and many others who are just above that threshold.
  - **Easiest to implement and manage from an administrative perspective.**
  - Results in the **highest transit ridership increase**.
  - **Improves service performance** by speeding up the boarding process.

# Other Findings

- Implementing the program as a pilot would enable collection of data to inform future decision-making and, for Scenarios 2 and 3, a reimbursement agreement between the City and WMATA.

- Fare capping would be beneficial under Scenario 3 (Discounted DASH + WMATA fares) to prevent low-income riders from paying more because they cannot afford the upfront cost of a discounted flat-rate pass.

- Implementing Scenario 1 (free fares for all riders on DASH) would not preclude the City from participating in a regional low-income fare product or program covering WMATA services.

- As noted by the DASH Board of Directors, the implementation of free or reduced fare policies should ultimately be weighed against potential service expansions through a comprehensive public engagement process.

THANK YOU

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# City of Alexandria Low-Income Fare Pass Assessment

## TECH MEMO 1

February 9, 2020

Prepared for:

Metropolitan Washington **Council of Governments**

TLC

CITY OF ALEXANDRIA VIRGINIA

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# EXECUTIVE SUMMARY

Transit fares are often a large cost burden for low-income riders, especially in areas with higher costs of living like the City of Alexandria and Washington, DC. For many, this burden has increased because of the economic recession caused by the COVID-19 pandemic. This project was initiated by the City of Alexandria, in partnership with the Metropolitan Washington Council of Governments, to assess the feasibility and impact of a low-income transit fare pass program in the City.

This technical memo identifies current practices for reducing the impact of fares on low-income people from across the country and considers their implications for the City of Alexandria. The memo starts by developing goals to guide the establishment of a program that would make public transportation more affordable for residents with low incomes. These goals are:

■ Make transit more accessible for City residents who struggle to afford the cost of fares.
■ Enhance equity and access to opportunities in the City.
■ Maintain or enhance operational performance of the DASH system while maintaining or increasing bus operator safety.
■ Minimize the administrative burden of implementing and sustaining a fare program.
■ Advance regional coordination to increase the affordability of public transportation for low-income residents throughout the region.

The options for a potential program in the City of Alexandria evaluated in this memo include:

■ Free fares for everyone on the DASH system at all times;
■ Free fares for everyone on the DASH system during off-peak hours;
■ Free fares for eligible low-income residents on the DASH system at all times;
■ Discounted fares and passes for eligible low-income residents on the DASH system;
■ Free fares for eligible low-income residents ride on both DASH and WMATA services; and
■ Discounted fares and passes for low-income residents on DASH and WMATA services.

## Literature Review

This memo outlines the findings from a review of published research relating to low-income individuals' transit usage, low-income fare program design, the relationship between fares and ridership, key benefits to low-income transit riders when fares are removed or reduced, and operational impacts that a transit agency may experience from reducing or eliminating fares. The literature review includes academic research papers that explore quantitative relationships between fares and ridership as well as practically-minded research that examines real-world findings from pilot programs and surveys. The portion of the literature review related to the needs and behaviors of low-income riders indicated that these riders are more likely to:

■ Pay for each ride rather than use an unlimited pass;
■ Travel shorter distances;
■ Take more frequent transit trips;
■ Make more transfers; and
■ Be unbanked or underbanked and rely on cash transactions.

In addition to being tailored to rider needs, any program in the City would also need to consider the impact of reduced or free fares on the affected operators. The literature review uncovered the following findings:

- In Boston, a pilot program found that low-income people who were given a 50 percent discount on fares took 30 percent more trips.
- A sample of ridership increases from agencies that went fare-free systemwide range from 32 to 205 percent, with most being below 60 percent.
- Not collecting fares allows for faster boarding, which in some cases can improve on-time performance, but can also lead to crowding. If the crowding is substantial, there is simultaneously the potential for free fares to worsen on-time performance.

## Case Examples

The case examples in this memo, which build on the findings in the literature review, highlight specific programs across the country in more detail and demonstrate a range of possible options for a new program in the City of Alexandria. Some of the significant findings from these case examples are:

- **Travel period considerations** – Most agencies in the case examples did not distinguish between discounts for peak and off-peak periods. Instead, most riders enrolled in reduced fare programs paid one rate per trip regardless of their time of travel.
- **Fare media for program participants** – In most case examples in which low-income participants received a benefit, agencies used one of three methods to recognize admission into a reduced or fare-free program. Agencies either: issued a separate card after eligibility was verified that would allow passengers to purchase discounted fares/passes; issued a combination photo ID and fare card for free rides; or programmed the discount onto the riders' transit cards.
- **Eligibility thresholds** – The case examples that involved targeted assistance (as opposed to going fare-free systemwide) had different income limits as part of their criteria, with most requiring individuals to have incomes of no more than 150 percent to 200 percent of the federal poverty level to qualify.
- **Making eligibility determination and certification easy** – The application process can be significantly streamlined by requiring minimal supporting documentation and, where possible, using existing certification documents from other (often federal) financial assistance programs to verify eligibility, such as Temporary Assistance for Needy Families (TANF) approval letters or Electronic Benefit Transfer (EBT) cards, which function like debit cards and are given to recipients of TANF and Supplemental Nutrition Assistance Program (SNAP) (food assistance) benefits.
- **Building partnerships with community organizations** – Community organizations can play an important role in a fare discount program. The case examples show that community organizations, which have direct contact with clients, can identify who would benefit from a reduced fare program and inform these clients. These agencies can also help applicants prepare their applications, host sign-up events, and be trained (and resourced) to certify, issue, and register resulting ID cards or fare media.
- **Regional collaboration when possible** – The LIFE and Clipper START programs (in the Los Angeles and San Francisco Bay areas, respectively) are examples of successful interagency cooperation. The Clipper START program, for example, grew from four to ten participating agencies. The program could serve as a model not just for the City of Alexandria, but potentially the entire region.

After considering these findings, the project team and City staff decided to move three options forward for further ridership and cost analysis as part of this study. These are:

- Free fares for everyone on the DASH system at all times;
- Free fares for eligible low-income residents ride on both DASH and WMATA services; and
- Discounted (50 percent) fares and passes for low-income residents on DASH and WMATA services.

The latter two options will allow riders to use the transit options that work best for them regardless of operator and will demonstrate the difference in impact between free fares and reduced fares. They also leave open the possibility for the City of implement the program initially just on the DASH system and then expand to cover WMATA services as resources become available.

The second technical memo will include more detailed ridership and cost estimates as well as a discussion of potential administration options and operational impacts.

# INTRODUCTION

## Overview

Public transit fares can often represent a large burden for low-income passengers, especially in areas with higher costs of living like the City of Alexandria and Washington, DC. For many, this burden has increased as a result of the economic recession caused by the COVID-19 pandemic. Access to public transportation continues to be a critical need for low- and middle-income residents, who can have significant trouble getting to jobs, health care appointments, education opportunities, social service offices, and retail destinations without it. Access includes not only the availability of public transportation, but the ability to afford the service, and the cost of riding public transportation remains a barrier for many residents. The Washington Metropolitan Area Transit Authority (WMATA), for example, found that low-income riders often limit transit use due to cost and spend more than twice as much of their after-tax income on transit as riders who are not low-income.[1]

Recognizing this issue, the City of Alexandria applied for, and was awarded, a grant through the Metropolitan Washington Council of Governments' (MWCOG) Transportation-Land Use Connections (TLC) Program to study and identify the best option for making public transportation more affordable to its residents, particularly those from low-income households. This Technical Memorandum describes the findings from the research conducted for this study as of January 2021.

This study is occurring as plans for a roll-out of the City's redesigned bus network are underway. Implementation of the new bus network is expected to begin in late 2021. The redesigned network, once fully implemented, will significantly increase the availability of higher-frequency transit for residents, particularly during off-peak periods and on weekends. The combination of an enhanced and improved network of bus services and more affordable fares represents a significant opportunity to enhance equity, increase access to opportunities, and improve quality of life in the City of Alexandria. There is also the potential for the implementation of free or more affordable public transportation fares for City residents to serve as a model for other jurisdictions in the Washington, DC region and in the Commonwealth of Virginia that are also currently considering how to address this challenge.

## Goals for the Program

The City of Alexandria and the Metropolitan Washington Council of Governments have identified goals that they would like to achieve through establishment of a program that would make public transportation more affordable for residents with low incomes. These goals are:

- Make transit more accessible for City residents who struggle to afford the cost of fares.
- Enhance equity and access to opportunities in the City.
- Maintain or enhance operational performance of the DASH system while maintaining or increasing bus operator safety.
- Minimize the administrative burden of implementing and sustaining a fare program.
- Advance regional coordination to increase the affordability of public transportation for low-income residents throughout the region.

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[1] WMATA, DC Low-Income Fare Pilot, Report to the WMATA Board Finance and Capital Committee, December 2019, https://www.wmata.com/about/board/meetings/board-pdfs/upload/3C-DC-Low-Income-Fare-Pilot-v2.pdf.

## Options Under Consideration

The following potential options for making public transportation services more affordable for City of Alexandria residents were identified for evaluation under this study:

- Free fares for everyone on the DASH system at all times.
- Free fares for everyone on the DASH system during off-peak hours.
- Free fares for eligible low-income residents on the DASH system at all times.
- Discounted fares and passes for eligible low-income residents on the DASH system.
- Free fares for eligible low-income residents ride on both DASH and WMATA services.
- Discounted fares and passes for low-income residents on DASH and WMATA services.

These options are not necessarily mutually exclusive; multiple options could be progressively implemented as discussions between the City of Alexandria and WMATA continue. For example, discounts or waived fares for people from low-income households could be implemented in the short-term on the DASH system, with an expansion of the program to cover WMATA services in the future.

The **Key Findings and Scenario Recommendations** section at the end of this memo identifies the advantages, disadvantages, and potential considerations related to these options, and recommends three for further evaluation as part of this study.

# EXISTING CONDITIONS

The City of Alexandria has nearly 160,000 residents and is located approximately five miles south of Washington, DC. This section outlines existing conditions in the City as they relate to the topic of public transportation access and affordability.

## Population Information

### Low-Income Population

In 2019, the City of Alexandria had a high median household income of $100,900. This figure is higher than the Washington, DC region, which had a median household income of $86,400, and significantly higher than the national median household income of $62,800.[2] However, there are many residents in the City who have low incomes and struggle to have all of their basic needs (shelter, food, healthcare, clothing, etc.) met.

A total of 16,100 (10.3 percent) of Alexandria residents live below the federal poverty level (FPL).[3] **Table 1** shows the number of individuals living below a variety of poverty ratios in Alexandria.[4] In the City, 7,600 residents live below 50 percent of the FPL (about $6,250 for an individual or $12,900 for a family of four), while 33,000 live below 200 percent of the FPL (about $25,000 for an individual or $51,500 for a family of four).

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[2] U.S. Census Bureau, Table S1903, ACS 5-year estimates, 2015-2019
[3] U.S. Census Bureau, Table S1701, ACS 5-year estimates, 2015-2019. The federal poverty level in 2019 was $12,490 for an individual and $25,750 for a family of four.
[4] U.S. Census Bureau. American Community Survey 5-year estimates, Table S1701

*Table 1: Individuals Below Federal Poverty Level*

| Income Level | Number of Individuals |
|---|---|
| 50 percent of FPL | 7,632 |
| 100 percent of FPL | 16,100 |
| 125 percent of FPL | 20,579 |
| 150 percent of FPL | 24,404 |
| 185 percent of FPL | 30,651 |
| 200 percent of FPL | 33,220 |
| 300 percent of FPL | 48,817 |
| 400 percent of FPL | 62,846 |
| 500 percent of FPL | 75,839 |

**Table 2** shows the number of households at various income levels in the City of Alexandria.[5] Approximately one-third of households earn less than $75,000, which is about 85 percent of the regional median household income.

*Table 2: Number of Households by Income Level in Alexandria, 2019*

| Household Income | Number of Households | Percentage of Households |
|---|---|---|
| Under $25,000 | 6,424 | 9.1% |
| $25,000-$49,999 | 8,684 | 12.3% |
| $50,000-$74,999 | 10,449 | 14.8% |
| $75,000 and above | 45,112 | 63.8% |

In July of 2020, 4,743 households and 9,554 individuals in the City of Alexandria received Supplemental Nutrition Assistance Program (SNAP) (food assistance) benefits, with an average amount of $352 of SNAP benefits per household.[6] In most cases, a household must earn at or below 130 percent of FPL to be eligible for SNAP benefits.[7] The number of individuals receiving SNAP benefits is about 46 percent of the population living below the 125 percent of FPL, indicating that there are many eligible residents who do not receive SNAP benefits.

Of DASH riders in 2013, 32.7 percent were from households earning less than $30,000, while 51.2 percent were from households earning less than $50,000.[8] WMATA's 2016 Metrorail Ridership Survey indicates that a total of 5.8 percent of Metrorail riders in the City of Alexandria were from households earning less than $30,000, while 13.1 percent of riders were from households earning less than $50,000.[9] WMATA's Metrobus survey in 2018 found that 31.5 percent of Metrobus riders in the City were from households earning less than $30,000, 45.5 percent of riders were from households earning less than $50,000, and 71 percent reported a household income of less than $100,000.[10] This indicates a relatively higher reliance on bus service vis-à-vis

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[5]  U.S. Census Bureau. American Community Survey 5-year estimates, Table S1901
[6]  SNAP Participation by Household, 2005-2020, Department of Community and Human Services/CES.
[7]  SNAP Eligibility, USDA, https://www.fns.usda.gov/snap/recipient/eligibility.
[8]  DASH Demographic Database, 2013
[9]  WMATA Metrorail Ridership Survey, 2016.
[10] WMATA Metrobus Ridership Survey, 2018.

rail among low-income residents. In the City of Alexandria, 6,600 households (about 9.4 percent of all households) do not own a vehicle.[11]

## Available Public Transportation Services

The City of Alexandria is served by the DASH bus system, which has 13 routes and 646 bus stops.[12] There are 47 WMATA Metrobus routes and 398 Metrobus stops (some of which coincide with DASH stops) in the City, as well as two WMATA Metrorail lines and four Metrorail stations.[13] The City is also served by the Virginia Railway Express (VRE) and Amtrak rail services, which both stop at King Street, and the Capital Bikeshare system.

## Public Transportation Ridership

In the City of Alexandria, 59 percent of workers commute by driving alone, 20 percent use transit, 8 percent carpool, 4 percent walk, and 1 percent bike.[14] In FY 2019, DASH provided a total of 3.7 million trips, 3.1 million on the weekdays and 612,000 on the weekends, with an average weekday ridership of approximately 12,500. **Figure 1** shows DASH and WMATA boardings by route in FY 2019. The Trolley, which is free and connects the King Street Metrorail station to the waterfront along King Street, carried more riders than any other route in FY 2019 (760,000), and the AT8[15] carried the most weekday passengers (650,000). In FY 2020, which included four months of service during the COVID-19 pandemic, DASH provided 2.8 million trips.

**Figure** 2 shows DASH ridership and service levels during the COVID-19 pandemic. DASH service levels decreased at the beginning of the pandemic in response to the drop in ridership, and have increase twice in response to rebounding ridership, although ridership was at around 40 percent of pre-pandemic levels in February 2021.

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[11] U.S. Census Bureau. ACS 2019 5-year estimates, Table B08201.

[12]  During the COVID-19 pandemic, the DASH network has been operating 10 routes and providing service at 590 bus stops.

[13]  There will be five Metrorail stations in the City once the Potomac Yard station opens.

[14]  U.S. Census Bureau. ACS 2019 5-year estimates. Table S0801

[15] The AT8 connects the Old Town area with Landmark Mall and Van Dorn Metro station in the western part of the City. Between Old Town and Landmark Mall, it operates along Duke Street.

*Figure 1: DASH and WMATA Boardings by Route, FY 2019*
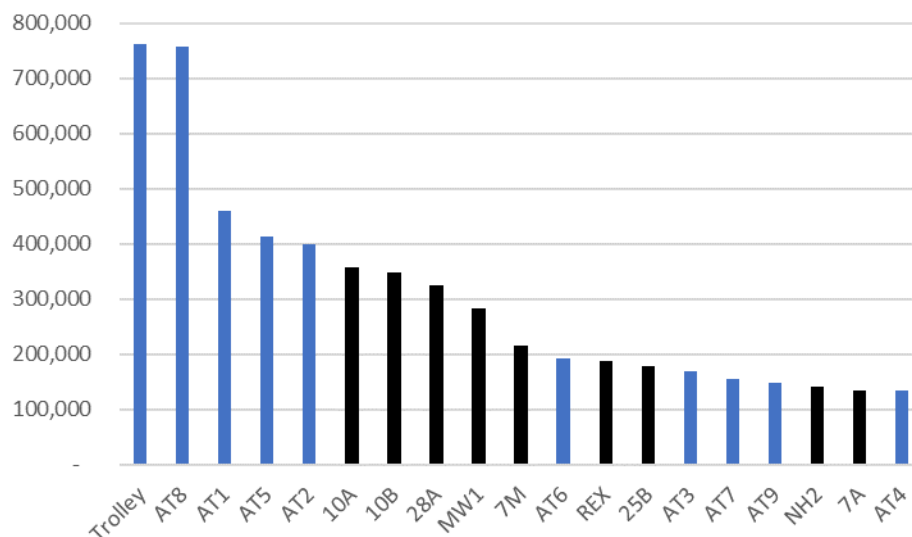


*DASH routes are shown in blue; WMATA Metrobus routes are shown in black.*

*Figure 2: DASH Weekly Boardings and Service Hours*



There were 3.1 million boardings on Metrobus bus routes in the City of Alexandria in FY 2019.[16] The 10A, 10B, 28A, Metroway, and 7M were the most popular routes, each with over 200,000 boardings in FY 2019.[17] WMATA's most used bus stops in Alexandria are at the King Street Station, Mark Center Transit Station, Southern Towers Apartments and Braddock Road Station.[18] Metrorail stops in the City of Alexandria include Braddock Road, King Street, Eisenhower Avenue, and Van Dorn Street. In FY 2019, these f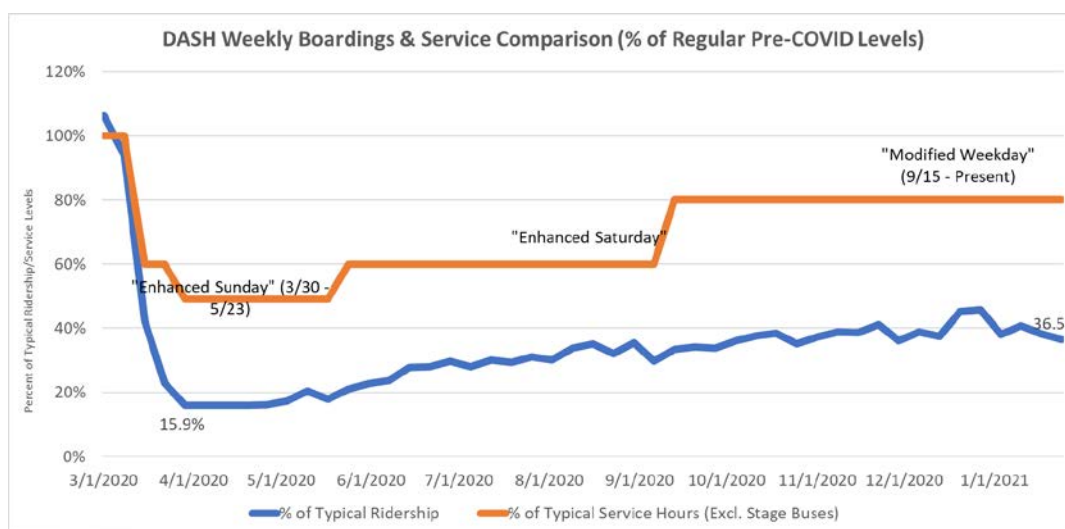our stations had 3.82 million entries, with 3.35 million on weekdays.[19] King Street was the most popular, with an average of

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[16] Bus Ridership Data Viewer: https://www.wmata.com/initiatives/ridership-portal/Bus-Data-Portal.cfm
[17]  WMATA PLAN Office using APC data, FY 2019.
[18]  WMATA Automatic Passenger Counter (APC) data, 2019.
[19] Rail Ridership Data Viewer: https://www.wmata.com/initiatives/ridership-portal/Rail-Data-Portal.cfm

6,000 daily weekday riders in FY 2019. **Figure 3** shows average daily entries by Metro stations in Alexandria.[20] **Figure 4** shows entries and exits at King Street station by time of day, indicating strong peak ridership and significantly lower off-peak ridership.[21] **Figure 4** also shows entries in the morning exceeding exits in the evening, indicating that more people are departing the station via Metrorail in the morning peak than are arriving there. Of Metrorail riders who live in the City of Alexandria, 13 percent report an income below $50,000, and 42 percent report an income below $100,000.[22]

VRE provided 4.4 million trips in FY 2019 across its service area, representing about seven percent of ridership in Northern Virginia across all transit modes.[23] Across VRE's entire service area, VRE averaged about 18,500 in daily ridership in early 2020, and provided about 350,000 monthly trips.[24]

*Figure 3: Average Daily Entries by Metrorail Station, October 2019*



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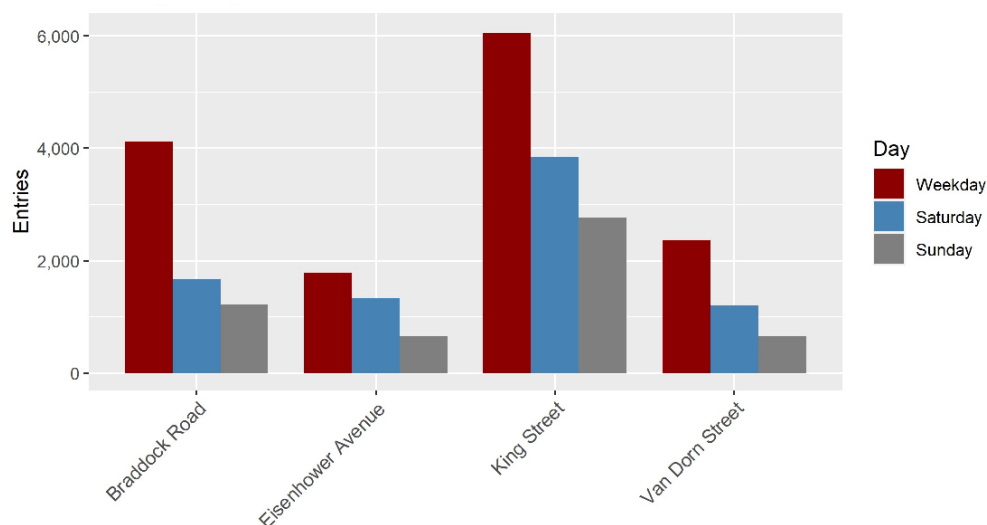
[20]  Metrorail Faregate Ridership Data.
[21]  Id.
[22]  Metrorail Ridership Survey, 2016.
[23]  Northern Virginia Transportation Commission (NVTC), FY 2019 Annual Transit Performance Report, https://novatransit.org/uploads/data/quarterly/FY2019%20Annual%20Transit%20Performance%20Report.pdf
[24]  VRE, CEO Report March 2020. https://www.vre.org/about/board/board-agenda-minutes/2020/March/2020-ceo-report-march-pdf/.

*Figure 4: King Street Metrorail Station Average Weekday Entries and Exits by Time of Day, October 2019*
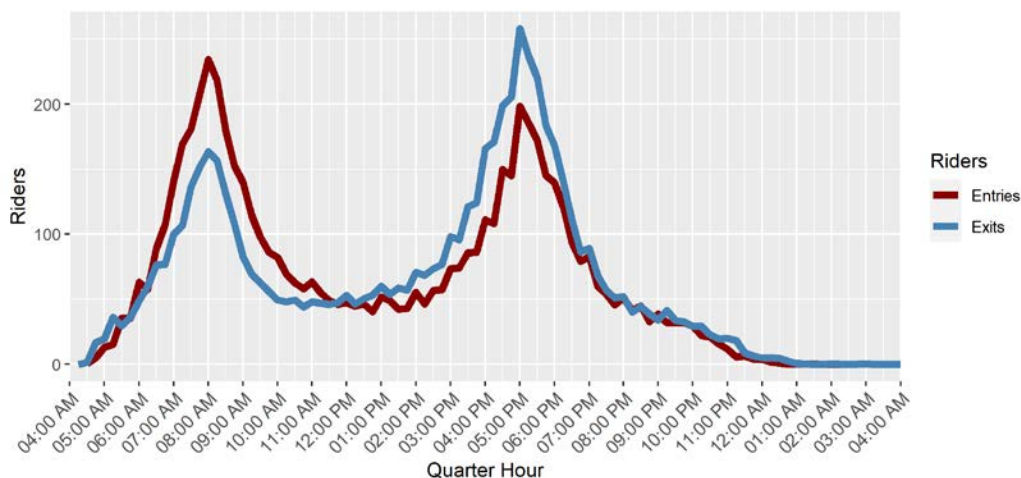


## Current Public Transportation Fares

### DASH and WMATA Fares

**Table 3** provides an overview of regular (non-pandemic) DASH and WMATA fares, transfers, and payment methods. As indicated in **Table 3**, Metrorail fares are shown as a range since they vary by time of day and distance, whereas Metrobus fares are a flat $2.00 on regular routes. This difference between Metrorail and Metrobus fares is believed to be a significant factor in many people's decisions to take bus rather than rail within the region. WMATA has found that over half of Metrobus riders are low-income, as compared to only 18 percent of Metrorail passengers.[25]

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[25] WMATA, Bus Transformation Project Strategy and Recommendations, September 2019, https://bustransformationproject.com/wp-content/uploads/2019/09/Bus_Transformation_Strategy_and_Recommendations_2019-09-05.pdf.

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*Table 3: DASH and WMATA Regular Fares, December 2020*

| Service | Standard | Children | Seniors & People with Disabilities | Students | Transfers[26] | Unlimited Passes | Pass Storage Media | Other Fare Payment Methods |
|---|---|---|---|---|---|---|---|---|
| DASH[27] | $2.00 | Up to two children ages four and under free w/ adult | $1.00 Senior SmarTrip® during off-peak hours and weekends | Free w/ valid Student ID during school year | Transfers to other DASH routes valid for 4 hours, honored on Metrobus and some other systems within two hrs. | Monthly: $45 | Paper or SmarTrip® card | Cash, Metrobus full fare token; DASH Bus mobile app |
| Metrobus[28] | $2.00 | Up to two children ages four and under free w/ adult | $1.00 for Seniors and Persons w/ Disabilities | Free - DC Kids Ride Free Program (KRFP) | To Metrobus: free w/ unlimited transfers within two hrs. To Metrorail: $0.50 discount within two hrs. | Monthly[29]: $72-$216; 1-, 3-, and 7-Day Unlimited: $13, $28, $58; 7-Day Short Trip: $38[30]; 7-Day Regional Bus Pass: $15 | SmarTrip® card; Apple Wallet (AW) | SmarTrip® app[31],cash; showing ID[32] |
| Metrobus Express routes (e.g., 5A/Airport) | $4.25-$7.50 | Up to two children ages four and under free w/ adult | $2.10-$3.75 | Free - DC KRFP | To Metrobus: free w/ unlimited transfers within two hrs. To Metrorail: $0.50 discount within two hrs. | Monthly pass covers first $2.00 | n/a | Apple Wallet (AW); cash (on most routes) |
| Metrorail (peak) | $2.25-$6.00 | Up to two children ages four and under free w/ adult | 50% off peak fare | Free - DC KRFP | To Metrobus: $0.50 discount within two hrs. | Monthly: $72-$216 | SmarTrip® card; Apple Wallet (AW) | SmarTrip® app |
| Metrorail (off-peak) | $2.00-$3.85 | Up to two children ages four and under free w/ adult | n/a | Free - DC KRFP | To Metrobus: $0.50 discount within two hrs. | Monthly: $72-$216 | SmarTrip® card; Apple Wallet (AW); | SmarTrip® app |

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[26] Transfers are only valid for those using SmarTrip® cards or other unlimited cards.

[27] DASH fare information comes from https://www.dashbus.com/ride-dash/fares.

[28] WMATA fare information comes from https://www.wmata.com/fares/basic.cfm.

[29] The monthly unlimited pass includes all rides on Metrorail and Metrobus for the month up to a maximum fare level based on time of travel and distance. If a rider makes a trip above their pass's fare, they pay the cost difference using stored value on their SmarTrip® card.

[30] Covers all trips in the Metrorail system during off-peak hours; unlimited trips on Metrorail up to a fare of $3.85 when peak fares are in effect; and covers first $2.00 of fare on Metrobus Express and Airport Express routes.

[31] In September 2020, WMATA launched a touch-free payment system that links SmarTrip® information with a rider's iPhone and Apple Watch, allowing them to tap either device where a SmarTrip® card would be tapped. Riders with a Senior SmarTrip® card may transfer their card to the mobile app.

[32] Certain riders may board fare-free by showing their ID or badge. Riders carrying badges from the Pentagon, Department of Defense (DOD) and contractor badges can ride fare-free on specific DOD routes. Those with US Coast Guard badges ride fare-free on two routes serving St. Elizabeth's. More information can be found at https://www.wmata.com/business/procurement/solicitations/upload/Exhibit-P-Farebox-Training-Guide.pdf.

In addition, riders transferring between modes and the services of different providers (e.g., WMATA, DASH, Fairfax Connector, ART, etc.) may be subject to additional transfer fares. For example, a DASH rider would have a free transfer to Metrobus and all other DASH lines, but would need to pay the full applicable fare, less a $0.50 credit, when transferring to Metrorail. There is currently, however, a $0.50 discount for transfers from Metrobus to Metrorail or from Metrorail to Metrobus within a two-hour transfer window. WMATA's FY21 budget proposed to increase the transfer discount to $1.00, but this has not yet been implemented due to budget challenges.

WMATA offers one-, three-, seven-day Unlimited passes, "7-Day Short Trip" passes (covering unlimited travel for Metrobus trips, off-peak Metrorail trips, and shorter Metrorail trips during peak hours), monthly combined passes for both Metrorail and Metrobus, and a seven-day regional bus pass. The price of a monthly pass that is valid for both modes ranges from $72-$216. There is no single, stand-alone monthly pass valid on only Metrobus or only Metrorail, but there is a 7-Day Regional Bus Pass which is valid on Metrobus, ART, DC Circulator, CUE, DASH, Fairfax Connector, TheBus, and Ride On and costs $15. Additional regional pass products were proposed in WMATA's FY 2021 budget but were ultimately removed as the scope of the pandemic budget impact became clear.

WMATA offers reduced fares for those ages 65 and over and for individuals with disabilities under 65. Special fare media (yellow Senior SmarTrip® cards (**Figure 5**) and Reduced Fare SmarTrip® Photo ID cards for individuals with disabilities) are issued to those who qualify, and the discounts are programmed on their cards.

For individuals with disabilities, their reduced fare cards include their photo and can be used for 50 percent off Metrobus, other regional buses, and trips made via Metrorail during peak hours. For seniors, these cards provide discounts of 50 percent off on trips made during peak periods via Metrorail and discounts on Metrobus, Express Metrobus, and Airport Express Metrobus routes.

*Figure 5: Yellow SmarTrip® Card for Seniors*



*Figure 6: Reduced Fare SmarTrip® Photo ID*



In addition, both SmarTrip® cards offer discounted fares for participating bus service providers in the region including DASH, ART, CUE, Fairfax Connector, Loudoun County Transit, OmniRide, Ride On, TheBus, and Maryland Transit Administration (MTA) bus. Applicants can only apply for the disability card (see **Figure 6**) in person at one of two WMATA offices, which are located in downtown DC or Silver Spring, MD. These offices have limited hours on specific days where they accept applications. Seniors can apply for their Senior SmarTrip® cards by visiting one of at least twenty locations throughout the region, including the Metro Center Sales Office; commuter stores; retail outlets; and select libraries in Montgomery County, Maryland.

Similar to Metrobus, DASH has one standard, $2.00 base fare and a policy that up to two children ages four and under ride for free when accompanied by a fare-paying adult. DASH also offers reduced ($1.00) fares for Senior/Disabled SmarTrip cardholders who ride during off-peak hours (anytime except 6:00 to 9:00 a.m. and 3:00 to 6:00 p.m. on weekdays). DASH offers free transfers between all DASH buses and most Metrobus routes. While most regional providers only provide a two-hour transfer window, DASH allows for free transfers within a four-hour window, enabling some riders to make their full trip (out and back) for the price of one fare.

The $45 monthly DASH Pass covers unlimited trips on the DASH system and is also recognized on Fairfax Connector local routes, but additional charges may apply when transferring between systems.

## Fare-Free Products in the Region

The types and availability of free fares across transit agencies operating within the Washington, DC region varies (prior to any pandemic-related changes to fare collection). **Table 4** provides an overview of fare-free programs for targeted populations. No reduced fare or free-fare program for low-income individuals currently operates among these providers.

*Table 4: Fare-Free Transit Options Available in the Washington, DC Region*

| Agency | Seniors | Children | Students | People with Disabilities |
|---|---|---|---|---|
| ART | — | Children under 5 | — | MetroAccess members |
| CUE | — | Children 3 and under, accompanied by adult | Fairfax secondary students GMU Students, faculty, and staff | MetroAccess members |
| DASH | — | Children under 4, accompanied by adult | Students from participating high schools during the school calendar year | MetroAccess members and City paratransit-eligible residents (DOT Program) |
| DC Circulator | — | Children under 5, accompanied by adult | Free with Kids Ride Free SmarTrip® card | — |
| Fairfax County Connector | — | Up to two Children ages four and under free w/ adult | Fairfax County high school and middle school students | — |
| Metrobus/ Metrorail | — | Up to two Children ages four and under free w/ adult | Free with Kids Ride Free SmarTrip® card | — |
| OmniRide | — | Up to two Children ages four and under free w/ adult | — | — |
| Ride On | Free off-peak | Free for all youth ages 18 and under | Free with Montgomery College student ID | Free off-peak with Metro Disability ID card Always fare-free for MetroAccess members |
| TheBus | Free for ages 60 and up | Free for all youth ages 5-18 | Free for students with ID | Free |
| VRE | — | Children under 10, accompanied by adult | — | Attendants travel for free with an attendant pass |

In 2019,[33] the DC Circulator experimented with fare-free for all service under Mayor Bowser's Fair Shot February program. Initially, the program provided fare-free rides on the system for the month of February. After this initial period, Mayor Bowser extended the program indefinitely and requested $3.1 million dollars to provide fare-free service in the 2020 fiscal year. This request was denied by Council and fares were later

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[33] DC Circulator, Mayor Bowser Announces Free Rides on DC Circulator During #FareShotFebruary, January, 2019, https://www.dccirculator.com/mayor-bowser-announces-free-rides-on-dc-circulator-during-fairshotfebruary/.

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reinstated in October 2019.[34] Fares were then re-suspended in response to the COVID-19 pandemic starting in March 2020 and had not yet been reinstated as of January 2021.

Prior to the COVID-19 pandemic, The Lab @ DC developed a pilot project through which to study how providing discounted transit would impact low-income residents.[35] The pilot, whose implementation was on hold as of January 2021, is being organized through a partnership between The Lab @ DC, the District Department of Transportation (DDOT), the DC Department of Human Services (DHS), and WMATA. Under the pilot, 2,500 study participants will receive assistance with varying levels of transit fares on Metrobus and Metrorail. The fare options include no discount other than being given a SmarTrip® card with a $10 credit (control group); half-price fares; and free unlimited trips. The research team will use surveys and other data to determine the impact of reduced or free fares on travel behavior and other outcomes related to economic mobility and participant well-being to inform future policy. Initial results, which could be used to inform similar initiatives for providers across the region, are expected in late 2022 at the earliest.

## Current Public Transportation Fare Media

DASH currently offers several ways for riders to pay fares. These include cash, SmarTrip® cards, Metrobus full fare tokens, DASH Passes (both a paper version or loaded onto a SmarTrip® card), and mobile tickets purchased on the DASH Bus app. Of these options, fare payment via SmarTrip® is by far the most popular fare media for DASH riders, who used SmarTrip® cards to pay for 85 percent of trips from November 2019-November 2020.[36] Less commonly, DASH riders used cash (13 percent) and mobile tickets (2 percent) during that period. DASH launched a mobile ticketing pilot in June 2019[37] and viewed this effort as an opportunity to play a part in advancing the goal of having a regional mobile ticketing platform that would be accepted by all transit operators in the DC region. Despite relatively low adoption, the pilot received positive reviews from passengers and DASH operators and was extended through March 2021.

In September 2020, WMATA launched a touch-free payment system that links SmarTrip® information with a rider's iPhone and Apple Watch and allows them to tap either device where a rider can tap their SmarTrip® card.[38] Riders with a physical Senior SmarTrip® card may also transfer their card to the mobile app. These mobile-based fare payment options are included in **Table 3**.

Many employers in the Washington, DC region provide SmartBenefits,[39] tax-free commute benefits to their employees via SmarTrip® cards. These benefits allow employees to make pre-tax contributions that are applied to their SmarTrip® cards, allowing them to pay for fares anywhere SmarTrip® cards are accepted. For agencies such as MARC and VRE that are not on the SmarTrip® system, riders can set up a separate online account; transfer their SmartBenefits to the account; and then use the transferred benefits to pay for fares on these systems.

[34] WAMU, D.C.'s Circulator Buses Will Charge Fares Again Oct. 1 At Council's Order, September 2019, https://wamu.org/story/19/09/27/d-c-s-circulator-buses-will-charge-fares-again-oct-1-at-councils-order/.

[35] The Lab @ DC, Can discounted transit improve mobility and well-being for low-income residents? Accessed January 2021, http://thelabprojects.dc.gov/fare-subsidy.

[36] DASH, November 2019-2020 Hour Ridership YOY Comparison.

[37] DASH, Dash Bus Mobile App Pilot Report, July 2020, https://www.dashbus.com/sites/default/files/2020-09/DASH%20Bus%20Mobile%20App%20Pilot%20Report.pdf.

[38] WTOP, Metro debuts 'touch-free' SmarTrip® payments with Apple Wallet, September 2020, https://wtop.com/tracking-metro-24-7/2020/09/metro-debuts-touch-free-smartrip-payments-with-apple-wallet/.

[39] WMATA, Take Advantage of SmartBenefits, accessed January 2021, https://www.wmata.com/business/smartbenefits/.

## Costs Associated with Fare Collection

Prior to COVID-19, DASH collected about $3.7 million in farebox revenue each year for a farebox recovery ratio of 17 percent in 2019 (just above the national average for all bus systems).[40] There are, however, expenses that are necessary to carry out the function of collecting fares. In the case of smaller operators, the cost of collecting fares can exceed the fare revenue that is generated from doing so, largely due to the cost of purchasing and maintaining fareboxes combined with a lack of economies of scale.

For DASH, the operating costs of collecting fares, which total an estimated $256,000 annually, include contributions to the Regional SmarTrip® Budget; a farebox cash collection contract with an armored truck service; farebox maintenance and repair; and fees charged by its mobile app vendor for the sale of mobile tickets (five percent of revenue processed). There are also significant capital costs to DASH of maintaining and upgrading fareboxes. DASH's recent capital costs for additional fareboxes and mobile app platform development are about $260,000. Planned future investments, including farebox upgrades to WMATA's new standard and electronic validation for DASH Bus Mobile App, are $1.3 million, most of which will be funded by the City of Alexandria's Capital Improvement Program (CIP).

In a recent study, DASH found that it would lose an estimated $2.2 million in fare revenue if off-peak fares were to be completely eliminated, which would decrease total annual fare revenues collected to $1.5 million).[41] After taking into account the operating (but not capital) costs associated with collecting fares, DASH's *net* fare revenue would be $1.3 million if the agency were to go fare-free during off-peak periods.  A total elimination of DASH fares would have resulted in a net loss of $3.7 million in annual fare revenues prior to the COVID-19 pandemic, but would result in a significantly lower loss if implemented within the next 2-3 years – a period during which ridership is expected to be lower than 2019 levels.

Several additional benefits of a partial or full elimination of fares would be increased ridership (and therefore productivity) improved operating speeds and reliability due to reduced dwell times and faster passenger boarding, and less potential for conflict between passengers and operators.

The findings from the DASH fare collection study align with the most relevant case example in TCRP Synthesis 101 Report.[42] Lane Transit in Eugene, Oregon, which could be considered a peer agency to DASH, found, in 2012, that it would lose $5 million per year in fare revenues but save only $100,000 - $500,000 by not collecting fares.

## Regional Fare-Related Developments

There are ongoing discussions in the Commonwealth of Virginia and the Washington, DC region related to changes to fare levels and technologies. Some of these may have implications for the City's efforts to enhance transit affordability and payment options. Examples of initiatives that are underway include:

- **Pandemic-related fare suspension** – DASH and many other operators in the region ceased fare collection in March 2020, at the beginning of the COVID-19 pandemic. Metrobus resumed fare collection and front-door boarding, and implemented the mobile payment option through ApplePay, on January 3, 2021. As of January 2021, DASH was continuing to operate fare-free and encouraging rear-door boarding, primarily to ensure the safety of bus operators.

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[40]  DASH 2019 NTD Submission; calculated by dividing total fares of $4,477,441 (including organization-paid fares) by total operating expenses of $25,976,670.

[41]  Fare Free and Fare Collection Costs Analysis FY 2020; This analysis took into account the assumption that approximately 15 percent of riders would switch from traveling during peak periods to traveling during off-peak periods.

[42]  TCRP Synthesis 101: Implementation and Outcomes of Fare-Free Transit Systems. 2012.

- **Virginia DRPT Transit Ridership Incentive Program (TRIP)** – TRIP is a new statewide grant program dedicated to improving transit's regional connectivity in urban areas with a population above 100,000 and reducing barriers to transit use by supporting low-income and zero-fare programming. The TRIP application is predicted to open in Spring/Summer 2021, and is a potential funding source for the recommendations that emerge from this study.[43]

- **Northern Virginia Transportation Commission (NVTC) 2021 Northern Virginia Regional Fare Collection Strategic Plan[44]** – This Strategic Plan identifies various fare-related developments occurring in the region in the short, mid-, and long term, with a focus on the role that NVTC will play in representing the needs of operators in the Commonwealth, including DASH. Key initiatives underway or under discussion identified in the Plan include:

  — **WMATA's Farebox State of Good Repair Project and New Farebox Procurement** – This project will mitigate end-of-life issues of the current bus fareboxes, and lead to implementation of new bus fareboxes with standalone SmarTrip® validators, enabling rear-door payment and all-door boarding.

  — **Mobile and contactless payment options** – Further implementation and promotion of the SmarTrip® App and mobile wallet, as new potential additional self-service payment options.

  — **Fare capping** – Regional discussions on implementing pay-as-you-go options that automatically issue a pass after meeting the fare payment equivalent of a daily, weekly, or monthly pass. Such options would require back office system upgrades across the region, as well as technology and policy changes.

  — **Retail network expansion** – Expansion of locations where customers can load money to fare payment cards or accounts using cash.

  — **Integration of VRE and SmarTrip®** – Implementation of new system and policies to enable VRE to offer option to pay using SmarTrip® card.

All of these initiatives will be taken into consideration in developing the recommendations of this study.

# LITERATURE REVIEW

This section outlines the findings from a review of published research relating to low-income transit usage, reduced fare program design, the relationship between fares and ridership, benefits to low-income transit riders when fares are removed or reduced, and operational impacts that a transit agency may experience. This literature review includes academic research papers that explore quantitative relationships between fares and ridership as well as practically-minded research that examines real-world findings from pilot programs and surveys. The literature review involved a review of differing methods for determining and verifying eligibility for programs that offer fare discounts or waivers in a targeted manner.

## Needs and Behaviors of Low-Income Transit Riders

Low-income riders, on average, use transit and pay for transit differently than other riders. Low-income riders are more likely to:

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[43]  DRPT, TRIP Transit Ridership Incentive Program, http://www.drpt.virginia.gov/transit/trip-transit-ridership-incentive-program/

[44]  NVTC, 2021. https://www.masstransitmag.com/technology/fare-collection/press-release/21205347/northern-virginia-transportation-commission-nvtc-nvtc-supports-enhanced-and-connected-train-and-bus-fare-collection

- ■ Pay for each ride rather than use an unlimited pass.[45]
- ■ Travel shorter distances.
- ■ Take more frequent transit trips.[46]
- ■ Make more transfers.[47]
- ■ Be unbanked or underbanked and rely on cash transactions.[48]

**Low-income riders travel more often by transit and make more transfers.**

For example, in New York City, only 18 percent of low-income riders with less than $100 in savings bought a 30-day pass, compared with 33 percent of low-income riders with at least $100 in savings, and 38 percent of non-low-income riders.[49] Low-income riders, especially those that are unbanked or have low savings, often have trouble paying the up-front cost of a pass, even if they would benefit from using the pass rather than paying per ride. The inability to pay up-front for a monthly pass, as seen in the New York City example, is likely a challenge that at least some low-income riders in the City of Alexandria also face.

Frequent, shorter trips with more transfers means that flat fares are less likely to benefit low-income riders[50] and that the cost of transfers is more burdensome for low-income riders. In the Washington, DC region, the cost of transfers is higher than in some other large urban areas and can only be paid with a SmarTrip, disproportionately negatively impacting low-income riders, especially if they pay with cash.[51] WMATA proposed removing the charge for transfers between Metrorail and Metrobus in its FY 2021 budget,[52] but implementation appears to be on hold due to the COVID-19 pandemic.

In an analysis of proposed fare changes, the Corpus Christi Regional Transportation Authority in Texas found that off-peak reduced fares and free transfers benefit low-income populations more than non-low-income populations, as the low-income populations were more likely to report off-peak travel (as well as more transfers).[53] One possible explanation for this finding is that low-income riders are more likely to work in retail and service industries and work shifts other than standard business work day hours. It is also important to note that all eligible low-income residents do not necessarily participate in programs for which they are eligible;

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[45] Rosenblum, J. 2019. How Low-Income Transit Riders in Boston Respond to Discounted Fares: A Randomized Controlled Evaluation. http://equitytransit.mit.edu/wp-content/uploads/2019/06/whitepaper_v8.pdf#page=5

[46] Nuworsoo, C., Golub, A., & Deakin, E. 2009. Analyzing Equity Impacts of Transit Fare Changes: Case Study of Alameda-Contra Costa Transit, California. Evaluation and Program Planning 32:4, p. 360-368.

[47] Rosenblum, J. 2019. How Low-Income Transit Riders in Boston Respond to Discounted Fares: A Randomized Controlled Evaluation. http://equitytransit.mit.edu/wp-content/uploads/2019/06/whitepaper_v8.pdf#page=5

[48] FDIC 2019 Survey: How America Banks: Household Use of Banking and Financial Services. https://www.fdic.gov/analysis/household-survey/2019execsum.pdf

[49] Community Service Society. 2016. The Transit Affordability Crisis: How Reduced MTA Fares Can Help Low-Income New Yorkers Move Ahead. https://issuu.com/cssnyorg/docs/the_transit_affordability_crisis_fi

[50] Regional Means-Based Transit Fare Pricing Study, San Francisco, 2016. https://mtc.ca.gov/sites/default/files/Summary_MTC_Mean_Based_Overview_DRAFT_FINAL.pdf

[51] Murakami, K. 2019. Metro finally makes some transfers free, but will it help those who need it most? Washington Post: https://www.washingtonpost.com/express/2019/07/10/metro-finally-makes-some-transfers-free-will-it-help-those-who-need-it-most/

[52] WMATA FY 2021 Budget: https://www.wmata.com/about/news/FY2021-Budget-Public-Comment.cfm#main-content

[53] Corpus Christi Regional Transportation Authority Fare Equity Analysis. 2019. https://www.ccrta.org/wp-content/uploads/2019/09/FEA-2019-Report.pdf

for example, in San Francisco, only 40.5 percent of eligible residents enrolled in the low-income fare discount program.[54]

## Reduced-Fare Program Design

A recent (2020) Transportation Research Board (TRB) paper reviewed the low-income reduced-fare programs of the largest 50 transit agencies in the U.S.[55] The authors found that only 17 have any type of low-income subsidy program. Fourteen are agency-administered, while three are administered by third-party social service organizations. Of self-administered programs, about half use an income requirement as a percent of the FPL, and half use qualification for some other program (which is often also based on a percent of the FPL). While there is significant variety in program design among the 17 programs, the most common discount was 50 percent reduced fare and an income eligibility threshold of at or below 125 percent to 200 percent of the FPL. Re-enrollment is required either yearly or every other year.

> **The most common program design among large agencies with low-income fare programs is a 50 percent reduction in fare for riders whose household incomes are at or below 125 to 200 percent of the federal poverty level.**

Most of the 17 programs use a "smart" fare card with a discount automatically applied; only two programs use special identification cards for participants. The three agencies[56] that partner with third-party social services organizations to administer their programs tend to be smaller, and presumably have pursued such partnerships because fare discount programs are expensive to administer internally. In this type of program, the transit agency typically sells farecards to social service organizations at a discount, who handle qualification and distribution.

## Benefits to Individuals

Programs that reduce or waive fares for low-income individuals have significant benefits for the participants. In Boston, a pilot program found that low-income residents who were given a 50 percent subsidy on transit fares took 30 percent more trips overall.[57] The same study found that low-income riders increased the trips that they took specifically to health and social services destinations, indicating that a lower fare allows low-income riders to take trips to access services to benefit their health and well-being that they might not have taken before.

> **In Boston, a pilot program found that low-income people who were given a 50 percent discount on fares took 30 percent more trips.**

Similarly, the ORCA LIFT program in Seattle resulted in nearly half of low-income recipients of a reduced-cost fare card taking more trips than before, with 40 percent of all the recipients' trips being to reach places other

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[54]  Regional Means-Based Transit Fare Pricing Study, San Francisco, 2016.
https://mtc.ca.gov/sites/default/files/Summary_MTC_Mean_Based_Overview_DRAFT_FINAL.pdf

[55]  Darling, Carpenter, Johnson-Praino, Brakewood, Voulgaris. 2020. A Comparison of Reduced-Fare Programs for Low-Income Transit Riders. TRB.

[56]  Agencies that partner with third parties to administer their fare discount programs may be underrepresented in the research for the paper, given that it focused on only the 50 largest transit agencies.

[57]  Rosenblum, J. 2019. How Low-Income Transit Riders in Boston Respond to Discounted Fares: A Randomized Controlled Evaluation. http://equitytransit.mit.edu/wp-content/uploads/2019/06/whitepaper_v8.pdf#page=5

than work or school.[58] In a separate pilot program in Seattle that offered reduced-cost monthly passes to residents of affordable housing buildings, participants saved money on transportation and were able to take more trips, which they used to go to grocery stores, medical appointments, and make regional trips. With the money saved on transportation, participants reported buying more food and paying other household bills.[59] In addition, fare-free programs for youth can allow youth to explore their communities more freely and relieves parents from playing chauffeur.[60]

## Ridership Impacts

A number of studies have focused on fare-ridership elasticity estimates. Elasticities estimate how much ridership will change based on a change in fare. Fare-ridership elasticities are always expressed as a negative number because an increase in fare leads to a decrease in ridership, and vice versa. An elasticity of -0.30, for example, means that a 1 percent increase in fare leads to a 0.3 percent decrease in ridership. Elasticities can be used to extrapolate and estimate the impact of a wide range of fare changes, either positive or negative; a -0.30 elasticity can also be interpreted as a 100 percent decrease in fare leads to a 30 percent increase in ridership. However, there is some evidence that a fare increase will dissuade more ridership than the extent to which a fare decrease of the same magnitude will encourage it.[61] The higher the absolute value of an elasticity, the more a change in price will result in a change in ridership; a lower elasticity indicates that a change in price will result in a smaller change in ridership.

The Simpson-Curtin Rule, which estimates the fare-ridership elasticity as -0.30, has long been cited as the rule of thumb when estimating ridership changes due to fare increases or decreases. A number of academics have attempted to test the validity of this rule. In a widely cited study by the American Public Transit Association (APTA), Pham and Linsalata found an average elasticity of -0.40, although they found the elasticity is lower in large urban areas (-0.36 compared with -0.43 in small urban areas) and during peak hours (-0.23 compared with vs. -0.42 in off-peak hours).[62] This indicates that urban riders and peak hour riders–who are often commuters–are less sensitive to price changes. In a study to evaluate regional fare policies, MTC in the San Francisco Bay Area estimated elasticities for low- and non-low-income residents by mode, finding that low-income riders had slightly higher elasticities–i.e., are more sensitive to price increases.[63] Given that low-income individuals are more likely to ride the bus than rail in areas such as Washington, DC, it is not surprising that increases in train fares reduce ridership less, as the individuals riding this mode are more likely to be higher income. **Table 5** summarizes this information about estimated elasticities.

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[58] First Survey of ORCA LIFT users confirms high satisfaction, more bus trips being taken. 2016. https://kingcountymetro.blog/2016/05/26/first-survey-of-orca-lift-users-confirms-high-satisfaction-more-bus-trips-being-taken/

[59] Brennan, A. & Becker, M. 2017. Affordable Housing Transit Pass Pilot: Program Evaluation. https://stb-wp.s3.amazonaws.com/wp-content/uploads/2017/08/06141528/Affordable-Housing-Transit-Pass-Pilot-Report-with-Appendices.pdf

[60] TCRP Synthesis 101: Implementation and Outcomes of Fare-Free Transit Systems. 2012.

[61] Litman, T. 2020. Transit Price Elasticities and Cross-Elasticities. Victoria Transport Policy Institute. https://www.vtpi.org/tranelas.pdf

[62] Pham & Linsalata. 1991. Fare Elasticity and Its Application to Forecasting Transit Demand. American Public Transit Association: https://www.apta.com/wp-content/uploads/Resources/resources/reportsandpublications/Documents/Pham_Linsalata_Fare_Elasticity_1991.pdf

[63] Metropolitan Transportation Commission. 2016. Technical Memorandum #3: Evaluate of Alternative Means-Based Transit Fare Scenarios. https://mtc.ca.gov/sites/default/files/3_MTC_Means_Based_TM_3_DRAFT_FINAL.pdf

*Table 5: Fare-Ridership Elasticity Estimates*

| Source | Elasticity | Notes |
|---|---|---|
| Simpson-Curtin Rule | -0.30 | "Rule of thumb" used for decades |
| Pham and Linsalata, published by APTA[68] | Average: -0.40<br>Large Urban Areas: -0.36<br>Small Urban Areas: -0.43<br>Peak Hours: -0.23<br>Off-Peak Hours: -0.42 | |
| Metropolitan Transportation Commission, San Francisco[69] | Average: -0.33<br>Low-income train riders: -0.23<br>Non-low-income train riders: -0.20<br>Low-income bus riders: -0.33<br>Non-low-income bus riders: -0.30 | |

However, real-world ridership changes when systems convert to fare-free can be even more informative than using traditional elasticities in estimating the likely impact of going fare-free. This may be because reducing fares to zero not only removes the financial cost of the fare, but also removes the mental barrier of needing to have the right fare and knowing how to use (and pay to use) the transit system.[64]

**A sample of ridership increases from agencies that went fare-free range from 32 to 205 percent.**

Ridership increases from a variety of examples of bus systems that went fare-free range from 32 percent for Advance Transit in New England to 205 percent for Hele-on-Transit in Hawaii. **Table 6** shows examples of transit agencies who went fare-free either temporarily or permanently, and the resulting increase in ridership.

*Table 6: Fare-Free System Examples*

| System | Location | Year Fare-Free Implemented | Location Type | Ridership Increase | Notes |
|---|---|---|---|---|---|
| Advance Transit | VT/NH | 2002 | Small Urban | 32% | In the first year after fare-free implementation |
| Asheville Rides Transit (ART) | Asheville, NC | 2006 | Urban | 58% | |
| Corvallis Transit System | Corvallis, OR | 2011 | University | 38%[65] | In the first year |
| Hele-on-Transit | HI | 2005 | Small Urban | 205% | In the first year after fare-free implementation |
| InterCity Transit | Olympia, WA | 2020 | Small Urban | Pending | |
| Marion City Bus Department | Marion City, IN[66] | 2008 | Small Urban | 200% | |

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[64] TCRP Synthesis 101: Implementation and Outcomes of Fare-Free Transit Systems. 2012.

[65] City of Corvallis, "Corvallis Transit System Celebrates 10 Years of Fareless Bus Service," https://www.corvallisoregon.gov/cts/page/corvallis-transit-system-celebrates-10-years-fareless-bus-service.

[66] Marion City is a separate city from Marion County (Indianapolis).

| System | Location | Year Fare-Free Implemented | Location Type | Ridership Increase | Notes |
|---|---|---|---|---|---|
| Mountain Line | Missoula, MT | 2015 | Small Urban | 70% | |

*Source: TCRP Synthesis 101*

Not surprisingly, there is also evidence that ridership gains exist even when the benefit is limited only to some individuals, rather than system-wide. In Boston, for example, as mentioned above, low-income riders took 30 percent more trips after receiving a 50 percent fare subsidy.[67]

Some agencies, when considering going fare-free, become concerned about disruptive (often younger) passengers being attracted to the free service or people experiencing homelessness using buses as a form of shelter. The TCRP Synthesis 101 Report, which surveyed a variety of agencies who went fare-free, asked agencies about this problem. Most agencies reported that this was not a significant problem that they faced. In fact, bus operators reported that they considered not dealing with fare payments a fair tradeoff for dealing, in some cases, with a smaller number of more disruptive passengers.[68]

## Operational Impacts

Going fare-free removes the need to collect fares and also generates additional ridership, which can have both positive and negative impacts on operational performance. Going fare-free can help a larger number of passengers board more quickly, potentially improving on-time performance on system that do not generally experience high vehicle loads (passenger volumes). University towns in particular report time savings at very popular bus stops where there are "crush loads" of passengers; removing the fare allows boarding to occur through all doors and much more quickly.[69] Not collecting fares also reduces the number of questions or conflicts drivers must negotiate with passengers regarding fare payment.

**Not collecting fares allows for faster boarding but can also lead to crowding and on-time performance issues.**

With large enough ridership increases, crowding and on-time performance can become issues, however. Crowding may occur due to sheer numbers of riders, and on-time performance can become an issue if buses need to stop at more stops to allow passengers to board or alight (possibly necessitating schedule adjustments to reflect new conditions). In Asheville, North Carolina, schedule adherence became a problem after removing fares.[70]

While the lack of fare revenue can increase the operating revenues needed from other sources for an agency, it also leads, not surprisingly, to improved performance with respect to metrics such as passengers per revenue hour and subsidy per passenger. In some cases, this has the potential to help secure funding. For example, Indiana state assistance is partially based on passenger mile. When Marion City Bus Department in that state removed fares in 2008, which increased ridership and passenger miles, this increased state funding

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[67] Rosenblum, J. 2019. How Low-Income Transit Riders in Boston Respond to Discounted Fares: A Randomized Controlled Evaluation. http://equitytransit.mit.edu/wp-content/uploads/2019/06/whitepaper_v8.pdf#page=5

[68] TCRP Synthesis 101: Implementation and Outcomes of Fare-Free Transit Systems. 2012.

[69] Id.

[70] Id.

by more than the foregone fare revenue.[71] As reported above, Mountain Line attributed its ability to qualify for capital grants to its high productivity.
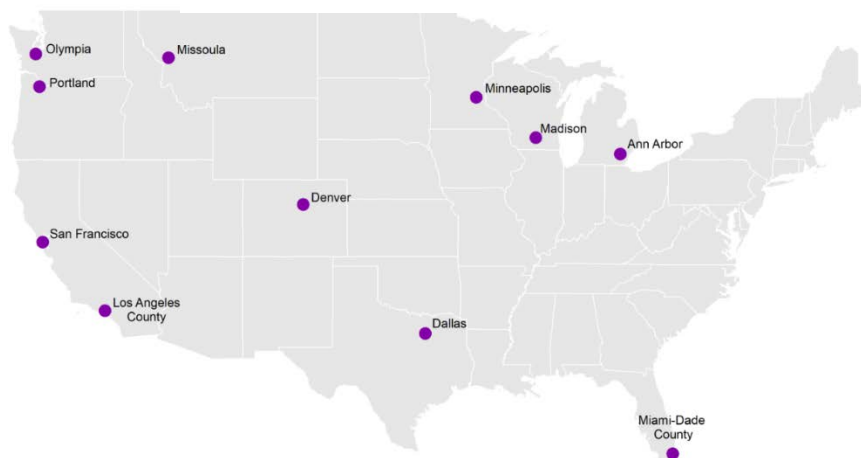
# CASE EXAMPLE REVIEW

## Overview

Across the U.S., many transit providers offer fare structures or programs that make riding public transportation more accessible from a cost perspective, particularly to people from low-income households. This section builds on the literature review by focusing on a set of practices from across the country in greater detail and demonstrating a range of possibilities for program logistics and administration. The case example review



*Figure 7: Case Example Locations*

focused on identifying key information about specific agencies and/or regions that have some kind of fare discount or fare-free service. The review included identification of the types of discounts agencies offered; eligibility and the certification process; marketing and distribution strategies; program costs and funding sources; results, such as ridership and operational impacts; and lessons learned. Among case examples reviewed, ten were identified for further study; these are shown in **Figure 7** and **Table 7.** (The case studies identified during the review but not selected for further evaluation/research are listed in the **Appendix**.) These programs range from fare-free for all to targeted discounts for qualifying populations (such as individuals with low incomes, seniors, veterans, etc.) offered through a mix of reduced fares and/or discounted passes. Some involve single agencies while others involve regional collaboration across operators.

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[71] TCRP Synthesis 101: Implementation and Outcomes of Fare-Free Transit Systems. 2012.

*Table 7: General Characteristics of Selected Case Examples*

| Location | Agency | Program Name | Type of Discount | Eligibility and Certification | Program Cost (if Available) and Funding Sources |
|---|---|---|---|---|---|
| Dallas, TX | Dallas Area Rapid Transit (DART) | Temporary Assistance for Needy Families (TANF) Cash Help Benefits and DART Passes | Discounted passes (50% discount) | Texans with Lone Star Cards who are TANF recipients (below poverty line) can purchase DART monthly passes using their TANF Electronic Benefit Transfer (EBT) card at reduced rates. No additional verification is required. | TANF funds are used for the purchase of the passes. The TANF program is mostly funded by federal block grants. |
| Denver, CO | Regional Transportation District (RTD) | LiVE | Reduced fares (40% discount) | Riders from households earning 185% or less of the FPL qualify. Applications are submitted through the Colorado State benefits website. State issues a LiVE eligibility card. | LiVE started in 2019 when RTD raised fares on buses and rail transit lines to the Denver International Airport, enabling expansion of a previously existing fare discount program. |
| Los Angeles County, CA | Los Angeles (LA) Metro and 12 local agencies | Low Income Fare is Easy Life (LIFE) | Discounted passes ($6-$24 off), varies by pass type and operator), free regional rides | Riders, who qualify if they earn 150% or less of the FPL, submit applications to one of two designated community organizations, which verify eligibility. | A 2018 Board Report requested $3.6 million of Measure M funds to support the LIFE program.[72] |
| Madison, WI | Metro Transit | Low Income Pass | Discounted passes (over 40% discount on a monthly pass) | Riders at or below 150% of the FPL self-certify income in an application, which can be completed at the time they purchase their pass at one of three locations. A limited number of passes are available each month. | In 2009, $100,000 from Metro's contingency fund was used to provide 3,600 low-income passes in response to a fare increase. Since then, the agency has maintained the program while aligning the number of passes with the available budget. -. |
| Miami-Dade County, FL | Miami-Dade Transit Metrobus and Metrorail | Commuter-Reduced Fare EASY Card | Reduced fares (50% discount) | Miami-Dade County residents earning $19,140 to $25,520 qualify. Applications processed by the department that issues Golden Passports to seniors and social security recipients and Patriot Passports to low-income veterans. | *[Information not available from online search]* |

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[72] LA Metro Board, 2017-0813- New Low Income Fare Subsidy Program (LIFE) Program, 2018, https://boardagendas.metro.net/board-report/2017-0813/.

| Minneapolis, MN | Metro Transit | Metro Transit Assistance Program (TAP) | Reduced fares (rides for $1.00, 50%+ discount) | Individuals must have incomes at or below 185% of the FPL, below 50% of the area median income, and/or participate in an eligible assistance program. Qualifying document from other programs can verify eligibility (SNAP, WIC card, and other state, housing, and health care programs). | TAP was implemented in conjunction with a fare increase, as a way to minimize the negative impact to low-income riders. |
|---|---|---|---|---|---|
| Missoula, MT | Mountain Line | Zero Fare | Free fares for all | N/A | Started in 2015 as a three-year demonstration project funded by community and local government partners that covered lost fare revenues.[73] In 2018, partners agreed to continue funding through the end of 2020. In November 2020, additional funding was approved by voters. |
| Portland, OR | TriMet | Low-income Honored Citizen | Reduced fares; discounted passes (50%-72% discount) | Applicants are automatically eligible if they qualify for other programs (SNAP, TANF, Medicaid, etc.) or earn at or below 200% of the FPL. TriMet issues a personalized Hop Card that automatically caps monthly fares at $28. | This program started by expanding an existing fare (Honored Citizen). New payroll tax of 0.1% passed by state legislature (the Keep Oregon Moving Act of 2017, which provides an ongoing, stable source of transit funding) |
| San Francisco, CA | Several Bay-area agencies | Clipper START | Reduced fares (discount of 20% to 50%; varies between operators) | Fare discounts across regional agencies are centrally administered by MTC on behalf of participating operators. Participants must earn 200% or less of the FPL, which can be proven by providing documentation showing eligibility for other programs (e.g., SNAP) or tax returns. | The cost to implement the program was $11 million, which came from a combination of state diesel fuel tax revenue and the state's Low-Carbon Transit Operations Program.[74] Also, $5 million in CARES funds will enable expansion to six additional agencies. |
| Olympia, WA | InterCity Transit | Zero-Fare Demonstration Project | Free fares for all | N/A | This project will provide fare-free transit for all for five years, starting in 2020 after Intercity Transit Authority approval in 2019. |

[73] Current partners include educational institutions, hospital and medical facilities, local businesses, radio stations, and business improvement districts.
[74] By comparison, BART's budgeted fare revenue for FY21 is $148.4 million (https://www.bart.gov/sites/default/files/docs/FY21%20Adopted%20Budget%20Manual%20Final%2009.23x.pdf). SFMTA's FY21-22 budgeted fare review is $188.8 million (https://www.sfmta.com/sites/default/files/reports-and-documents/2020/06/6-30-20_item_9_fy21_and_fy22_budget.pdf).

Although each case example is unique, together the case examples offer insights on how to address common questions and decisions that the City of Alexandria will face in implementing steps to make transit more affordable. Some of the key take-aways from the review of case examples include:

■ **Travel period considerations** – Most agencies in the case examples did not distinguish between discounts for peak and off-peak periods. Instead, most riders enrolled in reduced fare programs paid one rate per trip regardless of their time of travel.

■ **Fare media for program participants** – In most case examples in which low-income participants received a benefit, agencies used one of three methods to recognize admission into a reduced or fare-free program. Agencies either: issued a separate card after eligibility was verified that would allow passengers to purchase discounted fares/passes; issued a combination photo ID and fare card for free rides; or programmed the discount onto the riders' transit cards

■ **Eligibility thresholds** – The case examples that involve targeted assistance have different income limits as part of their criteria, with most requiring individuals to have incomes of no more than 150 percent to 200 percent of the FPL to qualify.

■ **Making eligibility determination and certification easy** – The application process can be significantly streamlined by requiring minimal supporting documentation and, where possible, using existing certification documents from other financial assistance programs to verify income, such as TANF approval letters or EBT cards (used for TANF and SNAP benefits). Initial certifications tend to be valid between six months to one year, after which riders will need to undergo a recertification process.

**Certification can be simplified by using proof of membership in other benefit programs to determine eligibility.**

■ **Building partnerships with community organizations** – Community organizations can play an important role in a fare discount program. The case examples show that community organizations, which have direct contact with clients, can identify who would benefit from a reduced fare program and inform these clients. These agencies can also help applicants prepare their applications, host sign-up events, and be trained (and resourced) to certify, issue, and register resulting ID cards or fare media.

■ **Regional collaboration when possible** – The LIFE and Clipper START programs are examples of successful interagency cooperation. The Clipper START program, for example, grew from four to 10 participating agencies. The program could serve as a model not just for the City of Alexandria, but potentially the entire region.

The following sections identify highlights from each of the case examples, organized by topic area, and explain different agency approaches in detail. Case examples with multiple noteworthy elements appear under multiple topics.

## Efficiency in Eligibility Determination

For the case examples that involved targeted fare payment assistance (i.e., not those that are fare-free for all), many of the agencies found ways to determine eligibility utilizing existing processes or methods to simplify the process for both the agency and the applicants. Regional Transportation District (RTD) in Denver, Colorado and Dallas Area Rapid Transit (DART) in Dallas, Texas relied on proof of eligibility for existing state-level programs in



*Figure 8: RTD on Colorado PEAK Portal*

their states to verify eligibility. In RTD's example, applicants complete an online application through a larger statewide benefits portal to receive an eligibility card without the need for any certification done directly by RTD, its discounted fare program is incorporated directly into the state's portal and eligibility for LiVE is reviewed just like any other state benefit. The program launched in July 2019, and by April 2020 it had over 5,000 participants.[75]

DART's program allows users that are currently receiving TANF benefits to use TANF funds on their EBT card to purchase discounted passes. In Miami-Dade County, the same office that processes Golden Passport (free transit for seniors and social security beneficiaries) and Patriot Passport (free transit for veteran residents with disabilities and an annual income of $30,721 or less) applications also reviews applications for the Commuter-Reduced Fare EASY Card, which grants low-income riders 50 percent off bus and rail fares. Other programs in Portland, Minneapolis, and the San Francisco Bay Area also ask applicants to provide proof of enrollment in other programs as a key determinant of their eligibility.

These approaches simplify the process for agencies when it comes to determining eligibility, and they also limit the time applicants need to invest to gather supporting documentation. Self-certification, which Madison's Metro Transit uses, is an easy process for both applicants and agencies. New applicants can complete a self-certification form that is valid for six months at the time they purchase a discounted pass.

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[75] Mass Transit, Denver RTD's LiVE Program provides income-based fares for those in need during difficult times, April 2020, https://www.masstransitmag.com/management/press-release/21132826/regional-transportation-district-rtd-denver-rtds-live-program-provides-incomebased-fares-for-those-in-need-during-difficult-times.

## Funding Reduced Fare and Fare-Free Service

The case example agencies followed different paths in developing and implementing their programs (either fare-free service or discounts for low-income individuals). In some cases, the introduction of a new reduced fare program was implemented in conjunction with a fare increase as a way to offset some of the negative equity implications of the fare increase. RTD's program was paid for by raising fares on buses and rail lines to the Denver International Airport. Metro Transit (in Minneapolis) also started its Transit Assistance Program in conjunction with a fare increase.

> **Agencies in the case examples funded programs with fare increases, voter referendums, sales and property taxes, and/or contributions from public and private sector partners.**

Other programs were supported by voters. In Missoula, Montana, a fare-free pilot project was started in 2015 at the same time the agency added bus service as part of a previous 2013 voter-approved mill (local property tax) levy. The 2013 levy grew Mountain Line's budget by $1.7 million and was the first referendum to improve Mountain Line in 35 years.[76] While the 2013 mill levy allowed Mountain Line to expand service in 2015, the agency's fare-free pilot began at the same time with the support of funding partners from local businesses, educational institutions, healthcare facilities, and business improvement districts. These partners helped cover lost fare revenues when the agency's $1.00 fares were eliminated. In 2017, the partners agreed to continue funding the program through the end of 2020. As of 2021, the agency had 26 partners.[77]

The Mountain Line fare-free pilot became a successful, and now permanent, program that provides over 1.5 million rides per year. In 2014, the last year before the fare-free program began, the agency provided over 900,000 rides.[78] The program enjoys public support, as evidenced by the fact that voters continued to support Mountain Line's fare-free service by agreeing to a $3 million dollar mill levy by a 20 percent margin in November 2020.[79] The agency cites numerous benefits to going fare-free: a ridership increase of almost 70 percent since 2015; ridership gains that have helped the agency secure millions of dollars in federal grants allowing for the purchase of 12 electric buses because increased ridership made the agency more competitive; and being able to adapt faster to Centers for Disease Control and Prevention (CDC) recommendations during COVID-19, since the program already limited contact between riders and drivers. A Mountain Line survey indicated that 48 percent of riders said they had started to ride more frequently since the program was introduced.[80]

The Clipper START pilot program has brought several Bay-area agencies together to provide discounts to riders with low incomes with the support of state and federal funding. Although the pilot started in 2020 with four participating agencies, at least 17 other agencies have expressed interest.[81] The twelve- to eighteen-month pilot was initially funded with about $11 million, including $8 million in State Transit Assistance (STA) funds generated by the state sales tax on diesel fuel plus $3 million from the statewide Low-Carbon Transit Operations Program. MTC (the region's Metropolitan Planning Organization) provided a one-time commitment

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[76] Missoulian, Mountain Line putting $1.7M levy increase on ballot, September 2013, https://missoulian.com/news/local/mountain-line-putting-1-7m-levy-increase-on-ballot/article_f2284cfe-e8f4-11e2-ac70-001a4bcf887a.html.

[77] Mountain Line, Mountain Line Benefits Us All, Accessed January 2021, https://mountainline.com/zero-fare.

[78] NTD, 2014 Annual Agency Profile of Missoula Urban Transportation District (Mountain Line), https://cms7.fta.dot.gov/sites/fta.dot.gov/files/transit_agency_profile_doc/2014/80009.pdf.

[79] KPAX, Mountain Line mill levy moving toward wide voter passage, November 2020, https://www.kpax.com/news/missoula-county/mountain-line-mill-levy-moving-toward-wide-voter-passage.

[80] Mountain Line, Mountain Line Benefits Us All, accessed January 2021, https://mountainline.com/zero-fare.

[81] MTC, Six Transit Agencies Join Clipper START Program, November 2020, https://mtc.ca.gov/whats-happening/news/six-transit-agencies-join-clipper-start-program.

of $5 million dollars in CARES funding in July 2020 to expand the number of participating agencies, and six more joined in November 2020.

As noted above, for some smaller agencies, the cost of charging fares is comparable or close to total fare revenue, leading them to consider going fare-free due to the modest financial impact. InterCity Transit in Olympia, Washington found that fares accounted for less than two percent of the agency's net revenue after the cost of fare collection was considered. Its new zero fare program, which started in 2020, began with the 2018 approval of Intercity Transit Proposition 1. After the proposition passed, InterCity Transit conducted a two-year public engagement process called IT Road Trip. One outcome of public engagement was that communities asked the agency to begin exploring ways to make fare collection faster and easier while reducing delays and making access simpler for riders. The agency ultimately found that going fare-free was the fastest and most effective option to achieve these goals.

## Fare Media

The agencies that offer targeted benefits (as opposed to going fare-free) typically use "smart" fare cards (like SmarTrip®) to administer and distribute the benefits to qualifying individuals. In the case examples, these agencies are Miami-Dade Transit; Metro Transit in Minneapolis; LA Metro and participating agencies; TriMet; and several agencies in the San Francisco Bay area. By utilizing the same fare media, the Clipper START pilot program joins several Bay-area agencies together to provide varying fare reductions across agencies (between 20 and 50 percent) – programmed onto and available all on one card.

## Discounts Offered in Conjunction with Fare Capping

In Portland, all riders benefit from TriMet's daily and monthly fare caps. However, riders enrolled in the Low-Income Honored Citizens Fares program pay a lower cost ($28) to reach their monthly fare cap as opposed to the $100 standard monthly pass. The agency estimates this saves participating riders over $850 annually.[82]

## Innovative Partnerships

Agencies employed several innovative methods for working among themselves and partnering with community organizations and human services agencies to administer their programs. RTD even created a partner toolkit that includes videos in English and Spanish, bilingual brochures, sample communications, and a web banner.[83]

## Administration

Minneapolis's Metro Transit approves partner organizations that can certify application documents and distribute and register cards on the agency's behalf,[84] making the application process easier for the applicant and the agency, and bringing services directly to the people who need them. The program started in 2017, and as of November of that year, 7,000 riders were using the card monthly – a small portion of the more than 500,000 residents who could qualify.[85]

> **Community partners can market programs, help riders enroll, certify applications, and distribute and register cards.**

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[82]  TriMet, Transit cost savings add up with TriMet's reduced fare for riders living on a low income, May 2019, https://news.trimet.org/2019/05/transit-cost-savings-add-up-with-trimets-reduced-fare-for-riders-living-on-a-low-income/.

[83]  RTD, Partner Tool Kit, Accessed January 2021, https://www.rtd-denver.com/LiVE#partnertoolkit.

[84]  Metro Transit, Transit Assistance Program Partner Information, Accessed January 2021, https://www.metrotransit.org/tap-partners.

[85]  MinnPost, TAP is a lifesaver for many Metro Transit riders, November 2019, https://www.minnpost.com/cityscape/2019/11/tap-program-is-a-lifesaver-for-many-metro-transit-riders/.

LA Metro and 12 other local agencies banded together for the Low- Income Fare is Easy Life (LIFE) program, which uses two community organizations to certify people's eligibility for the LIFE program.

## Marketing

There are also examples of community partners spreading the word about reduced fare programs. Approved partners in Minneapolis's Metro Transit's TAP program receive promotional materials in a variety of languages, in addition to certifying applicants. For the LIFE program, according to a 2018 board report, over 600 non-profit, faith-based, or governmental agencies conducted outreach about the LIFE program with their clients and the general public as a result of a December 2017 marketing plan and strategy.[86]

# INSIGHTS FROM CITY STAFF

The project team conducted two interviews with staff from the City of Alexandria's Department of Community and Human Services (DCHS) to better understand current programs and practices in the City, including those for determining how individuals are determined to be eligible for income-based programs. Staff from the City's Workforce Development Center, Office of Community Services, and the Benefits Programs departments were interviewed. The SNAP Employment and Training Program and the VIEW Program (Virginia Initiative for Education and Work), both run by DCHS, can provide bus tokens or SmarTrip® cards to clients on a temporary basis. However, the ability to support clients in meeting their transportation needs varies greatly between programs, and many low-income residents who qualify for other assistance programs do not qualify for transportation assistance.

These interviews produced several key takeaways:

- There is **a need for affordable transportation to connect low-income residents to community resources, workforce development, and employment opportunities**. City staff explained that some clients had difficulties paying the fare to arrive at the DCHS office to receive benefits, with some walking long distances because they could not afford the bus fare. Most of the City's human services programs are tied to eligibility criteria (using income-based guidelines), with income being verified by DCHS staff.
- Some individuals go through **a transition period** during which they no longer qualify for certain financial benefits due to earning more than a certain threshold, but still struggle to afford transportation.
- When asked about low-income clients' access to technology, **City staff recommended that physical (paper/plastic) passes may be better for some low-income populations; they also added that, while most clients may not have computer access, many have a smartphone** through another City program so app-based fare products could also work for a large number of program participants.
- Although most applicants also have email addresses, they **may require assistance from others to access a computer or complete any application or other mandatory paperwork.**
- **Providing information about the program to individuals with limited English proficiency** will be important for success of an income-targeted program.
- The DCHS staff had the impression that their clients who qualify for financial assistance **are more likely to use the DASH system as opposed to Metrobus or Metrorail**, since the City tends to pair job seekers with jobs at Alexandria-based businesses and employers.

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86  Metro Board, 2017-0813- New Low Income Fare Subsidy Program (LIFE) Program, 2018, https://boardagendas.metro.net/board-report/2017-0813/.

As part of this study, at least one additional interview, either with WMATA or another organization, will be conducted to gather additional information to assess the best options for the City of Alexandria.

## KEY FINDINGS AND SCENARIO RECOMMENDATIONS

The findings from the case example review, literature review, and interviews provide an indication of how the options under consideration for the City of Alexandria would compare with respect to the goals for the City's low-income fare initiative. **Table 8** shows a high-level or screening evaluation of how these options compare with respect to both the goals as well as other important considerations.

*Table 8: Summary Evaluation of Options for the City of Alexandria*

| Option | Impact for Intended Beneficiaries | Ridership Increase* | Administrative Complexity for the City | Estimated Relative Cost* | Other Considerations |
|---|---|---|---|---|---|
| Free fares for everyone on the DASH system at all times | Highest,** but less targeted | Highest | Lowest | Highest | ■ Greatest improvement to DASH operational performance (OTP, reduced conflicts over fares, all-door boarding) (+)<br>■ Potential operational cost increases with ridership increases (-)<br>■ Heightens need for Automatic Passenger Counters (APCs) (+/-)<br>■ Potential additional savings from avoided capital costs (+)<br>■ Large environmental benefit by increasing ridership (+) |
| Free fares for everyone on the DASH system during off-peak runs only | Moderate, but less targeted | High | Low | High | ■ Significant improvement to operational performance (during off-peak) (+)<br>■ Would increase productivity during the off-peak, one of DASH's operational goals; less likely to have challenges associated with ridership increase due to off-peak being less busy (+)<br>■ Heightens need for APCs (+/-) |
| Free fares for low-income residents on DASH | High | Low-Moderate | Moderate | Low | ■ Same impact as free DASH fares for all residents, but requires a (likely inconvenient) administrative process; fewer intended beneficiaries will take advantage of program. (-) |
| Discounted DASH fares and passes for low-income residents | Lowest | Lowest | Moderate-High | Lowest | ■ Requires fare capping to effectively address the needs of riders who may not be able to afford a monthly pass upfront and/or moderate-frequency riders who are not sure whether paying fares or buying a pass is their most economical option. (+/-) |
| Free fares for low-income residents on DASH and WMATA services | Highest** | Moderate-High | High | Moderate-High | ■ Benefit of giving people access to all services, allowing them to get more places and choose the service that works best for them. (+)<br>■ Requires more coordination with WMATA (+/-)<br>■ Large environmental benefit by increasing ridership (+) |
| Discounted passes and fares for low-income residents on DASH and WMATA services | Low | Low | Highest | Low | ■ Benefit of giving people access to all services, allowing them to get more places and choose the service that works best for them. (+)<br>■ Requires more coordination with WMATA (+/-)<br>■ Requires fare capping to cover both passes and fares on SmarTrip® cards in a streamlined way (as described above) (+/-) |

*To be further evaluated in Tech Memo 2, incorporating estimated administration costs and ridership impacts into the estimates.*

***Both options are rated "highest." One is highest due to free access to both services (DASH and WMATA), the other due to being more accessible because of the lack of a certification process, which creates a barrier to entry for potential participants.*

## Comparison and Evaluation of Options

The summary in **Table 8** shows the inherent trade-offs in seeking to achieve all of the goals for a low-income fare program in the City of Alexandria. In general, a greater investment in the program and in broader regional initiatives that would support this program and have long-term benefits (e.g., fare capping, expanding the POS retail network) will produce greater gains with respect to the program goals. This investment would be in terms both of direct monetary resources as well as prioritization of staff time to move implementation forward (e.g., communicating the value of the program to cultivate political support and galvanizing cross-departmental and cross-agency cooperation).

After considering the evaluation findings, free fares for all on the DASH system and both free and discounted fares on both DASH and WMATA services were identified for further study. There are a few reasons for this choice for the direction for the study:

■ Free fares for all on the DASH system would remove an administrative process for being able to access the benefit (i.e., it would be most accessible in terms of lowering participation barriers), which would result in the lowest administrative cost and would significantly increase transit ridership on DASH. This would significantly enhance equity and quality of life in the City and potentially result in environmental benefits as well. This option would be the easiest and quickest to implement, given that it would not require establishment of an internal income verification/certification process and that it would require less cross-agency coordination and cooperation. (The latter of these, while beneficial and valuable for many reasons, would likely increase the amount of time associated with implementation.)

■ Selecting options that cover both DASH and WMATA services would enable riders to access a wider range of services to meet their travel needs, which is also supportive of a broader regional goal of having a transit network that works relatively seamlessly across providers and jurisdictional boundaries.

— There remains potential for the City to proceed with applying the program first to the DASH system and then, over time, expanding it to cover WMATA services based on lessons learned, new information about the operational impacts from an incremental roll-out, and updated information about available resources. In this way, the options to apply free fares or discounted fares for low-income residents just on the DASH system will remain.

■ There is value in the City considering a variety of discount levels, as funding for the program is not guaranteed and it may be most effective and sustainable for the City to proceed more incrementally and conservatively to ensure the program is financially secure over the long-term. Based on the findings from the literature review that a 50 percent discount is the most common discount level, and that this discount level would be the easiest for participants to comprehend and calculate, 50 percent will be the discount level studied.

■ While the option to make fares free on DASH during off-peak periods would benefit low-income people disproportionately compared to all riders (given that low-income riders are more likely to ride during the off-peak), it would not give low-income riders flexibility to travel when it is most convenient for them, or when they may be required to travel (e.g., depending on the time of a shift or a doctor's appointment) to receive the benefit. In other words, the impact for intended beneficiaries would not be as high for some low-income riders. It would effectively create an additional barrier for some people to accessing the program's benefits.

■ The cost implications of the option to make fares free on DASH during off-peak periods were already identified in the DASH fare collection study.

## Other Considerations

This evaluation, of course, does not account for many of the other, sometimes qualitative, considerations, some of which are identified in **Table 8.** These are described in further detail below.

- **Operational costs –** It is likely that operational efficiency will improve on the DASH system if fares are eliminated due to less dwell time at each stop since passengers will not need to stop at a farebox. Although the dwell time savings will be minor on a stop-by-stop basis, the aggregate time savings across and entire route and for the entire network could result in real operational cost savings.

- **Potential Crowding –** In the short-term, the potential for a fare decrease or fare elimination to cause a level of ridership increase that would cause crowding and necessitate major increases in service does not seem highly likely. However, in the long run, it is possible that DASH would need to increase its level of service to meet the increased demand that lower fares would generate. This will largely depend on the rate at which passengers return to transit once the COVID-19 pandemic has largely ended.

- **Automated Passenger Counters (APCs) –** Currently, approximately half of the DASH fleet is equipped with APCs and a project is underway to install additional APC's that will result in 90 percent of the fleet being APC-enabled. If DASH were to eliminate fares completely, either at all times or just during the off-peak, having 100% APC coverage would be especially important for maintaining accurate ridership counts without asking the operator to manually push a button for every boarding, which could be occurring at multiple doors This is a potential additional cost associated with going fare-free.

- **Need for fare capping to enable both pass and fare discounts** – For options involving discounts on fares and passes to be beneficial both for occasional riders (for whom purchasing a monthly pass does not make sense) as well as for regular riders, fare capping would be needed to ensure that low-income riders using SmarTrip® cards do not over-pay simply because they cannot afford the cost (even if discounted) of an unlimited pass. While the study team has not looked into this question yet, it is possible that fare capping could be more easily implemented on the DASH system for those who use the DASH app.

- **Significant benefit to making barriers to participation as low as possible** – There is a significant, difficult to quantify, benefit of making barriers to riding transit, and/or to accessing a low-income fare program as, as few and minimal as possible. For this reason, there is a significant benefit associated with going fare-free as a way to reduce the cost burden for low-income residents. A means-tested program, even if designed to be as streamlined as possible, will place an administrative burden on both the City as well as riders, resulting in many individuals (particularly those with limited English proficiency) who would benefit from the program simply not taking advantage of it. If the fare reduction associated with undergoing a certification process is not significant enough, even some people who are aware of the program (which is highly dependent on investing in marketing and partnerships) may even delay or avoid completing it.

- **Potential to access more funding sources –** The case example review indicated that some agencies found that increased ridership and productivity made it easier for them to receive some incentive- and/or productivity-based funding sources. This could potentially be the case for DASH, given that state-level operating assistance in Virginia is based in part on ridership.

- **SmartBenefits types and usage –** In the region, many large employers provide SmartBenefits in the form of pre-tax transit benefits or direct credit for transit on SmarTrip® cards, which works on WMATA and the local systems. In 2019, about 10 percent of DASH revenue came from SmartBenefits. Transit benefits are usually provided for full-time employees, federal government employees, and generally those with higher incomes. Therefore, SmartBenefits will likely play less of a role in impacting low-income fare pass programs, but would result in a shift in subsidy from an employer and the Federal government to the City if the City were to subsidize DASH fares for everyone.

## Recommendations for Targeted Program

If the City selects to provide a targeted (as opposed to fare-free-for-all) approach, there are several recommendations the research supports, regardless of which specific option is chosen:

- **Building on existing eligibility thresholds** – All programs (except fare-free, all-day or just during off-peak) will require some kind of income verification/certification process to confirm individuals' eligibility. The

case examples, as well as basic logic, illustrate that streamlining this process by building on existing programs for awarding targeted assistance has proven to be most successful.

- **Effective marketing to reduce barriers** – As discussed on this page, for all options except those involving free fares for all riders, keeping barriers to participation as low as possible is important. Examples from the Minneapolis and San Francisco regions indicate that some programs have relatively low adoption rates, especially depending on how well a program is marketed. Given how many barriers low-income people already face in meeting their basic needs, there is considerable value in making barriers to receiving the benefits of the program as low as possible.

- **Forming or strengthening partnerships** – In a similar vein, reducing the administrative burden and enhancing public awareness of a fare program that is based on income levels will be best achieved through partnerships, both across departments within the City as well as with potential partners such as community-based organizations.

- **Making the program easy to understand, convenient, and allowing riders flexibility in scheduling their travel** – The more complicated the program is, the more difficult it will be for intended beneficiaries to understand it and, ultimately, take advantage of its benefits. The more "clauses" added to the program, such as discounts only applying during certain hours, on certain routes, for certain distances, or on certain days of the week, the more intended beneficiaries may be inconvenienced by having to shift their schedules or travel patterns to take advantage of the benefits. A program that provides users with maximum flexibility will result in greater benefits for those it is intended to help.

- **Expanding the retail network for purchasing fares and passes** – In line with the NVTC 2021 Northern Virginia Regional Fare Collection Strategic Plan, expanding the locations where people can purchase Senior SmarTrip® cards would reduce the burden on travelers of having to travel to Metro Center station in DC. In addition, more locations where people can add value to their SmarTrip® cards would significantly benefit cash-dependent populations. Mobile ticketing platforms also present opportunities for passengers to use cash to add funds to their accounts using point-of-sale (POS) retail networks that are widely available at convenience stores, and pharmacies. These are particularly helpful for low income riders who do not have bank accounts or credit cards.

## Conclusion and Next Steps

Research shows that recipients of fare discounts or free fares will take more trips, enabling them to access more opportunities, and freeing up money in their limited budgets to meet other critical life needs (shelter, food, health care, etc.). The options identified for further evaluation would all have a significant impact for the intended program beneficiaries in the City of Alexandria. In the next phase of this study, the project team will develop: more detailed estimates related to costs, ridership, and operational impacts; administrative process recommendations; performance metrics for tracking success of a low-income fare program; and a more detailed summary of marketing strategy recommendations.

# APPENDIX: FULL CASE EXAMPLE REVIEW FINDINGS

**Table A-1** shows basic information about all of the fare discount and fare-free programs that were identified in the process of selecting case examples.

*Table A-1: List of Other Fare Discount and Fare-Free Programs Identified in Selection of Case Examples*

| Location | Agency | Program Name | Type of Discount | Eligibility and Certification | Program Cost (if Available) and Funding Sources |
|---|---|---|---|---|---|
| Ann Arbor, MI | TheRide | Fare Deal and GoldRide | Discounted fares (50% discount), discounted passes (50% discount), free fares for seniors 65+ | Fare Deal provides seniors ages 60-64 and people with disabilities a 50% discount. Applicants provide a valid proof of Medicare, Medicaid, or an authorization form from a participating agency. With GoldRide, seniors ages 65 and over ride fare-free after completing an application and providing a photo. | *[Information not available from online search]* |
| Boston, MA | MBTA | Youth Charlie Pass Card | Discounted fares (50% discount), discounted pass (65% discount on monthly LinkPass) | Applicants must live in a participating city or town; be between 18 and 25 years old; and be enrolled in an MBTA-approved benefits, education, or job training program.[87] | *[Information not available from online search]* |
| Chapel Hill, NC | Chapel Hill Transit | N/A | Free fares for all | Chapel Hill Transit went fare-free in 2002. In 2015, the agency conducted a fare implementation analysis, but no fares were subsequently implemented.[88] | The recommended FY 2020-2021 transit budget is $25,232,504.[89] |
| Corvallis, OR | Corvallis Transit System | N/A | Free fares for all | The agency went fare-free in February 2011 because a Transit Operations Fee (TOF) replaced fares. The TOF replaced the previous transit funding from the City's General Fund. | Service is funded by a Transit Operations Fee that was approved by Corvallis Council in 2011, which also provides a stable local match. |

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[87] A list of MBTA-approved programs and participating cities and towns can be found at https://www.mbta.com/fares/reduced/youth-pass.

[88] Nelson\Nygaard Consulting Associates, Inc., Chapel Hill Transit – Fare Implementation Analysis, 2015, https://www.townofchapelhill.org/home/showdocument?id=29776.

[89] Town of Chapel Hill, Transit Fund, May 2020, https://www.townofchapelhill.org/home/showpublisheddocument?id=45885.

| Location | Agency | Program Name | Type of Discount | Eligibility and Certification | Program Cost (if Available) and Funding Sources |
|---|---|---|---|---|---|
| Indian River County, FL | Indian River Transit/ GoLine | N/A | Free fares for all | GoLine provides fare free service for all along 15 fixed routes. | 2019 operating funds expended were $4.1 million.[90] |
| Kansas City, MO | RideKC | To be determined | Free fares for all | Kansas City became the first US city to approve of free fares on buses in 2019, but the program has not yet moved toward implementation due to questions of funding. | Estimated annual cost is $8 million.[91] |
| Lincoln, NE | StarTran | Low-income Bus Pass | Discounted passes (50% discount) | Riders at or below 200% of the FPL can self-certify their incomes and purchase passes at the agency or community centers. | [Information not available from online search] |
| New York, NY | MTA | Fair Fares NYC | Discounted fares (50% discount) | All adults below the FPL are eligible. Applicants complete an online screening and if eligible, complete a full application. | In June 2020, $65 million was cut from the estimated $200 million program.[92] |
| Puget Sound Area, WA | Sound Transit and participating agencies | Regional Reduced Fare Permit (RRFP) | Reduced fares (varies by agency and mode) | People 65 and over, with disabilities, and/or who are Medicare-eligible can apply by completing an application and providing proof of enrollment documentation in a benefits program. | [Information not available from online search] |
| Seattle, WA | King County Metro and other participating agencies | ORCA LIFT | Reduced fares (varies between agency and mode) | Households with an income of less than 200% of the FPL can apply. Applicants can apply online and must provide proof of enrollment in defined benefits programs or paystubs. | [Information not available from online search] |
| Seattle, WA | King County Metro and other participating agencies | ORCA Opportunity | Free fares for select riders | This pilot program gave 1,600 free, unlimited use ORCA cards to Seattle Housing Authority tenants with a household income of 30% of the Area Median Income (AMI). The 12-month pilot started in 2019 and has been extended through 8/31/2020.[93] | Funded through the Seattle Transportation Benefit District.[94] |

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[90] NTD, Indian River County 2019 Annual Agency Profile, Accessed January 21, 2020, https://cms7.fta.dot.gov/sites/fta.dot.gov/files/transit_agency_profile_doc/2019/40104.pdf.

[91] Smart Cities Dive, Who will pay for Kansas City, MO's free transit?, March 2020, https://www.smartcitiesdive.com/news/who-will-pay-for-kansas-city-mos-free-transit/572980/.

[92] Streetsblog NYC, The Budget Pain: Mayor's Fair Fares Cut Falls Heavily on Lower-Income Transit Riders, June 2020, https://nyc.streetsblog.org/2020/06/30/the-budget-pain-mayors-fair-fares-cut-falls-heavily-on-lower-income-transit-riders/.

[93] Seattle.gov, ORCA Opportunity for SHA Tenants, August 2020, https://www.seattle.gov/transit/orca-opportunity/seattle-housing-authority-(sha)-pilot.

[94] Seattle.gov, ORCA Opportunity FAQ, July 2018, http://www.seattle.gov/Documents/Departments/Transit/ORCAFAQ7.26.pdf.

| Location | Agency | Program Name | Type of Discount | Eligibility and Certification | Program Cost (if Available) and Funding Sources |
|---|---|---|---|---|---|
| Tucson, AZ | Sun Tran | Low-Income | Discounted fares (50%+ discount), discounted pass (50% discount) | Riders that meet the US Department of Labor's Lower Living Standard Income Levels may apply. Applicants must provide proof of income. | *[Information not available from online search]* |
| Wasatch Region, Utah | UTA | Monthly Horizon Pass | Discounted pass (50% discount) | A discounted pass can only be sold to riders with an active Utah State Horizon Card. The State completed the Horizon Card certification. | *[Information not available from online search]* |
| Washington, DC | WMATA | Fare Subsidy Pilot | Discounted fares (50% discount) and free transit for select riders | For this pilot project, The Lab @ DC, DDOT, DC DHS, WMATA, and other partners will provide select riders, with 2,500 riders receiving public benefits with SmarTrip® cards with varying discounts. There will also be a control group. | The District of Columbia will reimburse WMATA up to $500,000 for foregone fare revenue due to the pilot.[95] |
| Washington, DC | DC Circulator | Fair Shot February | Free fares for all | The District first offered free rides for all on the DC Circulator as part of its #FairShotFebruary initiative in 2019. Fares were later reinstated in October 2019 (until the start of the COVID-19 pandemic). | The Mayor's budget proposed $3.1 million for FY 2020, but this request was rejected by Council.[96] |

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[95] WMATA Finance and Capital Committee, DC Low-Income Fare Pilot, December 2019, https://www.wmata.com/about/board/meetings/board-pdfs/upload/3C-DC-Low-Income-Fare-Pilot.pdf.

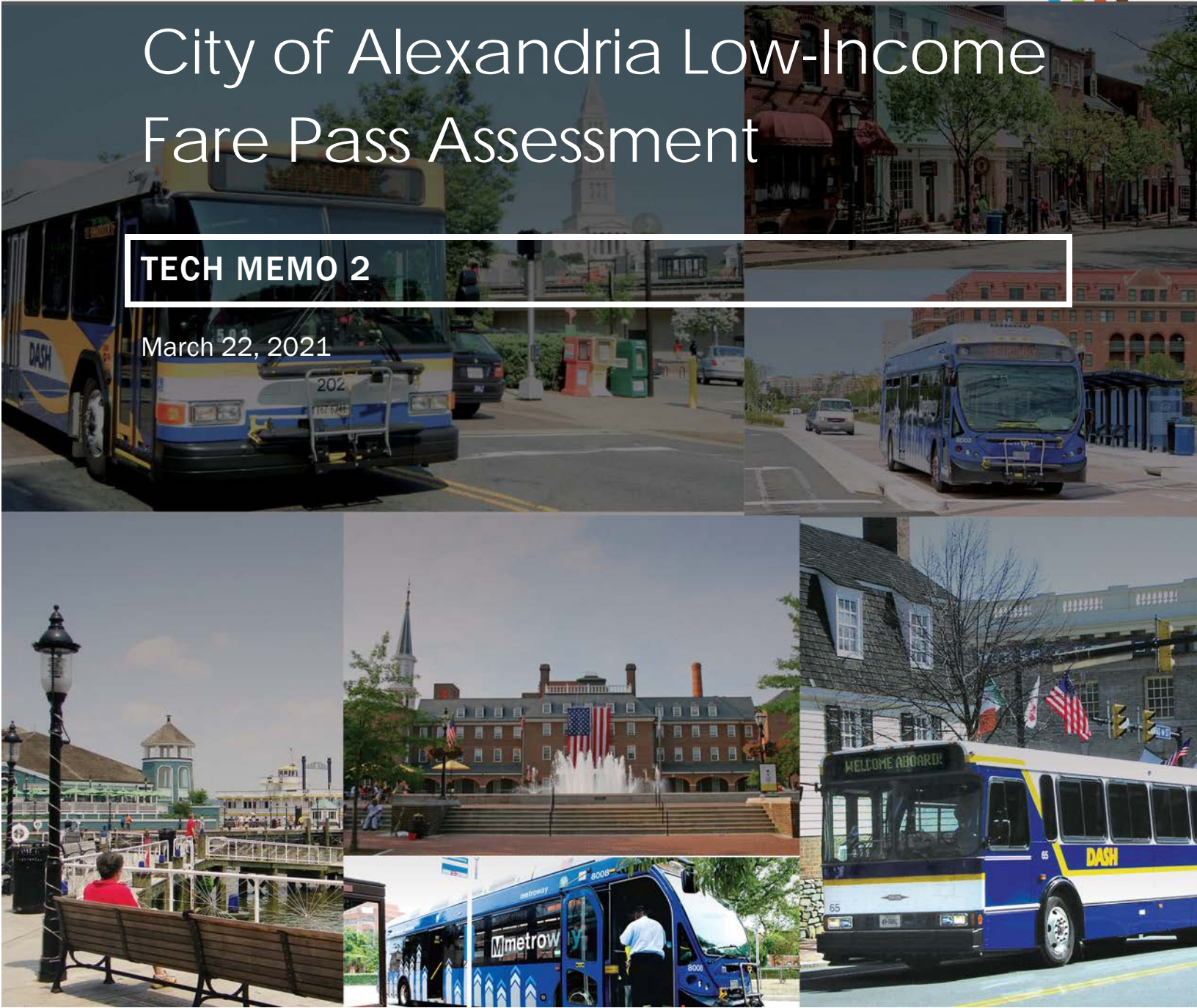[96] DC Curbed, $1 D.C. Circulator fares return next Tuesday, September 2020, https://dc.curbed.com/2019/9/27/20886834/dc-circulator-fare-returns-transportation-public-transit.

# City of Alexandria Low-Income Fare Pass Assessment

## TECH MEMO 2

March 22, 2021

Prepared for:

Metropolitan Washington **Council of Governments**

TLC

CITY OF ALEXANDRIA · VIRGINIA

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# EXECUTIVE SUMMARY

Transit fares are often a large cost burden for low-income riders, especially in areas with higher costs of living like the City of Alexandria, Virginia and Washington, DC. For many, this burden has increased because of the economic recession caused by the COVID-19 pandemic. To assist low-income residents, the City of Alexandria, in partnership with the Metropolitan Washington Council of Governments, is assessing the feasibility, benefits, and impacts of a low-income transit fare pass program in the City.

The first Technical Memorandum (Tech Memo) for this study described the existing population characteristics and transit ridership in Alexandria, summarized literature relevant to low-income fare reduction initiatives, reviewed case examples of other agencies implementing fare-free or reduced-fare programs, and summarized interviews with City staff about potential program administration. This Tech Memo builds on the first by exploring three program scenarios in more depth, providing a detailed analysis of the program administration, ridership projections, cost impacts, traffic impacts, and program evaluation for three potential program scenarios that were selected for further study. The three scenarios this Tech Memo evaluates:

- Scenario 1: Free fares for all riders on DASH services
- Scenario 2: Free fares for low-income residents on DASH and WMATA services (Metrobus and Metrorail)
- Scenario 3: Half-price fares and passes for low-income residents on DASH and WMATA services

For analysis purposes, low-income residents are defined as those from households that are eligible for the federal Supplemental Nutrition Assistance Program (SNAP); in most cases, meaning their households earn less than 130 percent of the federal poverty level (FPL).

## Program Administration

Program administration costs and logistics would be minimal under Scenario 1, since DASH fares would be free for all, but are relevant in Scenarios 2 and 3. Under these two scenarios, DASH and the City of Alexandria Transportation and Environmental Services (T&ES) Department would be responsible for coordinating with WMATA to establish the program, working with vendors to program discounts, marketing the program, and conducting program evaluation. The City and DASH would also coordinate with: (a) the City of Alexandria Department of Community & Human Services (DCHS), which would verify program eligibility and issue fare cards or passes, (b) WMATA to negotiate and coordinate pass benefits and interagency payments, and (c) other community partners to assist with marketing and applications.

Regardless of which scenario is chosen, the City will need to create a marketing plan to inform the public about the program. Scenarios 2 and 3, in particular, will require marketing to ensure that eligible residents are informed about the program. In addition to DCHS informing people about their eligibility for the program, marketing to SNAP recipients could include coordinating with partner agencies to reach eligible populations; advertising on the radio, social media, or other community websites or newspapers; or in-bus announcements.

## Ridership Projections

This Tech Memo projects ridership for a "Baseline Scenario," as well as each program scenario for Fiscal Year (FY) 2022 through FY 2025. The Baseline Scenario represents projected ridership levels absent any fare programs or changes; this includes taking into account the changes in revenue hours resulting from the Alexandria Transit Vision (ATV) plan implementation, continued reductions in ridership due to the COVID-19 pandemic, and, starting in FY 2023, projected increases in ridership due to WMATA increasing the discount for those transferring between Metrorail and DASH or Metrobus. Ridership projections under the fare scenarios are based on the level of fare reduction (free or half-price), applicable or eligible population (all riders or low-income residents), and the services the fare program would cover (DASH or both DASH and WMATA). They include considerations such as riders switching between DASH, Metrobus, and Metrorail depending on relative prices. For all of these analyses, available literature and data on the results of other fare programs were used

to develop the methodology. **Table ES-1** shows projected ridership for all scenarios from FY 2022 to FY 2025. Scenario 1 would result in the largest ridership increases compared to the Baseline Scenario.

*Table ES-1: Estimated Ridership on DASH, Metrobus, and Metrorail for All Scenarios, FY 2022–FY 2025*

| | FY 2022 | FY 2023 | FY 2024 | FY 2025 |
|---|---|---|---|---|
| **Baseline Scenario** | | | | |
| Projected Ridership in the City (DASH + WMATA) | 4,396,000 | 7,501,000 | 9,332,000 | 11,221,000 |
| **Scenario 1: Free fares for all DASH riders** | | | | |
| Projected Ridership in the City (DASH + WMATA) | 4,920,000 | 8,372,000 | 10,429,000 | 12,479,000 |
| Increase Rate over Baseline | 11.9% | 11.6% | 11.8% | 11.2% |
| **Scenario 2: Free fares for low-income residents on DASH and WMATA services** | | | | |
| Projected Ridership in the City (DASH + WMATA) | 4,648,000 | 8,153,000 | 10,139,000 | 12,153,000 |
| Increase Rate over Baseline | 5.7% | 8.7% | 8.7% | 8.3% |
| **Scenario 3: Half-price fares and passes for low-income residents on DASH and WMATA services** | | | | |
| Projected Ridership in the City (DASH + WMATA) | 4,547,000 | 7,892,000 | 9,816,000 | 11,780,000 |
| Increase Rate over Baseline | 3.4% | 5.2% | 5.2% | 5.0% |

## Cost Projections

Similar to the ridership projections, the cost projections include comparisons between anticipated costs under each scenario to the Baseline Scenario. Costs accounted for in the projections include: foregone fare revenue; the capital and operating costs of collecting fares; and administration and marketing costs, including the cost of fare media. Foregone fare revenue (and associated payments from the City to WMATA to account for it) is by far the largest driver of the costs under all three scenarios. The cost projections assume that most of the administration of the program under any scenario will be conducted as part of the regular duties of current City staff. The assumptions used to identify the amounts the City would reimburse WMATA for program participants' use of WMATA services under Scenarios 2 and 3 are based on available data and information and initial conversations; however, they are highly subject to additional negotiations. If the City were to implement Scenario 2 or 3 as a pilot, additional data would become available to inform an agreement regarding the level of transfer payments between the City and WMATA if the program were to be implemented on an indefinite basis. The analysis shows that ridership increases, even under Scenario 1, are not likely to increase DASH's operational expenses (i.e., adding more drivers, vehicles, or trips) to satisfy higher demand between FY 2022 and FY 2025. **Table ES-2** shows total costs for each scenario from FY 2022 to FY 2025. Scenario 2 is projected to have the highest costs, although the cost differential between Scenarios 1 and 2 is anticipated to decrease throughout the four-year period.

*Table ES-2: Total Cost by Scenario, FY 2022–FY 2025*

| Costs | FY 2022 | FY 2023 | FY 2024 | FY 2025 |
|---|---|---|---|---|
| Baseline Scenario (Cost of Collecting Fares) | $449,000 | $466,000 | $483,000 | $498,000 |
| Scenario 1: Free fares for all DASH riders | $2,639,000 | $3,921,000 | $4,970,000 | $5,521,000 |
| *Scenario 1: Net Increase over Baseline* | **$2,190,000** | **$3,455,000** | **$4,487,000** | **$5,023,000** |
| Scenario 2: Free fares for low-income residents on DASH and WMATA services | $3,972,000 | $6,067,000 | $6,390,000 | $6,570,000 |
| *Scenario 2: Net Increase over Baseline* | **$3,523,000** | **$5,601,000** | **$5,907,000** | **$6,072,000** |
| Scenario 3: Half-price fares and passes for low-income residents on DASH and WMATA services | $1,785,000 | $2,517,000 | $2,656,000 | $2,737,000 |

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| Costs | FY 2022 | FY 2023 | FY 2024 | FY 2025 |
|---|---|---|---|---|
| *Scenario 3: Net Increase over Baseline* | **$1,336,000** | **$2,051,000** | **$2,173,000** | **$2,239,000** |

While Scenario 1 would only apply to the DASH system (as opposed to both DASH and WMATA services), it would provide a benefit to significantly more individuals than Scenarios 2 and 3. All DASH system riders would benefit from Scenario 1, with the benefit being accessible to the more than 33,000 City residents with household incomes below 200 percent of the federal poverty level. By contrast, that the calculations assume that 8,425 SNAP-participating individuals would receive the benefits of Scenarios 2 and 3; however, exact program participation levels are unknown, and could be be between 5,000 and 10,000 individuals.

## Program Evaluation

Program evaluation will enable the City to determine whether the goals of the fare program are being met, what tangible benefits the program has achieved, and any changes that may be needed to the program. Tech Memo 1 includes a list of potential performance measures recommended for the City's use to assess the effectiveness of the program. A few key measures from the list include:

- The number of individuals using the program
- Ridership levels by program participants
- Total system ridership
- On-time performance
- Crowding levels
- Program cost (total and per low-income resident)
- Qualitative rider feedback on program impacts (from annual surveys)

## Findings Summary

Any of the three scenarios would have significant benefits for low-income residents in the City of Alexandria. **Table ES-3** summarizes key advantages and disadvantages of each scenario, encompassing both quantitative and qualitative characteristics.

*Table ES-3: Summary of Scenario Advantages and Disadvantages*

| Scenario | Advantages | Disadvantages |
|---|---|---|
| Scenario 1: Free fares for all on DASH | - Easiest for the City to implement<br>- Benefits the largest number of residents<br>- Easiest to access for participants<br>- Enhanced operational performance and reduced travel times<br>- Lowest cost relative to number of residents (low-income and total) served<br>- Greatest increase in ridership (11% in FY 2025) and associated environmental benefits | - Relatively high net cost ($5.0 million in FY 2025)<br>- Does not enhance affordability of WMATA services<br>- May reduce revenue to WMATA<br>- Offers less support for an integrated regional transit network |
| Scenario 2: Free fares for low-income residents on DASH and WMATA | - Highest level of benefit for participants<br>- Benefit provides free access to both DASH and WMATA services | - Highest net cost ($6.1 million in FY 2025)<br>- Fewer program beneficiaries compared to Scenario 1<br>- Greater administrative burden for the City and participants |

| Scenario | Advantages | Disadvantages |
|----------|-----------|---------------|
| Scenario 3: Half-price fares and passes for low-income residents on DASH and WMATA | ■ Provides more affordable access to both DASH and WMATA services<br>■ Lowest net cost ($2.2 million in FY 2025) | ■ Lower level of benefit to participants<br>■ Fewer program beneficiaries compared to Scenario 1<br>■ Greater administrative burden for the City and participants<br>■ Lowest increase in ridership (5% in FY 2025) and associated environmental benefits |

# INTRODUCTION

The City of Alexandria and the Metropolitan Washington Council of Governments (MWCOG) have identified goals that they would like to achieve by establishing a program that would make public transportation more affordable for the City of Alexandria's residents with low incomes. These goals are:

- Make transit more affordable for City residents who struggle to afford the cost of fares.
- Enhance equity and access to opportunities in the City.
- Maintain or enhance operational performance of the DASH system while maintaining or increasing bus operator safety.
- Minimize or eliminate the administrative burden and cost of current fare collection systems.
- Advance regional coordination to increase the affordability of public transportation for low-income residents throughout the region.

This memorandum builds upon the findings from Technical Memorandum 1 (Tech Memo 1), which established these goals for the program, estimated the number of residents within the City of Alexandria that would be eligible for a reduced-fare or fare-free transit program, described findings from a literature review, and identified lessons learned from existing reduced fare and fare-free programs at transit agencies across the United States. It also identified three affordable fare scenarios for the City (described below) based on a comprehensive view of the advantages and considerations of various potential fare program options. This memorandum estimates the expected ridership and cost implications of these three selected scenarios.

# SCENARIOS FOR STUDY

The scenarios identified for further evaluation in Tech Memo 1 are shown in **Table 1.** They are free fares for all DASH riders (Scenario 1), free fares for City of Alexandria low-income residents on both DASH bus service and WMATA Metrobus and Metrorail services (Scenario 2), and half-price fares for City of Alexandria low-income residents on both DASH bus service and WMATA Metrobus and Metrorail services (Scenario 3).

*Table 1: Fare Program Scenarios*

| Scenario | Applicable Agencies' Services | Eligibility Criteria and Supporting Documentation |
|---|---|---|
| Scenario 1: Free fares for all | DASH | N/A |
| Scenario 2: Free fares for low-income residents | DASH, WMATA | Ability to prove participation in SNAP or TANF programs |
| Scenario 3: Half-price fares and passes for low-income residents | DASH, WMATA | Ability to prove participation in SNAP or TANF programs |

## Program Design

Scenario 1 would entail elimination of fare collection on DASH buses. Some marketing would be required to inform residents of this change, but there would be no other administrative costs induced. Scenario 2 requires coordination with the City of Alexandria Department of Community & Human Services (DCHS). In this scenario, DCHS would offer all SNAP participants a monthly unlimited pass that would be downloadable to DASH's mobile app (or available via a SmarTrip® card provided at the request of the participant). The scenario assumes the City would reimburse WMATA a fixed amount for each pass distributed, with the understanding that some participants will use more services, and some will use fewer. The price of each monthly pass would

be subject to negotiation (and if the program were to initially be rolled out as a pilot, there would be additional data to inform the price). Under Scenario 3, DCHS would provide all SNAP recipients with a half-price discount that would be downloadable to DASH's mobile app (or on a SmarTrip® card at the request of the participant). The half-price discount would apply both to monthly unlimited passes and single-ride fares. The City would be responsible for paying WMATA for half of the costs of the passes and fares purchased using this discount.

## Program Participants

Under Scenario 1, all residents in the City of Alexandria, and anyone riding DASH, would benefit from the program. There are 18,100 City residents over the age of four (the threshold for paying a DASH fare) from households with incomes at or below 130 percent of FPL, the threshold for low-income in this study, and over 33,000 City residents earing at or below 200 percent of the FPL. In Scenarios 2 and 3, low-income residents are defined as those individuals that are eligible for SNAP, or any other more restrictive federal financial assistance programs such as Temporary Assistance for Needy Families (TANF). In general, SNAP recipients' gross household incomes must be at or below 130 percent of FPL, with some exceptions. Deductions for basic expenses, and additional criteria related to available financial resources are also considered in assessing SNAP eligibility.[1] Because SNAP has the least restrictive criteria of all of the major financial assistance programs available to City residents, using SNAP eligibility guidelines enables the City of Alexandria's fare program to apply to more low-income individuals while streamlining the program's administration.[2]

Under Scenarios 2 and 3, current SNAP benefit recipients in the City of Alexandria above the age of four are used as a proxy for the number of program participants (8,425). Because Virginia excludes vehicle ownership in considering whether someone is eligible to receive SNAP benefits,[3] it is likely that some SNAP recipients travel by vehicle rather than using transit and would not elect to participate in the City's fare program.[4] On the other hand, it is also possible that the ability to receive free or reduced transit fares could induce some individuals to sign up for SNAP benefits to take advantage of the fare program as well, as there are currently over 8,000 City residents who qualify for SNAP but do not receive the benefit. (SNAP participation levels mirror the state of the economy; data from July 2020, during the recession, were used for this analysis. No changes in the number of program participants between FY 2022 and FY 2025 were assumed.) To avoid underestimating the program's cost implications under Scenarios 2 and 3, this analysis assumes that all SNAP recipients will participate in the fare program, after a phase-in period in the first year. It is therefore possible that the program costs could be lower than estimated in this analysis, or that the City could, within the assumed budget, extend the benefit to more individuals. It is also possible that the reimbursement agreement between the City and WMATA would only apply to passes actually used on the WMATA system; i.e., if someone received a pass from the City but did not ever use it on the WMATA system, for example, it would not "trigger" a payment to WMATA.

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[1]  For more information, see Virginia Department of Social Services, SNAP Income Chart, https://www.dss.virginia.gov/files/division/bp/fs/intro_page/income_limits/SNAP_Income_Chart_2020.pdf.

[2]  A recent study that reviewed reduced and free transit programs in California noted that having simple eligibility requirements (such as the same threshold as another program such as SNAP) reduces the potential for people who are eligible to be deterred from applying due to confusion or lack of clarity about eligibility. For more information, see University of California, Irvine, A Review of Reduced and Free Transit Fare Programs in California, January 2020, https://escholarship.org/uc/item/74m7f3rx.

[3]  Palacio, Victoria. Vehicle Asset Limits and License Suspensions: Disproportionate Impact on Low-Income Communities and Communities of Color. Center for Law and Social Policy Report, October 2016, https://www.clasp.org/sites/default/files/public/resources-and-publications/publication-1/vehicle-asset-limit-brief-final-draft-1.pdf.

[4]  Information regarding the percentage of SNAP recipients that have access to personal vehicles is not available, nor is it known how frequently they drive or whether vehicle-owning SNAP recipients use transit and would therefore be likely to participate in the fare program.

# PROGRAM ADMINISTRATION

## Program Administration Roles under Scenarios 2 and 3

Program administration considerations primarily apply to Scenarios 2 and 3, given that these two scenarios require eligibility certification and coordination between DASH, the City's Department of Community & Human Services (DCHS), and WMATA. **Table 2** shows likely roles in program implementation, including both City employees and external partners, and their key responsibilities. Some tasks such as the marketing campaign establishment will occur once at startup, whereas other tasks will be completed regularly, infrequently, or on an annual basis as part of staff duties. All proposed administrative responsibilities in **Table 2** will be conducted within the scope of the employees' regular duties except for some marketing-related tasks, which have been incorporated into the cost estimates.

*Table 2: Program Roles and Responsibilities under Scenarios 2 and 3*

| Agency | Main Responsibilities |
|---|---|
| City of Alexandria Transportation and Environmental Services (T&ES) Department and DASH | ■ Coordination with WMATA to establish the program <br> ■ Working with vendor to program discounts into DASH Bus App <br> ■ Preparing a marketing plan involving partner agencies <br> ■ Marketing the program to the public <br> ■ Conducting program evaluation (including annual surveys) and reporting results to decision-makers |
| City of Alexandria Department of Community & Human Services (DCHS) | ■ Marketing the program to eligible clients <br> ■ Verifying program eligibility <br> ■ Issuing SmarTrip® cards in-person and through the mail <br> ■ Providing customer service function for the program (answering questions, assisting with lost or stolen cards, etc.) <br> ■ Liaising with community partners |
| WMATA | ■ Coordination with the City to develop program <br> ■ Programming SmarTrip® cards and handling technology-related issues |
| Community Partners | ■ Program marketing <br> ■ Assisting with applications |

The City, represented by T&ES, and WMATA would work together to establish the program, including reaching cost allocation agreements and identifying and implementing a work process for coding SmarTrip® cards for program participants and providing them to DCHS for distribution. DASH would also work with its vendor to program reduced fares and passes into the DASH Bus app. The City could utilize or build upon existing WMATA application forms for other reduced rate SmarTrip® cards to develop an application form.

Applicants would interface with DCHS for the eligibility verification and certification process. DCHS' staff of 25 benefits specialists and five supervisors already work with the over 4,000 households enrolled in SNAP. DCHS staff meet with clients two to three times annually, including a six-month interim report and an annual renewal meeting. The agency is therefore well-positioned to market the program to existing and qualifying applicants with little additional effort due to their frequent client contact, and to confirm whether participants are eligible to continue participating in the fare program on an annual basis.

To participate in the program, applicants would complete a standalone application on their own or with the assistance of their assigned DCHS benefits worker and provide documentation (likely already available) showing that they have participated in SNAP at some point within the last year. It is assumed that, for the purposes of keeping the administrative burden of the program low (at least as the program is initially implemented), participation in SNAP or another federal financial assistance program with even stricter income limits (e.g., TANF) would be a prerequisite to participate in the fare program. Over time, the City could

reevaluate whether it would like to expand eligibility and/or "decouple" program eligibility from SNAP or TANF participation.

On an ongoing basis, DCHS employees would also maintain program records and issue (in person and by mail) mobile app codes or SmarTrip® cards to program participants. As the agency already sends documents and cards via mail, it would be reasonably simple to include mobile app code information or SmarTrip® cards when they send materials to participants. In the long-term, this process could be further streamlined for applicants already receiving benefits by rolling it into the State of Virginia's CommonHelp portal. Once certified, DCHS could issue a SmarTrip® card or mobile app code valid for free or discounted fares.

If a program participant no longer qualifies for SNAP, The City would inform WMATA to remove the benefit from the SmarTrip® card. If the participant used the DASH Bus app, DASH would notify its vendor to withdraw the benefit from the app user. One DCHS staff member would serve as the primary program contact to internal and external parties, including potential applicants, interested partner organizations, and internal stakeholders, to answer questions about the program and coordinate with T&ES staff. Because DCHS already handles application review and certification within the course of regular meetings with clients, it is not anticipated to increase existing workloads extensively to undertake certification for a fare-free or discounted pass program.

T&ES and DASH employees will also have responsibility for monitoring the program on an ongoing basis. They will collaborate with DCHS on an as-needed basis on program administration, and with WMATA on broader initiatives such as establishing and implementing fare capping. DASH and T&ES employees will coordinate to conduct annual program surveys and conduct program evaluation. In most cases, there will be limited marginal costs to gather data for program evaluation since many data are already be collected (e.g., ridership). However, surveys will help gather additional information on rider satisfaction with the program, transit usage among participants, and program performance, as described in more detail below. Some labor hours will be necessary for development of surveys, as well as ongoing efforts to distribute and collect surveys each year, analyze the findings, and conduct reporting.

## Marketing

The City can pursue a variety of marketing approaches for the fare program (under any of the three scenarios). It is assumed that a free fare for all on DASH program (Scenario 1) would require less marketing than programs targeted to individuals with low incomes, since this scenario just requires a rider to board the bus without any additional targeting or certification required; however, making the fare changes known to the public would be beneficial. For Scenarios 2 and 3, City staff from various departments can take a more active role in promoting the program; for DCHS, for example, this would occur by introducing it to SNAP benefit recipients and assisting clients with the application process. The City also has an outreach coordinator that could market the program to City residents.

Aside from efforts to market the program to residents receiving or applying for SNAP benefits, there is also a large portfolio of external-facing marketing methods from which to choose. In addition to paid advertising in local media outlets, the City could consider coordination with partner agencies to amplify messaging through each agency's social media accounts and mailing lists and utilizing communication methods that the City already uses to communicate with residents. As there are many variables that influence the cost of marketing, including the number of readers or listeners and the time of day and competition, the City would want to tailor its methods to reach target populations. Some paid advertising methods include:

- Local radio and newspaper ads, including Spanish-language media.
- Social media and other online ads.
- Ads on community websites and newspapers.

The City may also explore lower-cost, in-house options as well as earned media. Some lower cost advertising methods include:

- Targeted outreach to Northern Virginia Community College and other educational institutions in the City to inform to college-age and older students about the program. Many students have low incomes and some experience food insecurity. [5]
- Targeted outreach to major employers.
- Social media posts on YouTube, Facebook, Twitter, and Instagram by the City, DASH, and partner organizations (Northern Virginia Transportation Commission, MWCOG, Commuter Connections, etc.).
- Email announcements/eNewsletters sent to City, DASH, and partner agencies' mailing lists.
- Updates on the City and DASH's webpages.
- Press releases and a press event.
- In-bus announcements, posters with QR codes, and/or print brochures.
- Bus stop ads.
- Push messages through the DASH Bus App/rider alerts/City messaging system.
- Messages sent to registered SmarTrip® card users.

In addition, the City could engage community organizations serving targeted populations such as libraries, schools, churches, and other community, charitable, or non-profit groups to help spread the word. Community-based organizations could also help applicants complete applications on an as-needed basis. In the long-term, the City could explore having select community partners assist with the program enrollment process – an arrangement that has seen some success for similar programs in Minneapolis and Los Angeles.

# RIDERSHIP PROJECTIONS

Studies show that fare reduction programs draw new riders to transit and incentivize existing riders to increase their usage of transit. Changes in ridership behavior are generally proportionate to the level and extent of fare changes. [6] This section projects ridership under each of the three scenarios for FY 2022 through FY 2025. Understanding how ridership is likely to change is a critical part of planning and evaluating options for the City's fare program.

## Methodology

The methodology used to project ridership under each of the scenarios is based on available service data for the DASH, Metrobus, and Metrorail systems; demographic information provided by riders through on-board surveys conducted by DASH and WMATA; and findings related to ridership increases and fare elasticities from the literature review and case examples outlined in Tech Memo 1. Metrobus and Metrorail ridership figures in this report are based on ridership (boardings) in the City of Alexandria only. The general methodology for developing ridership projections follows the steps below. Steps 1-3 outline the approach to developing a "Baseline" scenario, and steps 4-8 are repeated for each fare program scenario. [7]

1. Project future DASH ridership using FY 2019 ridership and adjusting for changes to system vehicle revenue hours (VRHs) in the future inclusive of the phased implementation of the ATV plan, assuming no changes to passengers per existing VRH and a slightly reduced passengers per VRH for new service hours. For WMATA Metrobus and Metrorail, use FY 2019 ridership data.
2. Subtract ridership according to post-pandemic recovery assumptions (described in more detail below).

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[5]  Melissa N. Laska, et. al, Addressing College Food Insecurity: An Assessment of Federal Legislation Before and During Coronavirus Disease-2019, October 2020, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7450237/.

[6]  TCRP, Implementation and Outcomes of Fare-Free Transit Systems, 2012, https://www.nap.edu/download/22753.

[7]  An alternative way to estimate the likely ridership changes due to the fare program is run the MWCOG's regional travel demand model with the fare changes programmed into it.

3. For FY 2023 and later, add expected increase in ridership from WMATA's proposed $2.00 discounted Metrorail transfer policy. In February 2020, WMATA estimated that this proposed policy would lead to an increase of 30,000 trips on the DASH system. These 30,000 trips have been scaled based on COVID-19 ridership recovery assumptions.

4. Identify the population to which the discount or free fares applies. For Scenario 1, this is all DASH riders. For Scenarios 2 and 3, this is low-income riders.

5. Adjust ridership to account for trips that are not influenced by price, which includes trolley ridership (as the trolley is already free) and pass ridership (as pass holders can already ride as much as they wish with no additional marginal cost).

6. Adjust for ridership that switches between modes due to price differences (e.g., from WMATA Metrobus to DASH when DASH is free in Scenario 1, or from bus to rail when rail becomes free for low-income riders in Scenario 2).

7. Apply expected growth in ridership due to free or discounted fares (to adjusted ridership amounts identified in step 6).

8. Calculate total ridership by adding the baseline ridership and expected increases in ridership.

The projected ridership tables later in this section list total ridership projections for each year as well as increase rates. The increase rates represent the increase over the Baseline Scenario, not year-to-year increases. Year-to-year changes in ridership depend on the level of service offered and how quickly ridership increases following the pandemic, but induced demand due to fare changes are expected to change in the first program year and remain at the higher level in future years.

## Baseline Scenario Development with COVID-19 Ridership Recovery

Projecting the ridership impacts of the City's fare program requires identifying what the ridership would be absent any fare program being implemented. The Baseline Scenario is compared to the ridership calculated for Scenarios 1 through 3 to understand the impact due to the fare program. Identifying ridership under the Baseline Scenario is made more complex due to two major changes occurring in the City: (1) service changes and increases resulting from the Alexandria Transit Vision (ATV) Plan and (2) reductions in ridership due to the COVID-19 pandemic. In addition, WMATA's proposed policy to provide $2.00 reduced transfers between Metrorail and bus also adds some ridership to DASH in the Baseline for FY 2023 and subsequent years. The approaches to incorporating these two changes into the baseline scenario are each described below.

### Alexandria Transit Vision (ATV) Expansion

The ATV proposes altered routes and expanded vehicle revenue hours (VRH) of service, shown in **Table 3**, slated to begin in FY 2022 and continue through longer-term changes in FY 2030.[8] Therefore, it is likely that DASH ridership will increase even without any change in fares. To approximate ridership increases due to expanded service, an estimated VRH of 13.0 was multiplied by additional planned VRH (above current service levels) to estimate ridership in each year, with planned VRH based on phased implementation of the ATV recommendations.

*Table 3: Planned Vehicle Revenue Hours, FY 2022–FY 2025*

|  | FY 2022 | FY 2023 | FY 2024 | FY 2025 |
|---|---|---|---|---|
| Planned Vehicle Revenue Hours | 280,000 | 305,000 | 325,000 | 325,000 |

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[8] FY22 Transit Development Plan (TDP), subject to change.

## COVID-19 Pandemic Ridership Impact and Recovery

The COVID-19 pandemic has had a profound impact on public transit ridership across the country. Shutdowns and shifts to telework began in the spring of 2020; by fall 2020, there were early signs that public transit ridership was starting to recover. In April and May of 2020, DASH ridership dropped to 20 percent of FY 2019 ridership but rebounded to approximately 40 percent of pre-COVID ridership in July 2020 through November 2020. WMATA's Metrobus and Metrorail systemwide ridership dropped to as low five percent of previous year ridership in April and May of 2020. [9] Both rebounded more slowly than DASH ridership, remaining at around 12 percent until December 2020. In January 2021, Metrobus ridership had recovered to 29 percent of previous year ridership, while Metrorail remained at 11 percent.

In its last report from 2020, the Bureau of Transportation Statistics (BTS) found that 59 percent of households in the Washington-Arlington-Alexandria Metropolitan Statistical Area (MSA) had substituted some or all of their typical in-person work for telework due to the pandemic. [10] The national average was 37.5 percent. The ability to telework varied significantly by income, however, with only 13.8 percent of households earning less than $25,000 replacing in-person work with telework. For households earning between $100,000 and $149,999, 72 percent replaced at least one in-person job with teleworking. [11] These data suggest that a majority of low-income workers were unable to switch to telework during the pandemic and would therefore benefit from reduced or free fares in the COVID-19 recovery period as they continue to report for in-person work.

Some projections have been made about future public transit ridership in the post-pandemic recovery period. These projections tend to be tied to the state of the economy and consider how unemployment rates or job growth may impact ridership. A recent study by the American Public Transportation Association (APTA) estimated that it may take until 2025 for the economy to return to pre-pandemic ridership levels, which translates into lower ridership levels and reduced revenue for agencies in the coming years. [12] The report also mentions that post-pandemic ridership will be impacted by pandemic-induced, temporary work from home scenarios becoming permanent. However, there are differences by mode in how the COVID-19 pandemic has impacted transit ridership. The APTA report notes that buses lost lower percentages of riders compared to higher-priced commuter rail services (such as Metrorail) during the pandemic. [6]

Based on this body of research, post-pandemic recovery assumptions used in the ridership estimates are shown in **Table 4**. DASH bus ridership is expected to be at 50 percent of FY 2019 levels in FY 2022, following existing trends, and gradually return to 100 percent of pre-pandemic ridership by FY 2025 (before taking ATV-related changes into account). WMATA Metrobus and Metrorail projections are based on WMATA's quarterly ridership projections for FY 2022. [13] Similar to DASH, the analysis assumes Metrobus ridership will gradually return to 100 percent of pre-pandemic ridership by FY 2025. Rail ridership recovery is expected to lag behind bus ridership recovery, only reaching 75 percent of pre-pandemic ridership by FY 2025. This is due to the steeper declines experienced for this mode as a result of the pandemic, and is a service more likely to be used by higher-income workers whose work is more likely to be able to be done remotely on a more permanent basis.

## Baseline Scenario Ridership

**Table 4** provides the projected ridership levels for FY 2022 to FY 2025. These ridership figures are used as the comparison point for each fare program scenario. Projected DASH ridership is based on FY 2019 ridership, the change in revenue hours due to ATV implementation, COVID-19 ridership impacts, and induced ridership due to the proposed Metrorail transfer policy (assumed to go into effect in FY 2023), the latter of which has also

[9] WMATA Bus Ridership Data Viewer: https://www.wmata.com/initiatives/ridership-portal/Bus-Data-Portal.cfm & Rail Ridership Data Viewer: https://www.wmata.com/initiatives/ridership-portal/Rail-Data-Portal.cfm

[10] BTS, Effects of COVID-19 on Travel Behavior, Accessed February 2021, https://www.bts.gov/effects-covid-19-travel-behavior.

[11] BTS, Effects of COVID-19 on Travel Behavior by Income Group, Accessed February 2021, https://www.bts.gov/effects-covid-19-travel-behavior-income-group.

[12] APTA, The Impact of the COVID-19 Pandemic on Public Transit Funding Needs in the U.S., January 2021, https://www.apta.com/wp-content/uploads/APTA-COVID-19-Funding-Impact-2021-01-27.pdf.

[13] WMATA FY2022 Operating Budget Work Session, February 25, 2021. https://www.wmata.com/about/board/meetings/board-pdfs/upload/3A-FY2022-Operating-Budget-Work-Session.pdf.

been scaled based on COVID-19 recovery assumptions. WMATA estimated a total 30,000 induced trips on DASH at pre-pandemic ridership levels. WMATA Metrobus and Metrorail projected ridership in the City of Alexandria is based on FY 2019 ridership adjusted for COVID-19 ridership impacts.

FY 2022 DASH ridership is expected to be nearly 2.3 million, while FY 2025 ridership is expected to grow to over 5.2 million. Metrobus ridership in the City of Alexandria in FY 2022 is expected to be nearly 1.5 million, and in FY 2025 it is projected to be 3.1 million, back to FY 2019 levels. Metrorail ridership in the City of Alexandria is expected to be 600,000 trips in FY 2022 and remain below FY 2019 levels through FY 2025.

*Table 4: Projected Ridership Under the Baseline Scenario, FY 2022–FY 2025*

| | FY 2022 | FY 2023 | FY 2024 | FY 2025 |
|---|---|---|---|---|
| **DASH** | | | | |
| Ridership (based on FY 2019 ridership levels and planned VRHs) | 4,605,000 | 4,930,000 | 5,190,000 | 5,190,000 |
| *Expected ridership level due to COVID-19 pandemic (compared to FY 2019)* | *50.0%* | *75.0%* | *90.0%* | *100.0%* |
| COVID-19 ridership impact | -2,303,000 | -1,233,000 | -519,000 | - |
| Increase in DASH ridership due to WMATA's free transfers to/from Metrorail policy | | 23,000 | 27,000 | 30,000 |
| **Projected Ridership** | **2,303,000** | **3,720,000** | **4,698,000** | **5,220,000** |
| **WMATA Metrobus** | | | | |
| FY 2019 ridership in the City of Alexandria | 3,136,000 | 3,136,000 | 3,136,000 | 3,136,000 |
| *Expected ridership level due to COVID-19 pandemic (compared to FY 2019)[14]* | *46.8%* | *71.8%* | *86.8%* | *100.0%* |
| COVID-19 ridership impact in the City of Alexandria | -1,667,000 | -883,000 | -412,000 | - |
| **Projected Ridership** in the City of Alexandria | **1,469,000** | **2,253,000** | **2,723,000** | **3,136,000** |
| **WMATA Metrorail** | | | | |
| FY 2019 ridership in the City of Alexandria | 3,820,000 | 3,820,000 | 3,820,000 | 3,820,000 |
| *Expected ridership level due to COVID-19 pandemic (compared to FY 2019)* | *16.3%* | *40.0%* | *50.0%* | *75.0%* |
| COVID-19 ridership impact in the City of Alexandria | -3,196,000 | -2,292,000 | -1,910,000 | -955,000 |
| **Projected Ridership in the City of Alexandria** | **624,000** | **1,528,000** | **1,910,000** | **2,865,000** |
| **Projected Ridership (DASH, Metrobus, Metrorail) in the City of Alexandria** | **4,396,000** | **7,501,000** | **9,332,000** | **11,221,000** |

## Scenario 1: Free Fares for All on DASH

Under Scenario 1, DASH fares would be free for everyone, while Metrobus and Metrorail fares would remain the same. This means that DASH ridership would increase over baseline ridership because of free fares. The expected growth in ridership due to free fares is 32 percent, but this is applied only to a portion of ridership,

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[14] FY 2022 expected ridership levels for WMATA services (46.8 and 16.3 percent of pre-pandemic ridership on Metrobus and Metrorail, respectively) are based on WMATA's FY 2022 budget projections.

excluding Trolley ridership, which is already free, and rides paid for with passes, which allow the user unlimited rides.

In addition, some Metrobus riders in Alexandria would likely choose to switch to DASH if they could complete their trip using a free service rather than a paid service. This is calculated by considering a portion of ridership on overlapping segments between DASH and Metrobus services. A small increase in Metrorail ridership has been added; it is assumed that free DASH fares would encourage and support transit use generally, as well as reduce the cost burden of other transit options. Assumptions used to create the ridership projection in Scenario 1 are listed in **Table 5**.

*Table 5: Assumptions Used for Ridership Estimates Under Scenario 1*

| Description | Assumption | Source/Notes |
|---|---|---|
| Projected increase in (non-pass and non-Trolley) DASH ridership based on free fares | 32.0% | Average growth rate based on Advance Transit, Corvallis, and DC Circulator fare-free pilot case studies. [15] <br> **This is applied only to a portion of ridership**, excluding Trolley ridership (which is already free) and rides paid for with passes (which allow the user unlimited rides). |
| DASH Trolley ridership as a percentage of total DASH ridership | 19.4% | From DASH FY 2019 ridership. <br> This is used to determine how many rides are already free in the baseline, and therefore are not subject to the increase rate. This does not represent the percent of trolley rides once free fares are implemented, which may change. |
| Percentage of all DASH ridership paying with passes | 15.6% | From DASH's 2013 Rider Survey; this includes: 7-day regional bus pass; senior/persons with disabilities 7-day regional bus pass; BRAC ID; bus-to-bus transfers; monthly DASH pass; rail-to-bus transfers; Trans Link card. <br> This percentage is used to determine how many rides are already "free" (since pass holders can take unlimited trips) in the baseline, and therefore should not be subject to the increase rate. |
| Expected switch in ridership from Metrobus in the City of Alexandria to DASH if DASH were free but Metrobus were not | 2.9% | Metrobus ridership along shared/overlapping corridors was calculated by summing ridership at stops along Duke Street and along Seminary Road between Beauregard St. and the hospital (which will still have some overlapping Metrobus and DASH routes under the ATV bus network) and identified to be 5.7 percent of all Metrobus ridership in the City. The analysis assumes that only 50% of riders at these stops would switch from Metrobus to DASH. Some riders' trips can be completed with either service given the high number of destinations in the corridor (hospital, dense housing, commercial destinations, Mark Center) and overlapping nature of some routes beyond the segment. |
| Estimated increase in Metrorail ridership in the City of Alexandria if the DASH system were free to ride | 5.0% | Making DASH fares free will make riding the bus easier for everyone, supporting transit ridership in general and reducing cost burden, leading to a modest increase in Metrorail ridership. |

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**Table 6** shows expected ridership for each service provider for FY 2022 to FY 2025 under Scenario 1. DASH's expected ridership increases from 2.8 million in FY 2022 to 6.4 million in FY 2025. This represents an increase in ridership from the baseline of 23.1 percent for each year. Metrobus is expected to lose 2.9 percent of its ridership in the City, as it is assumed that some riders will switch to free DASH service. Metrorail ridership is expected to increase, since free fares will encourage more transit usage generally and because Alexandria residents (of all income levels) will save money on the bus that they could use for more expensive transportation (i.e., similar to the way free bus trips for riders connecting to rail service would be expected to increase transit ridership). Overall, ridership in Alexandria on all three services is expected to increase from 4.9 million in FY 2022 to 12.4 million in FY 2025 and would increase about 11.2 percent compared to the Baseline Scenario.

*Table 6: Projected Ridership for Scenario 1, FY 2022–FY 2025*

| | FY 2022 | FY 2023 | FY 2024 | FY 2025 |
|---|---|---|---|---|
| **DASH** | | | | |
| Baseline Scenario Ridership | 2,303,000 | 3,720,000 | 4,698,000 | 5,220,000 |
| Switch from Metrobus to DASH | 42,000 | 64,000 | 78,000 | 89,000 |
| Expected increase in ridership because of free fares | 493,000 | 795,000 | 1,002,000 | 1,115,000 |
| **Projected DASH Ridership** | **2,837,000** | **4,579,000** | **5,778,000** | **6,424,000** |
| **Increase Rate over Baseline** | **23.2%** | **23.1%** | **23.0%** | **23.1%** |
| **WMATA Metrobus** | | | | |
| Baseline Ridership | 1,469,000 | 2,253,000 | 2,723,000 | 3,136,000 |
| Switch from Metrobus to DASH | -42,000 | -64,000 | -78,000 | -89,000 |
| **Projected Metrobus Ridership** in the City of Alexandria | **1,427,000** | **2,189,000** | **2,646,000** | **3,046,000** |
| **Increase Rate over Baseline** | **-2.9%** | **-2.8%** | **-2.8%** | **-2.9%** |
| **WMATA Metrorail in the City of Alexandria** | | | | |
| Baseline Ridership | 624,000 | 1,528,000 | 1,910,000 | 2,865,000 |
| Assumed increase in Metrorail ridership | 31,000 | 76,000 | 96,000 | 143,000 |
| **Projected Metrorail Ridership** | **655,000** | **1,604,000** | **2,006,000** | **3,008,000** |
| **Increase Rate over Baseline** | **5.0%** | **5.0%** | **5.0%** | **5.0%** |
| **Projected Ridership in the City of Alexandria (DASH, Metrobus, Metrorail)** | **4,920,000** | **8,372,000** | **10,429,000** | **12,479,000** |
| **Increase Rate over Baseline** | **11.9%** | **11.6%** | **11.8%** | **11.2%** |

## Scenario 2: Free Fares for Low-Income Residents on DASH and WMATA

In Scenario 2, free fares would be available for low-income City residents on DASH and WMATA services. This scenario would lead to an increase in low-income ridership, while non-low-income ridership is unlikely to be affected. Low-income riders are assumed to increase their transit ridership by 50 percent when fares are free, with the assumed growth rate applied to low-income ridership after excluding the portion that is Trolley and pass ridership. Unlike Scenario 1, where the growth rate applied only to DASH services, this growth rate applies to low-income trips within the City across DASH, Metrobus, and Metrorail services.

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Program participants are assumed to be SNAP recipients who live in the City of Alexandria. Induced ridership is scaled to program participation take-up, which is assumed to be 62.5 percent of participants in the first program year (i.e., one quarter of SNAP recipients are enrolled on the first day of each quarter throughout the first year of implementation) and full participation in subsequent years. Metrobus is expected to lose a portion of the ridership increase to Metrorail in one segment of the network where the two services substantially overlap, as the price differential between bus and rail will have been eliminated for program participants. Assumptions used to create the ridership projection in Scenario 2 are listed in **Table 7**.

*Table 7: Assumptions Used for Ridership Estimates Under Scenario 2*

| Description | Assumption | Source/Notes |
|---|---|---|
| Percentage of DASH riders who are low-income | 27.6% | Estimated from DASH's 2013 Rider Survey by comparing household income and household size to estimate the number of riders below 130% FPL |
| Percentage of Metrobus riders who are low-income within the City of Alexandria | 24.9% | From 2018 Metrobus Survey; used average household size to estimate the number of riders below 130% of FPL |
| Percentage of Metrorail riders who are low-income within the City of Alexandria | 5.8% | From 2016 Metrorail Survey, riders with income below $30,000 |
| Projected ridership increase among program participants | 50.0% | Extrapolated from Low-Income Transit Rider study in Boston; increase in ridership as the discount increases, but at slightly lower rate. **This is applied only to a portion of ridership**, excluding Trolley ridership (which is already free) and rides paid for with passes (which allow the user unlimited rides). |
| DASH Trolley ridership as a percent of total DASH ridership | 19.4% | From DASH FY 2019 ridership. This is used to determine how many rides are already free in the baseline, and therefore are not subject to the increase rate. This does not represent the percent of trolley rides once free fares are implemented, which may change. |
| Percentage of DASH low-income ridership paying with passes | 14.5% | From DASH's 2013 Rider Survey; this includes: 7-day regional bus pass; senior/persons with disabilities 7-day regional bus pass; BRAC ID; bus-to-bus transfers; monthly DASH pass; rail-to-bus transfers; Trans Link card This is used to determine how many rides are already "free" (since pass holders can take unlimited trips) in the baseline, and therefore are not subject to the increase rate. |
| Percentage of Metrobus low-income ridership paying with passes [16] | 4.6% | From DASH's 2013 Rider Survey; this includes: 7-day regional bus pass; senior/persons with disabilities 7-day regional bus pass; bus-to-bus transfers |

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[16] For the purposes of this analysis, no low-income riders were assumed to use unlimited passes to ride Metrorail services.

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| Description | Assumption | Source/Notes |
|---|---|---|
| Expected switch in ridership from Metrobus to Metrorail if low-income riders could ride either service for free | 0.6% | Metrobus ridership data by stop used in GIS to identify the percentage of all Metrobus boardings in the City that occur along the portions of the 10A and Metroway that overlap with Metrorail (2.3%). Assumed that 25% of these riders would switch to Metrorail. Many low-income riders choose buses over more-expensive rail services; it is likely some riders along the same corridor segments would take rail if there were no price differential. |
| Number of program participants (riders ages 5 and over) | 8,425 | Total SNAP participants (9,554) from the City of Alexandria Department of Community & Human Services (DCHS). The percentage of SNAP recipients who are four and under (who would ride for free) was estimated using U.S. Census Bureau Table B17001, ACS 5-year estimates (11.8%), which identifies the number of children per household by income level. This number assumes all SNAP participants over age four would participate in the program. |
| Program participation rate (take-up) in Year 1 | 62.5% | Assumes that one-quarter of participants are phased in at the beginning of each quarter of Year 1. |
| Program participant take-up in Years 2-4 | 100% | Assumes that all program participants would enroll in the first year. |

**Table 8** shows expected ridership for each service provider for FY 2022 to FY 2025 under Scenario 2. DASH ridership ranges from 2.4 to 5.7 million rides, with an overall increase in ridership of 9.1 percent. WMATA Metrobus ridership ranges from 1.5 to 3.5 million rides, with an increase in ridership of 11.7 percent. Metrorail is expected to experience a smaller increase in ridership, at 3.2 percent. This is due in part to the fact that relatively few low-income riders take Metrorail (likely due to both price as well as the locations where they live) and that many trips in the City cannot be made on Metrorail, which currently has only four stations in the City. Across all three providers, ridership is expected to increase by around 8.3 percent compared to the Baseline Scenario in FY 2025.

*Table 8: Projected Ridership for Scenario 2, FY 2022–FY 2025*

| | FY 2022 | FY 2023 | FY 2024 | FY 2025 |
|---|---|---|---|---|
| **DASH** | | | | |
| Baseline Scenario | 2,303,000 | 3,720,000 | 4,698,000 | 5,220,000 |
| Expected increase in ridership because of free fares for low-income riders | 131,000 | 339,000 | 429,000 | 476,000 |
| **Projected DASH Ridership** | **2,434,000** | **4,060,000** | **5,127,000** | **5,697,000** |
| **Increase Rate over Baseline** | **5.7%** | **9.1%** | **9.1%** | **9.1%** |
| **WMATA Metrobus** | | | | |
| Baseline Ridership | 1,469,000 | 2,253,000 | 2,723,000 | 3,136,000 |
| Switch from bus to rail | -2,100 | -3,200 | -3,900 | -4,500 |
| Expected increase in ridership because of free fares for low-income riders | 108,000 | 266,000 | 322,000 | 370,000 |
| **Projected Metrobus Ridership in the City of Alexandria** | **1,575,000** | **2,516,000** | **3,041,000** | **3,501,000** |
| **Increase Rate over Baseline** | **7.2%** | **11.7%** | **11.7%** | **11.7%** |

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| | FY 2022 | FY 2023 | FY 2024 | FY 2025 |
|---|---|---|---|---|
| **WMATA Metrorail** | | | | |
| Baseline Ridership | 624,000 | 1,528,000 | 1,910,000 | 2,865,000 |
| Switch from bus to rail | 2,100 | 3,200 | 3,900 | 4,500 |
| Expected increase in ridership because of free fares for low-income riders | 12,000 | 46,000 | 57,000 | 85,000 |
| **Project Metrorail Ridership in the City of Alexandria** | **638,000** | **1,577,000** | **1,971,000** | **2,955,000** |
| **Increase Rate over Baseline** | **2.3%** | **3.2%** | **3.2%** | **3.1%** |
| **Projected Ridership (DASH, Metrobus, Metrorail) in the City of Alexandria** | **4,648,000** | **8,153,000** | **10,139,000** | **12,153,000** |
| **Increase Rate over Baseline** | **5.7%** | **8.7%** | **8.7%** | **8.3%** |

## Scenario 3: Half-Price Fares and Passes for Low-Income Residents on DASH and WMATA

In Scenario 3, eligible low-income residents could purchase half-price fares and passes for DASH, Metrobus and Metrorail. This scenario would lead to an increase in low-income ridership, while non-low-income ridership is expected to be unaffected. Low-income riders are assumed to increase their ridership by 30 percent when fares are half price. This growth rate is applied to low-income ridership excluding the portion that is Trolley and pass ridership. As with Scenario 2, this growth rate applies to low-income ridership across all DASH, Metrobus, and Metrorail.

Program participants are assumed to be SNAP recipients who live in the City of Alexandria. Induced ridership is scaled to program participation take-up, which is assumed to be 62.5 percent of participants in the first program year and full take-up in subsequent years. Metrobus is again expected to lose some ridership to Metrorail, since low-income riders are currently likely riding Metrorail less because of its higher cost but could ride Metrorail more if the cost of both services were discounted, which would decrease the cost differential between the two services. Assumptions used to create the ridership projection in Scenario 3 are listed in **Table 9.**

*Table 9: Assumptions Used for Ridership Estimates Under Scenario 3*

| Description | Assumption | Source/Notes |
|---|---|---|
| Percentage of DASH riders who are low-income | 27.6% | Estimated from DASH's 2013 Rider Survey by comparing household income and household size to estimate the number of riders below 130% FPL |
| Percentage of Metrobus riders who are low-income within the City of Alexandria | 24.9% | From 2018 Metrobus Survey; used average household size to estimate the number of riders below 130% of FPL |
| Percentage of Metrorail riders who are low-income within the City of Alexandria | 5.8% | From 2016 Metrorail Survey, riders with income below $30,000 |

| Description | Assumption | Source/Notes |
|---|---|---|
| Projected ridership increase among program participants | 30.0% | From Low-Income Transit Rider study in Boston [17] |
| DASH Trolley ridership as a percent of total DASH ridership | 19.4% | From DASH FY 2019 ridership.<br>This is used to determine how many rides are already free in the baseline, and therefore are not subject to the increase rate. This does not represent the percent of trolley rides once free fares are implemented, which may change. |
| Percentage of DASH low-income ridership paying with passes | 14.5% | From 2013 DASH Rider Survey; this includes: 7-day regional bus pass; senior/persons with disabilities 7-day regional bus pass; BRAC ID; bus-to-bus transfers; monthly DASH pass; rail-to-bus transfers; Trans Link card<br>This is used to determine how many rides are already "free" (since pass holders can take unlimited trips) in the baseline, and therefore are not subject to the increase rate. |
| Percentage of Metrobus low-income ridership paying with passes [18] | 4.6% | From 2013 DASH Rider Survey; this includes: 7-day regional bus pass; senior/persons with disabilities 7-day regional bus pass; bus-to-bus transfers |
| Expected switch in ridership from Metrobus to Metrorail within the City of Alexandria when low-income riders can ride either for half-price | 0.5% | Metrobus ridership data by stop used in GIS to identify the percentage of all Metrobus boardings in the City that occur along the portions of the 10A and Metroway that overlap with Metrorail (2.3%). Assumed that 20% of these riders would switch to Metrorail. Many low-income riders choose buses over more-expensive rail services; it is likely some riders along the same corridor segments would take rail if there were no price differential. |
| Number of program participants (riders ages 5 and over) | 8,425 | Total SNAP participants (9,554) from the City of Alexandria Department of Community & Human Services (DCHS). The percentage of SNAP recipients who are four and under (who would ride for free) was estimated using U.S. Census Bureau Table B17001, ACS 5-year estimates (11.8%), which identifies the number of children per household by income level. This number assumes all SNAP participants over age four would participate. |
| Program participant take-up in the Year 1 | 62.5% | Assumes that one-quarter of participants phased in at the beginning of each quarter of Year 1. |
| Program participant take-up in Years 2-4 | 100% | Assume that all program participants would enroll in the first year. |

**Table 10** shows expected ridership for each service provider for FY 2022 to FY 2025 under Scenario 3. DASH ridership is projected to increase from 2.3 million to 5.5 million trips across the four-year period, with an overall increase in ridership of 5.5 percent. Metrobus ridership increases from 1.5 to 3.3 million rides, with an increase in ridership of 7.1 percent compared to the Baseline Scenario. Metrorail is projected to experience a smaller increase in ridership, at 1.8 percent. Across all three providers, ridership is expected to increase around 5.0 percent.

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[17] Rosenblum, J. 2019. How Low-Income Transit Riders in Boston Respond to Discounted Fares: A Randomized Controlled Evaluation. http://equitytransit.mit.edu/wp-content/uploads/2019/06/whitepaper_v8.pdf#page=5.

[18] For the purposes of this analysis, no low-income riders were assumed to use unlimited passes to ride Metrorail services.

*Table 10: Projected Ridership for Scenario 3, FY 2022–FY 2025*

| | FY 2022 | FY 2023 | FY 2024 | FY 2025 |
|---|---|---|---|---|
| **DASH** | | | | |
| Baseline Scenario | 2,303,000 | 3,720,000 | 4,698,000 | 5,220,000 |
| Expected increase in ridership because of discounted fares | 79,000 | 204,000 | 257,000 | 286,000 |
| **Projected DASH Ridership** | **2,381,000** | **3,924,000** | **4,956,000** | **5,506,000** |
| **Increase Rate over Baseline** | **3.4%** | **5.5%** | **5.5%** | **5.5%** |
| **WMATA Metrobus** | | | | |
| Baseline Ridership | 1,469,000 | 2,253,000 | 2,723,000 | 3,136,000 |
| Switch from bus to rail | -1,700 | -700 | -900 | -1,000 |
| Expected increase in ridership because of discounted fares | 65,000 | 160,000 | 194,000 | 223,000 |
| **Projected Metrobus Ridership in the City of Alexandria** | **1,532,000** | **2,412,000** | **2,916,000** | **3,358,000** |
| **Increase Rate over Baseline** | **4.3%** | **7.1%** | **7.1%** | **7.1%** |
| **WMATA Metrorail** | | | | |
| Baseline Ridership | 624,000 | 1,528,000 | 1,910,000 | 2,865,000 |
| Switch from bus to rail | 1,700 | 700 | 900 | 1,000 |
| Expected increase in ridership because of discounted fares | 7,000 | 27,000 | 34,000 | 50,000 |
| **Projected Metrorail Ridership in the City of Alexandria** | **633,000** | **1,556,000** | **1,944,000** | **2,916,000** |
| **Increase Rate over Baseline** | **1.4%** | **1.8%** | **1.8%** | **1.8%** |
| **Projected Ridership (DASH, Metrobus, Metrorail) in the City of Alexandria** | **4,547,000** | **7,892,000** | **9,816,000** | **11,780,000** |
| **Increase Rate over Baseline** | **3.4%** | **5.2%** | **5.2%** | **5.0%** |

## Ridership Summary

**Table 11** summarizes the projected transit ridership in the City under each scenario. Scenario 1 shows the largest growth in ridership in each year, from 4.4 million rides in FY 2022 to 11.2 million rides in FY 2025, with an overall increase in ridership of 11.6 percent compared to the baseline in each year. Scenario 2 shows modest growth in ridership, with an overall 8.7 percent increase in ridership across all three providers. Scenario 3 has the lowest increase in ridership, with a total of 5.0 percent increase in ridership.

*Table 11: Total Projected Transit Ridership in the City of Alexandria by Scenario for All Providers, FY 2022–FY 2025*

| | FY 2022 | FY 2023 | FY 2024 | FY 2025 |
|---|---|---|---|---|
| **Baseline Scenario** | | | | |
| Projected Ridership in the City | 4,396,000 | 7,501,000 | 9,332,000 | 11,221,000 |
| **Scenario 1** | | | | |
| Projected Ridership in the City | 4,920,000 | 8,372,000 | 10,429,000 | 12,479,000 |
| Increase Rate over the Baseline | 11.9% | 11.6% | 11.8% | 11.2% |

|  | FY 2022 | FY 2023 | FY 2024 | FY 2025 |
|---|---|---|---|---|
| **Scenario 2** | | | | |
| Projected Ridership in the City | 4,648,000 | 8,153,000 | 10,139,000 | 12,153,000 |
| Increase Rate over the Baseline | 5.7% | 8.7% | 8.7% | 8.3% |
| **Scenario 3** | | | | |
| Projected Ridership in the City | 4,547,000 | 7,892,000 | 9,816,000 | 11,780,000 |
| Increase Rate over the Baseline | 3.4% | 5.2% | 5.2% | 5.0% |

# COST PROJECTIONS

This section projects the cost of implementing each of the fare program scenarios for FY 2022 through FY 2025 and explains the methods that were used to develop the cost estimates. Understanding the total cost of the program in each scenario is a critical part of planning and evaluating options for the City's fare program. All dollar figures have been rounded to the nearest thousand.

## Methodology

Total costs for each scenario include, as applicable, the costs of fare collection, fare media, foregone fare revenue, payments from the City to WMATA, program administration and marketing, and additional operational costs. The costs of collecting fares include capital costs such as purchasing fareboxes as well as operating costs such as farebox maintenance. Fare media, in Scenarios 2 and 3, includes money paid to DASH's mobile app vendor for mobile app usage as well as SmarTrip® cards. Foregone fare revenue includes fares that DASH would have otherwise collected (under the Baseline Scenario). This section also analyzes whether ridership increases would affect operations to the extent that they would necessitate additional costs like extra drivers, buses, or trips.

The assumptions required to develop cost estimates are outlined below, along with the resulting total costs. Relevant assumptions include the level of participation in the program, cost agreements between the City of Alexandria and WMATA, anticipated fare media used, and ridership levels among program participants.

## Fare Collection Costs

Fare collection costs include capital and operating expenses. Capital costs of collecting fares are associated with the infrastructure to charge fares, such as fareboxes, the development of the DASH bus app, and potential electronic fare validation readers. These capital costs are not recurring on an annual basis and occur infrequently; the annual amounts shown reflect averages when the costs are spread across the appropriate number of years (10 to 15 for most major capital expenses). This analysis assumes an inflation rate of three percent each year for capital costs. Operating costs include regional cost allocations, cash collection, and farebox maintenance, which are mostly fixed costs independent of ridership.

**Table 12** shows fare collection costs broken into capital and operating costs. These costs are relevant under the baseline and Scenarios 2 and 3. Under Scenario 1, there would be no capital or operating costs for the City because fares would not be collected on DASH. Under Scenario 1, there would be savings of about $456,000 annually from not collecting fares.

*Table 12: Projected Capital and Operating Costs of Collecting Fares, FY 2022[19]*

| Costs | FY 2022 | FY 2023 | FY 2024 | FY 2025 |
|---|---|---|---|---|
| **Capital Costs** | | | | |
| Potential Electronic Validation for DASH Bus Mobile App | $53,000 | $54,600 | $56,300 | $58,000 |
| WMATA Next Generation Fare Boxes | $106,100 | $109,300 | $112,600 | $115,900 |
| Mobile App Development Fee | $15,900 | $16,400 | $16,900 | $17,400 |
| **Total Capital Costs** | **$175,000** | **$180,300** | **$185,700** | **$191,300** |
| **Operating Costs** | | | | |
| Annual ATC Contribution to Regional SmarTrip® Budget | $63,700 | $65,600 | $67,500 | $69,600 |
| Farebox Cash Collection Contract | $53,000 | $54,600 | $56,300 | $58,000 |
| Regular Farebox Repair Costs | $31,800 | $32,800 | $33,800 | $34,800 |
| Farebox Maintenance Expenses | $119,400 | $123,000 | $126,700 | $130,500 |
| **Total Operating Costs** | **$267,900** | **$275,900** | **$284,200** | **$292,800** |
| **Total Annual Capital and Operating Costs of Collecting Fares** | **$443,000** | **$456,200** | **$469,900** | **$484,000** |

## Fare Media Costs

Vendor charges for passes and fares purchased via the DASH mobile app will vary depending on ridership and app usage. The cost analysis assumes a contractual fee of eight percent for the total fare and pass revenue that is purchased via the app, using fare revenue per paying passenger of $1.41 based on FY 2019 data and excluding trolley ridership which is free. Based on historic DASH Bus App usage data, it is estimated that approximately three percent of fares and passes will be purchased using the app during the study period. This fee will be 8 percent in the Baseline Scenario. Under Scenario 1, no fees would be collected, so this would not be applicable.

In Scenarios 2 and 3, program participants would receive a pass through the DASH Bus app, unless the participant requests a SmarTrip® card. This analysis assumes that 70 percent of participants would use the app and 30 percent would request a SmarTrip® card. DASH would negotiate the annual cost per pass downloaded to the app with moovel, the app provider. For the purposes of this analysis, this is assumed to be $4.00 per pass each year, but could be as low as $2.00 per pass, subject to negotiation. (If a price of $2.00 per pass downloaded were to be negotiated, this could result in over $11,000 in savings under Scenarios 2 and 3.) Each SmarTrip® card costs $2.00 and the City expects to replace 2,000 SmarTrip cards each year.

**Table 13** shows the costs of fare media under each scenario. Under the Baseline Scenario, fare media expenses are between $6,00 and $14,000 per year, depending on ridership. Under Scenarios 2 and 3, fare media would cost between $32,000 and $37,000 each year.

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[19] Costs shown throughout this memorandum have been rounded to the nearest $1,000.

*Table 13: Projected Fare Media Costs, FY 2022–FY 2025*

| Costs | FY 2022 | FY 2023 | FY 2024 | FY 2025 |
|---|---|---|---|---|
| **Baseline Scenario** | | | | |
| DASH Bus Mobile App Fees (8% of transactions) | $6,300 | $10,200 | $12,800 | $14,300 |
| **Scenario 1** | | | | |
| DASH Bus Mobile App Fees | $0 | $0 | $0 | $0 |
| **Scenario 2** | | | | |
| DASH Bus Mobile App Fees (non-program participants) | $4,100 | $6,700 | $8,400 | $9,400 |
| DASH Bus Mobile App Fees (program participants) | $23,600 | $23,600 | $23,600 | $23,600 |
| SmarTrip® cards | $5,100 | $4,000 | $4,000 | $4,000 |
| **Total Fare Media Costs** | **$32,800** | **$34,300** | **$36,000** | **$37,000** |
| **Scenario 3** | | | | |
| DASH Bus Mobile App Fees (non-program participants) | $4,100 | $6,700 | $8,400 | $9,400 |
| DASH Bus Mobile App Fees (program participants) | $23,600 | $23,600 | $23,600 | $23,600 |
| SmarTrip® cards | $5,100 | $4,000 | $4,000 | $4,000 |
| **Total Fare Media Costs** | **$32,800** | **$34,300** | **$36,000** | **$37,000** |

## Foregone Fare Revenue and Payments to WMATA

Foregone fare revenue represents fare revenue that DASH would have collected in the baseline but is no longer collected after program implementation. For the scenarios that include free or reduced fares for the Metrorail or Metrobus systems, this analysis assumes that the City will reimburse WMATA, via direct payments for passes or fares, for WMATA's foregone revenue. The cost estimating approaches for foregone fare revenue under each scenario are described and shown in this section.

### Baseline Scenario

The baseline scenario estimates how much fare revenue would be collected in FY 2022 to FY 2025 without any changes in fares. As shown in **Table 14**, DASH's FY 2019 average revenue per passenger trip of $1.14 was used to calculate estimated fare revenue based on projected, and no fare increases were assumed. The average revenue per passenger includes all ridership, including trolley ridership. This number is used to calculate projected passenger revenue in FY 2022–FY 2025 in the baseline, during which trolley ridership would be expected to represent about the same proportion of ridership as it does in FY 2019.

*Table 14: Figures and Assumptions Used in Developing Cost Estimates for the Baseline*

| Description | Assumption | Source/Notes |
|---|---|---|
| DASH Passenger Fare per Passenger Trip | $1.14 | DASH FY 2019 Passenger Fares and Ridership from NTD. Calculated from total ridership (including trolley ridership) and total passenger revenue. |

| Description | Assumption | Source/Notes |
|---|---|---|
| Fare changes on DASH, Metrobus, and Metrorail. | 0% | No fare change plans are known. However, analysis does assume Metrorail's transfer discount is implemented. |

Losses in fare revenue due to WMATA's Metrorail transfer policy are also incorporated beginning in FY 2023 and are scaled to COVID-19 recovery assumptions. **Table 15** shows projected DASH passenger fare revenue under the baseline scenario.

*Table 15: Projected DASH Passenger Fare Revenue Under the Baseline Scenario, FY 2022–FY 2025*

| FY 2022 | FY 2023 | FY 2024 | FY 2025 |
|---|---|---|---|
| $2,623,000 | $3,912,000 | $4,961,000 | $5,512,000 |

## Scenario 1: Free DASH Fares for All

Under Scenario 1, DASH would not collect any fares, and would lose all projected fare revenue shown in **Table 15**. These amounts range from $2.6 million in FY 2022 to $5.5 million in FY 2025.

## Scenario 2: Free Fares for Low-Income Riders on DASH and WMATA

Under Scenario 2, DASH would lose fare revenue from the portion of rides that would have been taken by paying program participants under the baseline scenario. This is determined by estimating the number of trips taken by low-income riders and multiplying by average passenger revenue per trip.

The City would also need to pay WMATA for passes that program participants would use to access Metrobus and Metrorail services at no cost. Program participation/take-up is assumed to be the equivalent of 62.5 percent average participation rate in the first program year (with additional participants being added to the program throughout the first year) and full participation in subsequent years. The number of program participants is multiplied by the total cost that the City would pay WMATA for a monthly pass, times 12 months for a yearly cost. As noted in **Table 16**, the cost of a pass is assumed to be $43.45 per program participant, which is based on a previous low-income pilot agreement and the fact that Alexandria residents would split their ridership between DASH and WMATA services. Under this scenario, all program participants would receive a pass giving them the ability to ride free, regardless of how much they may ride.

*Table 16: Figures and Assumptions Used in Developing Cost Estimates for Scenario 2*

| Description | Assumption | Source/Notes |
|---|---|---|
| DASH Passenger Fare per Passenger Trip | $1.14 | DASH FY 2019 Passenger Fares and Ridership from NTD. Calculated from total ridership (including trolley ridership) and total passenger revenue. |
| Percentage of Alexandria transit trips that happen on WMATA (Metrobus and Metrorail) | 63.9% | Together, Metrobus and Metrorail ridership in Alexandria account for 63.9% of all transit ridership in Alexandria in FY 2019 (which includes Metrobus, Metrorail, and DASH rides in Alexandria) |
| Amount the City would compensate WMATA for a monthly unlimited pass per person | $43.45 | $68 was the cost agreed upon for the DC Low-Income Fare Pilot. Cost adjusted to reflect Alexandria residents taking 63.9% of their trips on WMATA services (see row above). |

| Description | Assumption | Source/Notes |
|---|---|---|
| Number of program participants (riders ages 5 and over) | 8,425 | Total SNAP participants (9,554) from the City of Alexandria Department of Community & Human Services (DCHS). The percentage of SNAP recipients who are four and under (who would ride for free) was estimated using U.S. Census Bureau Table B17001, ACS 5-year estimates (11.8%), which identifies the number of children per household by income level. This number assumes all SNAP participants over age four would participate. |
| Program participant take-up rate in the Year 1 | 62.5% | Assumes that one-quarter of participants are phased in at the beginning of every quarter of Year 1. For all subsequent years, the rate is 100%. |

**Table 17** shows DASH's foregone revenue and the City's payments to WMATA for FY 2022 to FY 2025. DASH's foregone fare revenue ranges from $725,000 to $1.6 million, while the City would pay WMATA $2.7 million in FY 2022 and $4.4 million in subsequent years for monthly passes for program participants.

*Table 17: Projected Foregone Fare Revenue and Payments to WMATA for Scenario 2, FY 2022–FY 2025*

| | FY 2022 | FY 2023 | FY 2024 | FY 2025 |
|---|---|---|---|---|
| DASH foregone revenue | $724,000 | $1,170,000 | $1,477,000 | $1,641,000 |
| Payments to WMATA for monthly passes | $2,745,000 | $4,393,000 | $4,393,000 | $4,393,000 |
| **Total: Foregone revenue (DASH) and reimbursements to WMATA** | **$3,469,000** | **$5,562,000** | **$5,870,000** | **$6,034,000** |

## Scenario 3: Half Price Fares for Low-Income Residents on DASH and WMATA

Like Scenario 2, DASH would lose fare revenue from the portion of rides that would have been taken by program participants under the Baseline scenario; however, under Scenario 3, DASH would also gain some revenue from induced trips that happen with a half-price fare, reducing the total amount of foregone fare revenue. As shown in **Table 18**, like under Scenario 2, it is assumed that the City would pay WMATA a flat rate for passes, but under Scenario 3, program participants can choose whether they purchase a pass or pay for half-priced rides individually. The City will reimburse WMATA for half-priced passes or half-priced rides based on program participants' choices. Based on responses in the 2013 DASH Rider Survey, about 14.5 percent of low-income riders pay using passes. This analysis assumes that with half-price passes, 50 percent of low-income riders would buy a pass and 50 percent would pay per ride. This analysis assumes that that riders who pay per ride would ride less frequently than riders who pay with a pass, and that they would take an average of 1.5 bus trips per week and four rail trips per month. These assumptions could have a large impact on payments due to WMATA.

*Table 18: Figures and Assumptions Used in Developing Cost Estimates for Scenario 3*

| Description | Assumption | Source/Notes |
|---|---|---|
| DASH Passenger Fare per Passenger Trip | $1.14 | DASH FY 2019 Passenger Fares and Ridership from NTD. Calculated from total ridership (including trolley ridership) and total passenger revenue. |

| Description | Assumption | Source/Notes |
|---|---|---|
| Percentage of Alexandria bus trips that happen on WMATA (Metrobus and Metrorail) | 63.9% | Together, Metrobus and Metrorail ridership in Alexandria account for 63.9% of all transit ridership in Alexandria in FY 2019 (which includes Metrobus, Metrorail, and DASH rides in Alexandria) |
| Amount the City would pay WMATA for a half-price monthly unlimited pass per person | $21.72 | $34 was the cost agreed upon for the DC Low-Income Fare Pilot. Cost reduced since Alexandria residents would take 63.9% of their trips on WMATA services (see row above). |
| Number of program participants (riders ages 5 and over) | 8,425 | Total SNAP participants (9,554) from the City of Alexandria Department of Community & Human Services (DCHS). The percentage of SNAP recipients who are four and under (who would ride for free) was estimated using U.S. Census Bureau Table B17001, ACS 5-year estimates (11.8%), which identifies the number of children per household by income level. This number assumes all SNAP participants over age four would participate. |
| Metrorail average fare revenue per trip | $2.33 | From WMATA's NTD report, 2019 |
| Percentage of low-income riders who would buy a discounted pass rather than pay per ride | 50.0% | Assumed an increased number of low-income riders would buy a half-price pass (14.5% of low-income riders paid with a pass in the 2013 DASH Rider Survey) |
| Percentage of low-income riders who would pay per ride rather than buy a discounted pass | 50.0% | Assumed an increased number of low-income riders would buy a half-price pass (14.5% of low-income riders paid with a pass in the 2013 DASH Rider Survey) |
| Average bus trips a rider paying per ride (rather than a pass) takes per week | 1.5 | 2013 DASH Rider Survey |
| Average rail trips a rider paying per ride (rather than a pass) takes per month | 4.0 | Low-income riders less likely to take rail; two round trips per month assumed. |
| Program participant take-up in the Year 1 | 62.5% | Assumes that one-quarter of participants phased at the beginning of every quarter of Year 1. For all subsequent years, the rate is 100%. |
| Program participant take-up in Years 2-4 | 100% | Assume that all program participants would enroll in the first year. |

**Table 19** shows foregone fare revenue and payments to WMATA under Scenario 3. DASH's foregone revenue ranges from $317,000 to $658,000, while payments to WMATA are around $686,000 in the first year and $1.5 million for each subsequent year. It is worth noting that Scenario 3's payments to WMATA are not half of Scenario 2; in fact, they are slightly less than half. This is because Scenario 3 assumes that some participants purchase a pass and some (likely those who ride less) will pay per ride. The total costs range from about $1.3 million to $2.2 million across the four-year period.

*Table 19: Projected Foregone Fare Revenue and Payments to WMATA for Scenario 3, FY 2022–FY 2025*

| | FY 2022 | FY 2023 | FY 2024 | FY 2025 |
|---|---|---|---|---|
| **DASH** | | | | |
| DASH lost revenue | $362,000 | $585,000 | $739,000 | $821,000 |
| DASH gain in revenue for induced trips | $45,000 | $116,000 | $147,000 | $163,000 |

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| | FY 2022 | FY 2023 | FY 2024 | FY 2025 |
|---|---|---|---|---|
| **Total DASH Foregone Revenue** | **$317,000** | **$469,000** | **$592,000** | **$658,000** |
| **WMATA** | | | | |
| Payments to WMATA for half-priced passes | $686,000 | $1,098,000 | $1,098,000 | $1,098,000 |
| Payments to WMATA for half-priced single rides (bus and rail) | $278,000 | $446,000 | $446,000 | $446,000 |
| **Total Payments to WMATA** | **$965,000** | **$1,544,000** | **$1,544,000** | **$1,544,000** |
| **Total: Foregone revenue (DASH) and reimbursements to WMATA** | **$1,282,000** | **$2,013,000** | **$2,136,000** | **$2,202,000** |

The implementation of fare capping, which is under review in the region, would alleviate the need for participants to choose between buying a pass or a single-ride fare by addressing the difficulty some low-income people face in affording even a half-price pass up front and preventing them from overpaying if they could not purchase the pass upfront. This could encourage further discussions between the City and WMATA regarding the structure of payments from the City to WMATA for foregone fare revenue on the WMATA system under this scenario, potentially shifting to the City paying the 50 percent difference on each trip taken by program participants.

## Total Foregone Fare Revenue and Payments to WMATA

**Table 20** summarizes the total foregone revenue-related costs for each scenario from FY 2022 to FY 2025. Scenario 2's costs are higher than Scenario 1 because all SNAP participants are expected to participate by FY 2023 and the City is assumed to be paying WMATA for monthly unlimited passes for all program participants, i.e., the cost is not based on fluctuations due to lower ridership during the pandemic. The cost of providing passes to participants to be used on the WMATA system represents the largest share of costs in Scenarios 2 and 3. However, the structure of these payments would be subject to further negotiation between the City and WMATA.

*Table 20: Total Projected Foregone Fare Revenue and Payments to WMATA by Scenario, FY 2022–FY 2025*

| | FY 2022 | FY 2023 | FY 2024 | FY 2025 |
|---|---|---|---|---|
| **Baseline Fare Revenue** | | | | |
| **DASH** | **$2,623,000** | **$3,912,000** | **$4,961,000** | **$5,512,000** |
| **Scenario 1** | | | | |
| DASH–foregone fare revenue | $2,623,000 | $3,912,000 | $4,961,000 | $5,512,000 |
| WMATA–payments for passes | $0 | $0 | $0 | $0 |
| **Total** | **$2,623,000** | **$3,912,000** | **$4,961,000** | **$5,512,000** |
| **Scenario 2** | | | | |
| DASH–foregone fare revenue | $724,000 | $1,170,000 | $1,477,000 | $1,641,000 |
| WMATA–payments for passes | $2,745,000 | $4,393,000 | $4,393,000 | $4,393,000 |
| **Total** | **$3,469,000** | **$5,562,000** | **$5,870,000** | **$6,034,000** |
| **Scenario 3** | | | | |
| DASH–foregone fare revenue | $317,000 | $469,000 | $592,000 | $658,000 |
| WMATA–payments for passes and single rides | $965,000 | $1,544,000 | $1,544,000 | $1,544,000 |
| **Total** | **$1,282,000** | **$2,013,000** | **$2,136,000** | **$2,202,000** |

## Program Administration and Marketing

The cost analysis assumes that most administrative tasks to establish the fare program will be completed by current staff. Marketing costs are split into labor costs and the production of marketing materials. Marketing costs will vary slightly depending on the scenario. It is anticipated that Scenario 1, fare-free DASH service for all, will require less marketing than the targeted programs in Scenarios 2 and 3. Initial start-up costs that will only apply in the first year include the development and implementation of the marketing campaign, communicating with staff, and developing and printing promotional materials, which is estimated at 120 hours of staff time, resulting in a one-time cost of $5,700.[20] Marketing in subsequent years are expected to be half of the costs in the first year.

An overview of potential marketing activity types and their assumed *direct* costs (not including labor) by scenario is included in **Table 21**. The **Marketing** section included more information about lower- and no-cost strategies for marketing, which are not included in these estimates.

*Table 21: Projected Direct Expenses for Administration and Marketing, FY 2022*

|  | Scenario 1 | Scenario 2 | Scenario 3 |
|---|---|---|---|
| Local radio and print ads | $3,700 | $8,000 | $8,000 |
| Online advertisements | $3,700 | $8,000 | $8,000 |
| Signs, flyers, and posters | $3,200 | $5,300 | $5,300 |
| **Total** | **$10,600** | **$21,200** | **$21,200** |

## Program Impact on Operations

Induced demand under each scenario could necessitate additional service. Scenario 1 has the potential for the largest increase in ridership, with an estimated increase in DASH ridership of 23.1 percent, compared with 9.1 percent in Scenario 2 and 5.5 percent in Scenario 3 by FY 2025. Average passengers per vehicle trip on DASH in FY 2019 was 14.1, which is significantly below thresholds that would lead to concerns about crowding, although peak-period crowding is still a possibility.

For a clearer picture of crowding by time of day, boardings per revenue hour from FY 2018 were used to estimate the boardings per revenue hour in FY 2025 for the busiest routes, the AT1 and AT8, under Scenario 1, which has the highest expected increase in DASH ridership (an effective 23.1 percent increase over FY 2019 ridership), as shown in **Table 22**.

*Table 22: Existing and Projected Boardings Per Revenue Hour for Routes AT1 and AT8, FY 2025*

|  | FY 2018 | | Projected FY 2025 Under Scenario 1 | |
|---|---|---|---|---|
|  | AT1 (Line 35) | AT8 (Line 30) | AT1 (Line 35) | AT8 (Line 30) |
| 5:00 AM | 12.1 | 14.4 | 14.9 | 17.7 |
| 6:00 AM | 12.0 | 17.1 | 14.8 | 21.0 |
| 7:00 AM | 14.2 | 22.0 | 17.5 | 27.1 |
| 8:00 AM | 15.3 | 32.2 | 18.8 | 39.6 |
| 9:00 AM | 24.5 | 26.5 | 30.2 | 32.6 |
| 10:00 AM | 18.1 | 18.9 | 22.3 | 23.3 |

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[20] The assumed hourly cost of marketing labor was $44.73, based on Wage Estimates from the U.S. Bureau of Labor Statistics (BLS).

| | FY 2018 | | Projected FY 2025 Under Scenario 1 | |
|---|---|---|---|---|
| 11:00 AM | 16.5 | 18.9 | 20.3 | 23.3 |
| 12:00 PM | 19.1 | 21.1 | 23.5 | 26.0 |
| 1:00 PM | 19.9 | 20.2 | 24.5 | 24.9 |
| 2:00 PM | 16.4 | 22.8 | 20.2 | 28.1 |
| 3:00 PM | 15.4 | 20.6 | 19.0 | 25.4 |
| 4:00 PM | 18.0 | 19.5 | 22.2 | 24.0 |
| 5:00 PM | 17.4 | 21.3 | 21.4 | 26.2 |
| 6:00 PM | 14.8 | 22.0 | 18.2 | 27.1 |
| 7:00 PM | 29.2 | 25.0 | 35.9 | 30.8 |
| 8:00 PM | 20.7 | 20.4 | 25.5 | 25.1 |
| 9:00 PM | 10.0 | 23.1 | 12.3 | 28.4 |
| 10:00 PM | 22.4 | 29.3 | 27.6 | 36.1 |
| 11:00 PM | | 28.5 | | 35.1 |

In FY 2025, with this increase in ridership, the AT1 would experience only one hour, 7:00 p.m., during which boardings would be above 35 per hour—a level that, even in non-pandemic times, would indicate significant crowding. The AT8 would experience three hours with average boardings at or above 35 boardings per hour: 8:00 a.m., 10:00 p.m., and 11:00 p.m. However, DASH is planning to improve AT8 off-peak and weekend frequencies by FY 2024, which should mitigate any future capacity concerns on the Duke St corridor.

Both the AT1 and the AT8 will undergo changes due to ATV Plan in FY 2022. The AT8 will become known as Line 30 and retain existing service levels, while the AT1 will be replaced by Line 35 on a similar alignment with major increases in service frequency throughout the day. [21] It is likely that this more frequent service would largely alleviate any potential crowding-related challenges. However, DASH will continue to monitor boardings per vehicle trip by hour to determine where adjustments may be needed. It is likely that DASH would be able to address any crowding issues in a cost-neutral manner by adjusting on other routes as needed. Therefore, the cost analysis does not assume that any of the fare program scenarios will necessitate additional operating funding for DASH (above the planned service levels).

DASH is entering the design phase for a major facility expansion that will provide room for 35 additional buses, which will allow more flexibility in addressing service needs. DASH also has plans to expand its active fleet by 26 buses in the next decade from grant funding opportunities. Consequently, DASH is well-positioned to address any additional service capacity or fleet storage increases that might be needed from increased ridership demand resulting from reduced or eliminated fares.

In addition, removing fares in Scenario 1 has the potential to reduce dwell time since passengers can board more quickly, which also has the potential to improve on-time performance. This can result in intangible benefits, like better customer experience when customers do not have to wait for their bus, or tangible cost savings when extra runs are not needed because buses run behind schedule or bunch less frequently.

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[21] City of Alexandria, Alexandria Transit Vision, https://www.alexandriava.gov/tes/default.aspx?id=104193.

# Cost Summary

## Total Costs

**Table 23** shows the costs for all three scenarios by year from FY 2022 to FY 2025. Foregone fare revenues, combined with the money that the City would reimburse WMATA for foregone fare revenue from free/discounted passes and fares in Scenarios 2 and 3, are the major driver in determining costs.

In every year, Scenario 2 is the most expensive program and has the largest amount of foregone fare revenue as it calls for free fares on both systems (DASH and WMATA) for low-income riders. However, there is potential to reduce these cost by adding a monthly opt-in (or pass "trigger") process for program participants to bring costs down by only paying for passes that will be used during any given month, as well as an option for the city to cap the number of program participants, which would lower the cost of Scenarios 2 and 3. Scenario 3, which had the smallest amount of foregone DASH fare revenue but over $1.5 million in payments to WMATA, is the least expensive scenario. Scenario 1 is between Scenarios 2 and 3 in terms of overall cost, with the costs for Scenario 1 increasing significantly (and approaching the estimated cost of Scenario 2) as ridership is assumed to recover after the pandemic (resulting in more foregone fare revenue). Under Scenarios 2 and 3, the number of program participants is anticipated to stay constant.

*Table 23: Total Projected Cost by Scenario, FY 2022–FY 2025*

| Costs | FY 2022 | FY 2023 | FY 2024 | FY 2025 | Total 4-Year Costs, FY 2022 – FY 2025 |
|---|---|---|---|---|---|
| **Baseline** | | | | | |
| Capital Costs of Fare Collection | $175,000 | $180,000 | $186,000 | $191,000 | **$732,000** |
| Operating Costs of Fare Collection | $268,000 | $276,000 | $284,000 | $293,000 | **$1,121,000** |
| Fare Media Costs | $6,300 | $10,000 | $12,800 | $14,000 | **$43,600** |
| Total | **$449,000** | **$466,000** | **$483,000** | **$498,000** | **$1,897,000** |
| **Scenario 1** | | | | | |
| Foregone Fare Revenue | $2,623,000 | $3,912,000 | $4,961,000 | $5,512,000 | **$17,008,000** |
| Marketing Costs | $16,300 | $5,500 | $5,600 | $5,800 | **$33,200** |
| Total | **$2,639,000** | **$3,918,000** | **$4,967,000** | **$5,518,000** | **$17,042,000** |
| **Net Increase over Baseline Scenario** | **$2,190,000** | **$3,452,000** | **$4,484,000** | **$5,020,000** | **$15,145,000** |
| **Scenario 2** | | | | | |
| Foregone Fare Revenue and payments to WMATA | $3,469,000 | $5,562,000 | $5,870,000 | $6,033,000 | **$20,936,000** |
| Capital Costs of Fare Collection | $175,000 | $180,000 | $186,000 | $191,000 | **$732,000** |
| Operating Costs of Fare Collection | $268,000 | $276,000 | $284,000 | $293,000 | **$1,121,000** |
| Fare Media Costs | $32,800 | $34,300 | $36,000 | $37,000 | **$140,000** |
| Marketing Costs | $26,900 | $10,900 | $11,300 | $11,600 | **$61,000** |
| Total | **$3,972,000** | **$6,064,000** | **$6,387,000** | **$6,567,000** | **$22,989,000** |

| Costs | FY 2022 | FY 2023 | FY 2024 | FY 2025 | Total 4-Year Costs, FY 2022 – FY 2025 |
|---|---|---|---|---|---|
| **Net Increase over Baseline Scenario** | **$3,523,000** | **$5,598,000** | **$5,904,000** | **$6,069,000** | **$21,092,000** |
| Scenario 3 | | | | | |
| Foregone Fare Revenue and payments to WMATA | $1,282,000 | $2,013,000 | $2,136,000 | $2,202,000 | **$7,632,000** |
| Capital Costs of Fare Collection | $175,000 | $180,000 | $186,000 | $191,000 | **$732,000** |
| Operating Costs of Fare Collection | $268,000 | $276,000 | $284,000 | $293,000 | **$1,121,000** |
| Fare Media Costs | $32,800 | $34,300 | $36,000 | $37,000 | **$140,000** |
| Marketing Costs | $26,900 | $13,900 | $14,300 | $14,700 | **$69,800** |
| Total | **$1,784,600** | **$2,517,000** | **$2,656,000** | **$2,737,000** | **$9,695,000** |
| **Net Increase over Baseline Scenario** | **$1,335,600** | **$2,051,000** | **$2,173,000** | **$2,239,000** | **$7,798,000** |

Under Scenarios 2 and 3, if only 5,000 SNAP beneficiaries receive and use passes, the total projected costs for the program for FY 2022 would be $2.8 million and $1.4 million, respectively (including the cost of fare collection). These amounts would be projected to increase to $4.8 million and $2.1 million, for Scenarios 2 and 3 respectively, in FY 2025.

## Cost per Intended Beneficiary

The purpose of the fare program is to benefit low-income residents in the City of Alexandria. This section compares the total cost of each proposed scenario in relation to the number of low-income beneficiaries using expected total program costs in FY 2025 (the year in which bus ridership is projected to return to pre-pandemic levels). Each scenario provides different benefits (both qualitative and quantitative) as well as cost to the City, as described below. This cost analysis reflects the fact that the benefits to program participants will be greater as the City invests more money in the program.

- **Scenario 1:** Beneficiaries could be considered all low-income riders (over the age of four) in the City of Alexandria (18,100) who would pay a fare under the Baseline Scenario. These beneficiaries receive free rides on DASH at an annual **estimated cost of $304 per beneficiary**. Due to only a portion of those individuals riding transit, the cost per *likely* beneficiary would be higher; for example, if only 60 percent of low-income residents used the DASH system, for example, it would be closer to $500 per beneficiary. On the other hand, *it is important to note that the benefits under this scenario would extend to the entire population of DASH riders in the City. This is a significant consideration, as there are many City residents who do not qualify for SNAP assistance but still have low enough incomes that reducing their expenditures on transit would significantly lessen their economic hardships.*[22] This scenario has the drawback, however, of not making usage of Metrobus and Metrorail any less expensive for low-income riders. However, updated service under ATV provides more direct access to low-income riders in the City, with 89 percent of low-income residents within a quarter mile of all-day transit under ATV's 2030 plan (73 percent under the ATV 2022 plan) compared with only 29 percent under the current system.

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[22] In the City, there are over 33,000 individuals from households earning less than 200 percent of the FPL, which is the equivalent of about $25,000 per year for a single-person household and $51,500 for a four-person household.

■ **Scenario 2:** Beneficiaries are considered all program participants (all SNAP benefit recipients) who would pay a fare (i.e., are over the age of 4) in the City of Alexandria (8,425). These beneficiaries receive free rides on DASH, Metrobus, and Metrorail at an **estimated annual cost of $779 per beneficiary**. This scenario results in costs that are more than double those of Scenario 3 due in part to higher induced demand from fares being free rather than discounted. Scenario 2, vis-à-vis Scenario 1, offers the benefit of enabling beneficiaries to choose the service that best meets their travel needs, regardless of operator.

■ **Scenario 3:** Beneficiaries are considered all program participants (all SNAP benefit recipients) who would pay a fare (i.e., are over the age of 4) in the City of Alexandria (8,425). These beneficiaries receive half-priced rides on DASH, Metrobus, and Metrorail at an **estimated annual cost of $325 per beneficiary**. Scenario 3 also offers the benefit of enabling beneficiaries to choose the service that best meets their travel needs, regardless of operator.

## Phased Implementation

Any of these scenarios could first be implemented as a pilot program. A pilot program, especially for Scenarios 2 and 3, would enable observation of participation and usage rates, which could determine the feasibility for long-term implementation and financial sustainability of the program. The pilot could be designed to run for a certain number of months and/or could set a cap on the total number of program participants, reducing uncertainty for the City regarding the program's cost. After collecting data about usage from a pilot, the City and WMATA would have more information to inform the reimbursement formula. If usage levels are low, for example, the City would be well-positioned to negotiate a lower cost per pass or different reimbursement structure based on actual usage.

# TRAFFIC IMPACTS

In TCRP Synthesis 101, many agencies implementing fare-free programs had a stated goal of reducing traffic congestion.[23] However, this report did not include data about the impact of fare-free service on traffic congestion and called for a more in-depth study of the impact of increased transit ridership on traffic congestion.

Some recent research indicates that reduced and/or fare-free programs have a limited impact on traffic congestion. In Europe, a study in Tallinn, Estonia showed a three percent drop in car trips in the three years after the city made public transit free.[24] That study also noted that the Tallinn transit system had not undergone an update to ensure it was effectively meeting the needs of potential riders, implying that the drop in car trips could have been larger if there were better transit options available for more residents. A study in Brussels, Belgium found there is modest potential to decrease traffic congestion with fare-free transit, but did not attempt to quantify the exact impact.[25] In Santiago, Chile, researchers found that randomly assigning a fare-free, two-week unlimited two-week transit pass to workers did not have a significant reduction in car trips among pass recipients, possibly because study participants may have already been transit riders.[26]

In the U.S., Los Angeles Metro launched a study in 2020 to understand the impact of a fare-free system while also conducting a Traffic Reduction Study to determine the feasibility of a traffic reduction program. However, the results of these studies are not yet known.[27] A 2020 study in California determined that fare-free programs

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[23] TCRP, Implementation and Outcomes of Fare-Free Transit Systems, 2012, https://www.nap.edu/download/22753.

[24] Oded Cats, Yusak Susilo, and Triin Reimal, The prospects of fare-free public transport: evidence from Tallinn, April 2016, https://link.springer.com/content/pdf/10.1007%252Fs11116-016-9695-5.pdf.

[25] Wojciech Kębłowski, Fare-free public transport: critical lessons from multiple sites, accessed February 2021, https://innoviris.brussels/sites/default/files/documents/innoviris_prospective_research_policy_brief_wojciech_keblowski.pdf.

[26] Owen Bull, Juane Carlos Muñoz, Huge E. Silva, The impact of fare-free public transport on travel behavior: Evidence from a randomized controlled trial, January 2021, https://www.sciencedirect.com/science/article/abs/pii/S016604622030301X?dgcid=rss_sd_all#!.

[27] Metro, Fareless transit: A Q&A on Metro's study to eliminate fares, September 2020, https://thesource.metro.net/2020/09/11/fareless-transit-a-qa-on-metros-study-to-eliminate-fares/.

are not very effective in shifting drivers to transit unless they are coupled with other measures that increase the cost of driving such as tolling or parking pricing,[28] which are not expected to occur as part of the City of Alexandria's free or discounted fare program.

Based on these studies, it is does not appear likely that the City's low-income fare program alone would lead to a significant reduction in traffic in the City. However, it is possible that the program, especially under a fare-free scenario (Scenario 1) in combination with the City's ATV implementation (which will significantly increase residents' access to all-day transit options) and many existing master plans that support transit-oriented development, could slow the rate at which traffic congestion in the City increases over the long term.[29]

# PROGRAM EVALUATION

Understanding the impact of the City of Alexandria's low-income fare program is important for determining whether the program goals are being met, what tangible benefits the program has achieved, and whether any changes in direction or approach may be needed. It is recommended that the City implement a performance monitoring/evaluation element of the program, with tracking of key performance measures done at least annually. Results from the program evaluation should be shared with, at a minimum, all agencies that contribute to the program, as well as with decision-makers who are responsible for determining the program's level of financial support. It is also recommended that the City monitor the results from the DC Low-Income Fare Pilot[30] to identify any findings that would be relevant in making decisions about its own fare program.

The TRIP program is a statewide grant program that focuses on improving regional connectivity and supporting low-income and zero-fare initiatives.[31] The TRIP program is relevant to any of the three scenarios under consideration, as its zero fare and low-income initiative, which accounts for 25 percent of program funds, includes free passes to low-income populations, subsidized passes to low-income populations, and zero-fare systems. TRIP will focus on applicants who have well-researched programs that are collaborative and developed with partnerships that are ready to be implemented.

## Recommended Performance Measures for Program Evaluation

Performance measures used in program evaluation should relate to the goals that the program seeks to achieve. Two types of performance measures–output and outcome–can and should be used as part of this program evaluation. Output measures address the direct actions taken to further the program. Agencies generally have more direct control over performance related to output measures. Outcome measures reflect concerns of the public and stakeholders; these are often the most meaningful to the public and relate most directly to program goals. However, they may be influenced by a range of factors beyond the City's control.

**Table 24** shows a list of performance measures recommended for the City to track to evaluate the program's success and indicates whether each measure is an outcome or output measure, the estimated level of effort (low, medium, high) to calculate or track the measure annually, and the program goals to which the measure relates. For measures that the City already tracks (e.g., ridership), the estimated level of effort is assumed to be low.

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[28] University of California, Irvine, A Review of Reduced and Free Transit Fare Programs in California, January 2020, https://escholarship.org/uc/item/74m7f3rx.

[29] For example, see: Reid Ewing, Keith Bartholomew, Steve Winkelman, Jerry Walters, and Don Chen, *Growing Cooler*, 2007, https://www.nrdc.org/sites/default/files/cit_07092401a.pdf. The MWCOG travel demand model, prior to the COVID-19 pandemic, projected that traffic congestion will worsen throughout the Washington, DC metropolitan area over the coming decades. The model projects that significant investments in transit, in general, will not reduce the total level of traffic congestion; rather, they are likely to reduce the extent to which traffic congestion worsens. However, there is also potential for technology-related changes such as the implementation of automated and connected vehicles to significantly improve traffic congestion; likely impacts of these technologies are largely speculative at this point in time.

[30] For more information, see: https://www.wmata.com/about/board/meetings/board-pdfs/upload/3C-DC-Low-Income-Fare-Pilot-v2.pdf.

[31] Virginia Department of Rail and Public Transportation. TRIP Program Overview and RFI Discussion: http://www.drpt.virginia.gov/media/3242/drpt-trip-rfi-webinar-updated-1.pdf

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*Table 24: Recommended Performance Measures for Evaluating the City's Low-Income Fare Program*

| Performance Measure | Output/ Outcome | Level of additional effort to calculate/ track | Goal: Access for low-income riders | Goal: Enhance equity and access | Goal: Maintain/ enhance operations and safety | Goal: Minimize admin. burden and costs | Goal: Advance regional coordination on fares |
|---|---|---|---|---|---|---|---|
| Total number of program participants | Outcome | Low | X | X | | | |
| Number of program participants relative to low-income population | Outcome | Low | X | X | | | |
| Number of trips taken by program participants | Outcome | Low | X | X | | | |
| Total system ridership | Outcome | Low | X | X | | | |
| System ridership during off-peak periods | Outcome | Low | X | X | | | |
| Monetary savings by program participants | Outcome | Medium | X | X | | | |
| Number of eligible individuals informed about the program* | Output | Medium | X | X | | X | |
| Processing time from application to certification* | Output | Medium | X | X | | X | |
| Number of advertisements placed and collateral distributed to inform people about the program* | Output | Medium | X | X | | | |
| Participant feedback regarding the program's impact on their access to jobs and opportunities (qualitative) | Outcome | High | X | X | | | |
| On-time performance | Outcome | Low | | | X | X | |
| Crowding on buses | Outcome | Low | | | X | X | |
| Operator feedback regarding operational impacts of the program (qualitative; applies primarily to Scenario 1) | Outcome | High | | | X | | |
| Cost to the City of operating the program | Outcome | Medium | | | | X | |
| Costs to the City of operating the program per trip made by a low-income rider | Outcome | Medium | X | X | | | |
| Costs of program to the City per low-income resident | Outcome | Medium | X | X | | | |
| Farebox recovery rate | Outcome | Low | | | | X | |
| Operating cost per trip (system-wide) | Outcome | Low | | | | X | |
| Applicability to services beyond the DASH system | Outcome | Low | | | | | X |
| Expansion of the program to other jurisdictions | Outcome | Low | | | | | X |

*Applies to Scenarios 2 and 3 only.*

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These performance measures, taken together and tracked, would paint an informative picture about the impact of the program. Most of the measures are reasonably straightforward to track. The less straightforward measures, in general, are those that rely on information provided through surveys.

## Survey-Based Measures

Qualitative information can be valuable in evaluating a program's success. The performance measures identified in **Table 24** as having a "high" level of effort are those that depend on surveys to collect data. Two types of surveys are recommended for gathering information about the program's performance–rider and operator surveys. These are each described below.

### Rider Surveys

It is recommended that the City conduct surveys of program participants to gauge how the program is impacting their travel, finances, job prospects (if applicable) and quality of life. For Scenario 1, a survey of all DASH riders would be appropriate; for the other two scenarios, a more targeted survey effort to get the input exclusively of program participants would be more appropriate. In years when DASH on-board surveys are conducted, under Scenario 1, questions could be added to the survey to support evaluation of the fare program (as opposed to conducting a separate survey). Under Scenario 1, in years when an on-board survey is not conducted, information about how to complete an online version of the survey could also be posted on buses, at bus stops, rail stations, libraries, City government offices, and community centers. Under Scenarios 2 and 3, a program participant survey could be emailed and mailed to program participants to gather this input, and/or administered when people visit DCHS to discuss their benefits with a case worker. Recommended questions for an annual program participant survey include:

- [If necessary/applicable] Do you use a [name of program card] to ride transit?
- How often do you ride the bus or train (DASH, Metrobus, and/or Metrorail)? (Multiple choice; question asked for each service.)
- How often did you take transit (DASH, Metrobus, and/or Metrorail) before participating the program? (Multiple choice; question asked for each service.)
- What are the trip purposes you travel by transit for? (Multiple choice.)
- How would you get around if fares weren't [discounted/free]? (Multiple choice.)
- Has the program made it easier for you to afford other expenses such as food, housing, or medical care? (Yes/No.)
- How has the program made your life easier (if at all)? (Open-ended.)
- Demographic questions (Questions with options for age, gender, race, and space to provide home zip code.)

If desired to enable longitudinal comparisons, question formats or phrasing could be adjusted to be consistent with DASH's on-board survey.

### Operator Surveys

Because bus operators are on the front lines and most frequently interact with customers, they usually have valuable insights into the on-the-ground impacts of fare changes. It is recommended that the City conduct surveys of DASH bus operators, particularly under Scenario 1, as the program is rolled out (and possibly another time if/as ridership significantly increases following the pandemic) to gauge how well the program appears to be working from operators' perspectives. The operator survey could be emailed to operators and made available in operator break facilities (via tablet and/or paper). Recommended questions for the bus operator survey include:

- Do the routes you operate regularly experience crowding (the number of riders exceeding available seats)? (Yes/No.)
  - If Yes, which routes and at what times? (Open-ended.)

- Has the program reduced the number of negative interactions you have with passengers?
- Have you spoke with riders about the program? (Yes/No.)
  - If Yes, what have they said? (Open-ended.)
- Do you have any other comments for management's consideration related to the program?

## Pilot Program Evaluation

Since any of these scenarios could first be implemented as a pilot program, evaluating the costs and benefits of the pilot would be especially beneficial. The main purpose of a pilot would be to assess the effectiveness of the program, as well as identify whether the cost of the program is sustainable for the long-term. The evaluation of a pilot program would not need to be as intensive as the full program evaluation outlined above but would likely focus heavily on participation and usage rates, as well as operational impacts, the latter particularly under Scenario 1. A survey of riders (under Scenario 1) and program participants (under Scenario 2 and 3) for the pilot would also be valuable to gauge the qualitative impact of the fare change.

In Scenario 1, this would mean tracking total ridership and evaluating crowding issues, especially at peak times. This would also mean evaluating bus on-time performance and bus bunching, since all-door boarding and lack of fare collection could reduce dwell time.

In Scenario 2, this would mean identifying the total number of pass recipients and tracking the total trips that they take using their passes. The amount that the City reimburses WMATA under a long-term agreement would be subject to evaluation of actual usage patterns from the pilot. In addition, if not done already, evaluating the pilot would be an opportunity for the City to reconsider additional activation requirements if some participants receive but do not use passes.

In Scenario 3, this would mean tracking participation rates and total trips taken by participants. This would be an opportunity to evaluate whether the program participation is sufficiently high, and whether the administrative complexity or the up-front cost of a pass remain burdens to potential participants.

# CONCLUDING SUMMARY

The key cost and ridership findings for each scenario are summarized in **Table 25** for FY 2025.

*Table 25: Projected Ridership and Cost Summary by Scenario, FY 2025*

| | DASH Ridership (Trips) | All Transit Ridership in the City (DASH + WMATA Trips) | Net Cost Increase over Baseline | Beneficiaries (Potential Low-Income* Program Participants) | Cost per Beneficiary |
|---|---|---|---|---|---|
| **Baseline Scenario** | 5.2 million | 11.2 million | - | - | - |
| **Scenario 1: Free fares for all DASH riders** | 6.4 million (23.1% increase) | 12.5 million (11.2% increase) | $5.0 million | 18,100 | $304 |
| **Scenario 2: Free fares for low-income riders on DASH and WMATA** | 5.7 million (9.1% increase) | 12.2 million (8.3% increase) | $6.1 million | 8,425[32] | $779 |

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[32] Represents total SNAP participants. Because participation levels are unknown, this number is most likely to range from 5,000 to 10,000. The final report contains information about cost implications (ranges) based on the potential range of participants for Scenarios 2 and 3.

| | DASH Ridership (Trips) | All Transit Ridership in the City (DASH + WMATA Trips) | Net Cost Increase over Baseline | Beneficiaries (Potential Low-Income* Program Participants) | Cost per Beneficiary |
|---|---|---|---|---|---|
| Scenario 3: Half-price passes and fares for low-income riders on DASH and WMATA | 5.5 million (5.5% increase) | 11.8 million (5.0% increase) | $2.2 million | 8,425 | $325 |

*Those from households with incomes at or below 130 percent of FPL.*

In addition to these ridership and cost estimates, there are some key considerations that should be taken into account:

- Under Scenario 1, not all 18,100 individuals who are SNAP-eligible would benefit because some do not ride transit. On the other hand, the benefit under this scenario would be realized by many residents who do not qualify for SNAP but still have low incomes (as well as all non-low-income riders); over 33,000 City residents are from households with incomes under 200 percent of the FPL. Therefore, the cost per beneficiary would likely be higher than $304 per person, but including the number of low-income beneficiaries, by expanding the definition of "low-income" to up to 200 percent of the federal poverty level, would make this per-beneficiary cost figure significantly lower.
- Scenario 1 (free fares for all DASH riders) would be the easiest for the City to implement and would have the added benefit of removing some administrative cost and complexity. It is estimated DASH would realize average savings of $450,000 annually by not collecting fares, not including staff time for tasks like fare planning and SmarTrip reconciliation that would no longer be required.
- Scenario 1 is also the easiest to use for participants, who do not need to prove eligibility in order to ride for free.
- Scenario 1 could improve operational performance of the DASH system by reducing dwell time associated with collecting fares.
- Scenario 1, in which one provider offers free service, reduces regional consistency and is therefore not consistent with the Bus Transformation Project (BTP)'s vision of a more integrated bus network with a unified fare policy throughout the region.
- Scenarios 2 and 3 have the benefit of providing program participants free or discounted access to whichever transit services (between DASH, Metrobus, and Metrorail) best meet their travel needs.
- Exact cost figures will depend on the cost allocation agreement reached between the City and WMATA.