DRPT

VIRGINIA DEPARTMENT OF RAIL AND PUBLIC TRANSPORTATION

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Rural Microtransit Case Study and Report

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Background and Study Purpose

The Virginia Department of Rail and Public Transportation (DRPT) applied for and received an Integrated Mobility Innovation (IMI) Demonstration Research Program Grant to plan and implement microtransit in two rural areas in the Commonwealth. DRPT collaborated with two rural transit providers: Bay Transit and Mountain Empire Older Citizens (MEOC). These providers received grant funds to procure and operate microtransit, branded as Bay Transit Express and METGo!, respectively, using a Software-as-a-service model. The microtransit demonstration projects have been operating for 18 months and are reaching a point of transitioning from the temporary IMI grant funding to 5311 operating funds.

DRPT staff convened an evaluation study of these microtransit services with its consulting team, RK&K and Via Mobility. The purpose of this study is to summarize the findings of the rural microtransit deployment project, develop an operational sustainability strategy, and prepare an implementation toolkit for other rural transit agencies interested in launching and operating microtransit services of their own. This technical memorandum summarizes stakeholder interviews conducted as part of the summary of findings from the two rural microtransit pilot programs.

Stakeholder Interviews

Introduction

The project team at RK&K conducted interviews with various stakeholders associated with the Bay Transit Express and METGo! services. Stakeholders included agency staff and program administrators from DRPT, transit managers of Bay Transit and MEOC, bus drivers and dispatchers who operate each service, frequent riders of both services. Additional community stakeholders with a strong interest in public transportation were also consulted, including Gloucester County (for Bay Transit) and the University of Virginia's College at Wise and Wise County/City of Norton Chamber of Commerce, for MEOC. Detailed transcripts of discussions with DRPT staff, transit managers, and community stakeholders are provided in **Appendix 4: Stakeholder Interview Transcripts**.

Methodology

The team created three unique interview and discussion guides to structure conversations and solicit targeted feedback related to both microtransit services. These guides included

- Stakeholder (including DRPT staff, transit managers, and community stakeholders specified above)
- Bus Operator / Dispatcher
- Rider

DRPT, Bay Transit, and MEOC provided RK&K with contact information for agency directors, bus operators, dispatchers, riders, and other community stakeholders. Using the discussion guides, RK&K conducted the interviews during January 2023.

Key Findings

The following summarizes key findings from the stakeholder interviews.

Experiences from inception to launch:

- Positive attributes:
  - Pilot gave agencies courage to try microtransit.
  - Strong stakeholder relationships.
  - Good experience working with Via.
- Challenges:
  - Getting the technologies procured including hurdles with state agencies.
  - Overcoming initial skepticism that microtransit could succeed in rural areas.
  - COVID 19 pandemic limited opportunities for in-person training.
  - Staffing and vehicle procurement challenges.
  - Local match requirement for IMI grant funding.
  - Uncertainties due to the pandemic.
  - Via had little experience with such small agencies.
  - Determining the service area / microtransit zone.

Experiences after launch:

- Positive attributes:
  - Software works well and is user-friendly — riders can sign up smoothly and book rides themselves, with call-in option available
  - Ridership growth in both services, resulting in additional vehicles and expanded service zones
  - Effective promotion by transit agencies and local government
  - Useful datasets and reporting tools

- Challenges:
  - Many riders need outreach/education to become comfortable booking via smartphone app — some misunderstood their origin/destination inputs or entered incorrectly, causing delayed pickups and no-shows
  - Some software features not properly configured to rural areas (e.g. Virtual Bus Stops vs. exact addresses)
  - Manual overrides on some software features needed — e.g. correcting errors in driver shift durations or rider pickup locations
  - Delays in Via technical assistance and troubleshooting — e.g. extending service hours took 2 months to process
  - Drivers request dedicated, mid-shift break

Other key stakeholder findings:

- Planning for microtransit
  - Perform feasibility studies for new services to identify fleet requirements and gauge community interest

    - Ensure buy-in from local governments, and include stakeholders and partners on steering committees
    - Ensure service zones include good mix of use-cases, balance between residential areas and community destinations
    - Develop evaluation criteria suitable for your community — not all benchmarks are transferable
- Procurement and funding
    - DRPT should procure the software statewide and will need to navigate through VITA
    - Avoid FOIA transparency issues by having proposers clearly identify what is confidential/proprietary
    - DRPT should provide funding for additional pilots and ongoing operations support
- Launch and operations
    - Market the service locally through all available media (e.g., public access, social media, newspaper, flyers, websites, and word of mouth)
    - Ensure drivers and dispatchers have buy-in, they need education on how microtransit works and how it may affect their standard operating procedures

Key findings from rider, driver, and dispatcher interviews include:

- Bay Transit Express
    - Positive Attributes:
        - Frees up resources on other Bay Transit demand-response services
        - Considering expanding microtransit to replace other demand-response and deviated fixed-route services
    - Challenges:
        - Drivers would like to disable audio on navigation software, since they know the area well
- Metgo!
    - Positive Attributes:
        - Popular among students — it allows them to get involved in the community
        - Agencies and riders appreciate the pre-booking option for recurring trips (e.g., work or medical appointments)
        - Desire to expand service zones to new areas (e.g., Big Stone Gap)
    - Challenges:
        - Dispatchers need software improvements to prioritize certain riders or identify deactivated accounts
        - When booking a trip, show next available time rather than requiring rider or dispatcher to go through each timeframe
        - Dispatchers would like to be able to add extra riders when booking trips
        - Enable riders to book return trips and the time of initial booking (dispatchers can do so)
- Both Services
    - Positive Attributes:
        - Safe, affordable, reliable, and accessible service available on-demand (no advance booking required)

- Friendly and courteous drivers
- Short wait times and travel times
- Improved mobility to jobs, schools, and community destinations
- Equitable solution that serves people with no other mobility option

- Challenges:
  - Demand for longer hours of operation: earlier in the mornings, later into evenings, and on weekends
  - Need for more vehicles and drivers to ensure driver satisfaction and maintain quality of service

1.2 Service Performance Evaluation

In 2020, DRPT was awarded $160,930 from the Federal Transit Administration through the Integrated Mobility Innovation Program (IMI). The funding was provided for the implementation of rural microtransit services in order to augment the existing transit services in two communities. In partnership with DRPT, Mountain Empire Older Citizens, Inc. (MEOC) and Bay Transit launched microtransit services in June 2021. The goal for these services was to enhance the customer experience while improving operating efficiencies and expanding access to service.

Bay Transit Express

Bay Transit Express is based in Gloucester County, in eastern Virginia. The microtransit service is operated by Bay Transit, a nonprofit organization which provides public transportation services in the counties of Charles City, Essex, Gloucester, King and Queen, King William, Lancaster, Mathews, Middlesex, New Kent, Northumberland, Richmond, and Westmoreland. Bay Transit Express provides microtransit service between 8 AM and 5 PM on weekdays. The cost of each ride is $1 The service is operated with 3 vehicles, a Ford E450, a Ford Transit 350 and a Ford Transit van with six seats. The map below shows the Bay Transit Express service zone and popular destinations.

Figure 1 Bay Transit Express Service Map

MetGo

MetGo is operated by MEOC, a nonprofit organization focused on meeting the needs of older adults, including the essential service of providing public transportation. MEOC's services cover Wise, Lee and Scott Counties in the southwestern corner of Virginia. MEOC offers its public transit to all ages and abilities in their service area.

The MetGo service area focuses on the Town of Wise and City of Norton (about 15 square miles). Service is free and is available weekdays between 7 AM and 7 PM. The microtransit service is provided with a fleet of 4 Ford vans each with a capacity of 7 ambulatory passengers and one wheelchair space. The map below shows the MetGo service area and key destinations.

Figure 2 MetGo Service Zone Map

Both services are operated directly by each agency, using microtransit software made available through a Software-as-a-Service (SaaS) contract with Via. Riders are able to book rides on-demand through an app or by calling a dispatcher. Passengers who are able to are asked to walk a few minutes to meet their vehicle, thus minimizing detours and maximizing the efficiency of the service. Both pilots were launched at the end of June 2021 and have been met with generally positive feedback from the community.

This evaluation assesses the first 18 months of performance data for MetGo and Bay Transit Express (from July 2021 through December 2022). By assessing the ridership, supply, and quality-of-service trends, this report highlights how these two services have performed to date and how the services can be sustainably operated in the long-term. Furthermore, throughout the report below, both Bay Transit Express and MetGo are evaluated against the transit-technology industry benchmarks derived from nine comparable, rural microtransit services. These comparable microtransit services are each of similar size, travel patterns, and geography and are also operated with Via software. More detailed characteristics these comparable microtransit services share in common with Bay Transit Express and MetGo include:

- Rural, nonmetropolitan setting in the United States (Section 5311-eligible)
- Service zone size of less than 50 square miles
- Total zone population and employment, combined, of less than 100,000 residents and jobs

- Limited to no fixed-route bus service present, though some comparable zones contained deviated fixed-route or other demand-response services
- No trip restrictions within the service zone; riders can travel from anywhere to anywhere in the zone
- On-demand operations model, though several comparable services offer the option for riders to pre-book their trips, as in MetGo

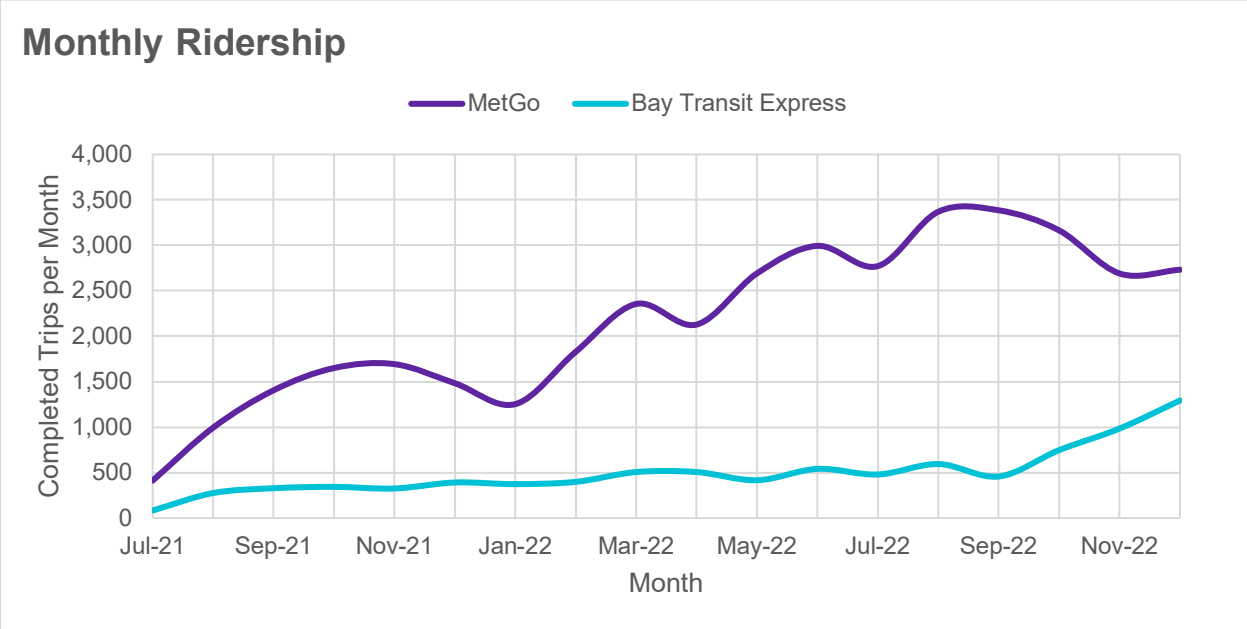
Comparisons between the IMI-funded services and the nine comparable, rural microtransit services identified above yield important benchmarks for microtransit service delivery explored in detail in following sections.

Ridership

MetGo and Bay Transit express both launched on June 28, 2021. Over the last 18 months, both services have grown in ridership. MetGo's ridership has grown to an average of 144 daily trips in December 2022. However, MetGo's growth was not steady, and ridership declined modestly in January 2022, April 2022, July 2022, and November 2022 before recovering in subsequent months. From July 2022 to December 2022, the average monthly ridership was 2,166 trips. Monthly ridership was highest in August 2022, with 3,369 completed trips.

In contrast, Bay Transit Express had fairly steady monthly ridership from August 2021 to August 2022, though much lower ridership than observed on the MetGo service. Bay Transit's service had an average monthly ridership of 502 completed trips during the 18-month pilot and had an average ridership of 62 trips per day in December 2022. In October 2022, Bay Transit expanded the service zone south to include Gloucester Point, and ridership more than doubled to 1,293 completed trips in December 2022. These figures are displayed in Figure 3 below.

Figure 3 Month-to-month Ridership Growth



MetGo provides an average of 106 daily trips for a total of 38,996 trips during the 18-month pilot period. Bay Transit Express served an average of 24 daily trips for a total of 9,039 completed trips during the 18-month pilot.

One means of evaluating ridership across multiple microtransit services is to evaluate ridership intensity, expressed as the number of hourly rides per 10,000 residents and jobs in the microtransit service zone (see Table 1). This approach normalizes service with common units of measurement. Typically, ridership intensity is driven by the following considerations:

- **Zone demographics**. Areas with greater numbers of low-income residents, older adults, people with disabilities, and people without access to a private vehicle are more likely to rely on public transportation, including microtransit services, as their primary form of transportation.
- **Service design.** Service features such as zone size, service hours, wait times, and journey times can all impact the demand for a service. The coverage of the zone and service hours relates to the utility of the service. Transit-dependent riders with fewer alternative mobility options are less sensitive to the quality-of-service metrics such as wait times and journey times. However, providing high-quality service can help attract 'choice riders' who may otherwise choose to drive a personal vehicle to complete their trips.
- **Fare policy.** Some fare-free services, such as MetGo, experience higher ridership than services that charge a fare, as the lack of fare removes a potential financial burden or inconvenience that may otherwise discourage some riders from using the service.
- **Marketing and rider engagement.** Microtransit services with high levels of ridership typically engage successfully with multiple, concurrent approaches to marketing and rider engagement. These strategies could range from promotions during the service launch period, promotion through local news media, social media advertising, and engagement with local stakeholder organizations. Some of these strategies are discussed in more detail in **Appendix 4.**

Table 1 Ridership summary

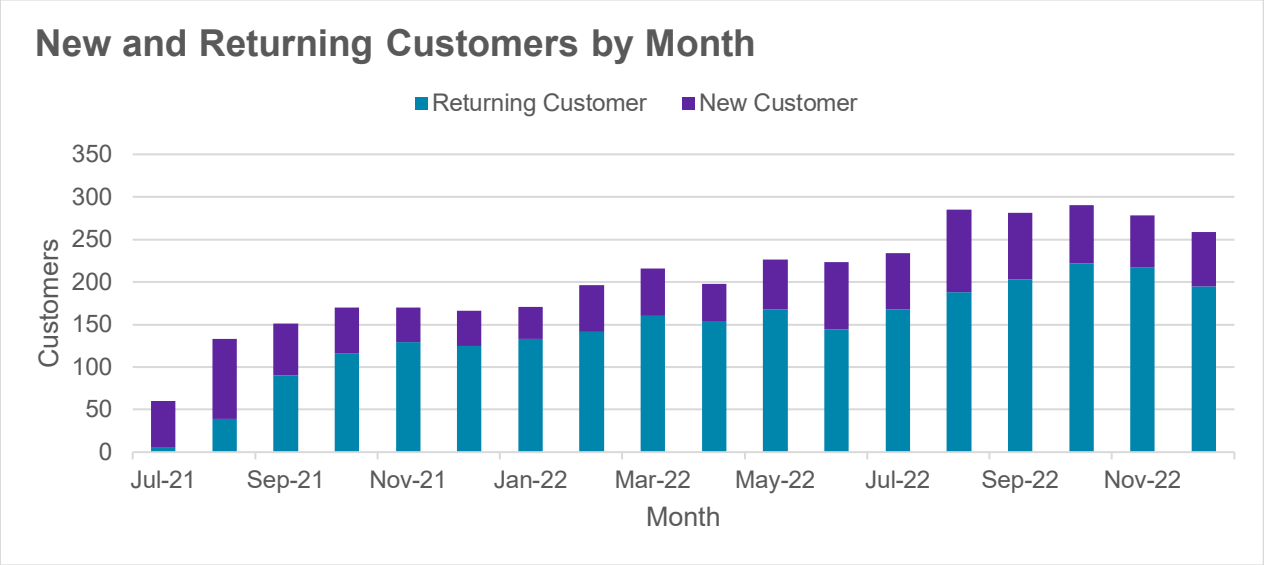
	MetGo	Bay Transit Express	Comparable Services
Total completed trips	38,996	9,039	n/a
Average monthly rides	2,166	502	3,513
Average daily rides	106	24	163
Hourly rides per 10,000 residents and jobs	1.47	3.57	3.73

Ridership Growth

Both services demonstrated strong growth by attracting new riders to service each month and retaining a growing number of existing customers. For MetGo, the average monthly number of new customers was 59. On average, 63% of customers per month are returning. As shown in Figure 4, MetGo's overall number of customers peaked in October 2022 with 222 customers.

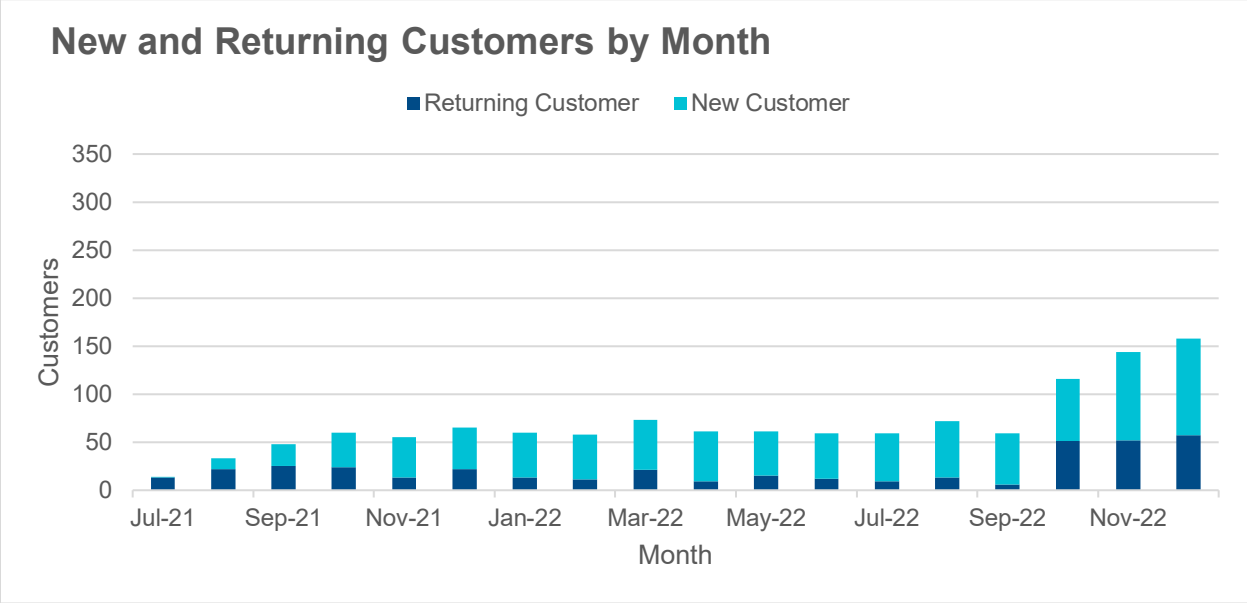
August 2022 saw the highest number of new customers, with about 100 new customers riding the service.

Figure 4 - MetGo Monthly Unique Riders



Below, Figure 5 shows new and returning customers for Bay Transit Express. On average, 64% of monthly customers are returning riders, a similar share to MetGo. Bay Transit Express's total customer base more than doubled after the zone expanded, resulting mainly from new customers. December 2022 saw the largest number of new and returning customers, with 101 new and 57 returning customers respectively.

Figure 5 Bay Transit Express Monthly Unique Riders



By attracting and retaining new customers each month, the pilot services grew steadily throughout the 18 months. Typically, comparable microtransit services operated by Via continue to experience ridership growth throughout their first year of service, when services often begin as pilot programs featuring more limited service zones, vehicle fleets, or hours of operation.

MetGo's ridership appears to have plateaued after the first year of service. Bay Transit Express has grown in the second year, likely due to the zone expansion to Gloucester Point. As detailed in the **Efficiency and Cost Assessment** section below, ridership growth is essential to improving service efficiency over time.

Repeat Customer Usage

Repeat customer usage measures the frequency with which riders use the service, and it is expressed by the average number of weekly trips riders take with the service. High repeat usage rates typically indicate a positive customer experience. Customers with negative experiences on microtransit are less likely to return to the service, and they will either find other means of transportation or simply avoid making future trips if they cannot find alternative transportation.

Both services featured a high rate of returning riders. For MetGo, 81% of active users[1] took at least two trips using the service, and 69% of active riders took at least five trips during the pilot months. Similarly, 85% of Bay Transit Express active riders have taken at least two trips with the service, and 63% have taken at least five trips. Active MetGo riders take an average of 4.5 trips per week, well above the average for comparable microtransit services of 4 trips per week (see Table 2). Bay Transit Express riders take an average of 3.2 trips per week. The monthly trends for average weekly trips per rider are shown in Figure 6. MetGo's average weekly trips

[1] Accounts that have taken at least one ride on the service.

peaked in May 2022 with an average of over 5.5 trips per week per rider. Bay Transit Express peaked in August 2022 with an average of over 4 trips per week per rider. The average weekly trips for Bay Transit Express did not significantly increase after the zone expanded, indicating that rider growth following the expansion is mostly composed of new riders and not necessarily to existing customers taking more trips.

Figure 6 Average weekly trips per rider

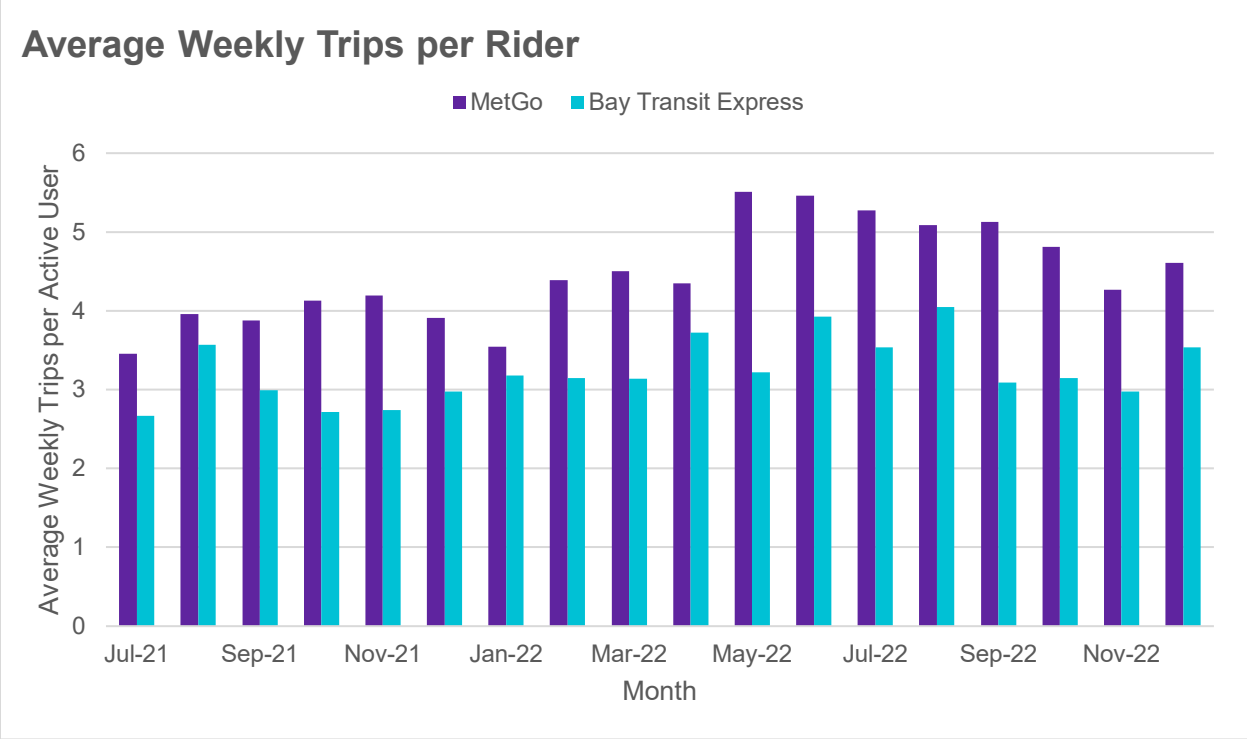


Table 2 Repeat Ridership Summary

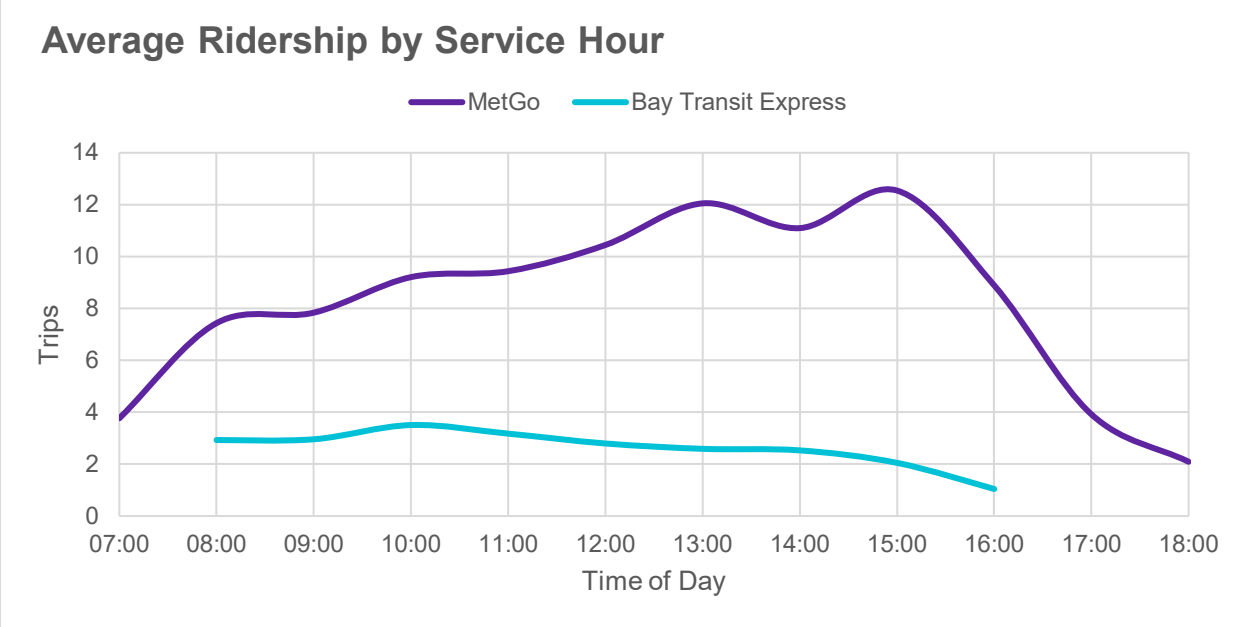
	MetGo	Bay Transit Express	Comparable Services
Average Completed Trips per Customer per Week	4.5	3.2	4.0

Hourly Demand Breakdown

MetGo offers microtransit service from 7 AM to 7 PM on weekdays, while Bay Transit Express offers service on weekdays between 8 AM and 5 PM. Below, Figure 7 shows demand patterns across an average day of service for each service. As the chart shows, MetGo's ridership fluctuates more throughout the day, between high-demand and low-demand periods, than Bay Transit Express, which serves ridership at a relatively consistent rate throughout the day. MetGo's ridership peaks in the afternoons between 1 PM and 4 PM and is lowest during the last hour of service between 6 PM and 7 PM. Bay Transit Express's ridership is more consistent

throughout the day however decreases slightly starting at 3 PM. Ridership on Bay Transit Express is highest around 10 AM.

Figure 7 Ridership by time of day

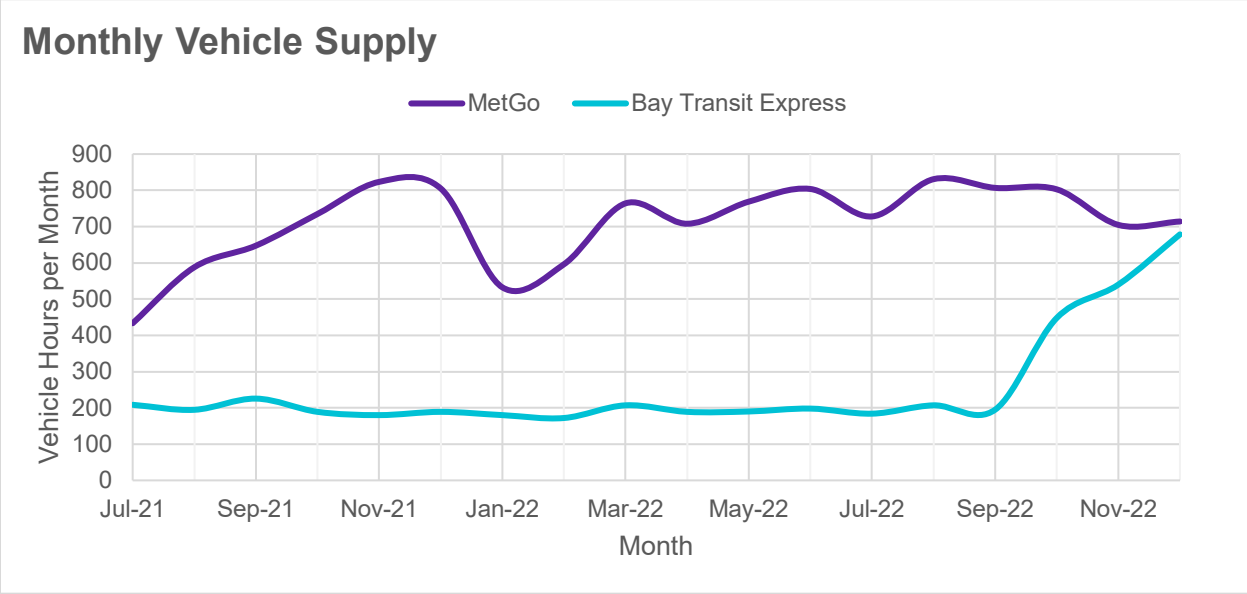


Vehicle Supply

Supply Overview

In both services, vehicle supply fluctuated across the months of service (Figure 8). MetGo's service utilized an average of 710 vehicle-hours per month. For the first six months of the service, vehicle supply was steadily increasing. After dropping in January 2022, vehicle supply has been mostly consistent for the last nine months of the pilot. In contrast, Bay Transit Express used an average of 220 vehicle-hours per month between July 2021 and September 2022. For the last three months of the pilot, Bay Transit Express's vehicle hours steadily increased to 680 hours in December 2022 to accommodate the zone's expansion to Gloucester Point and increase in demand.

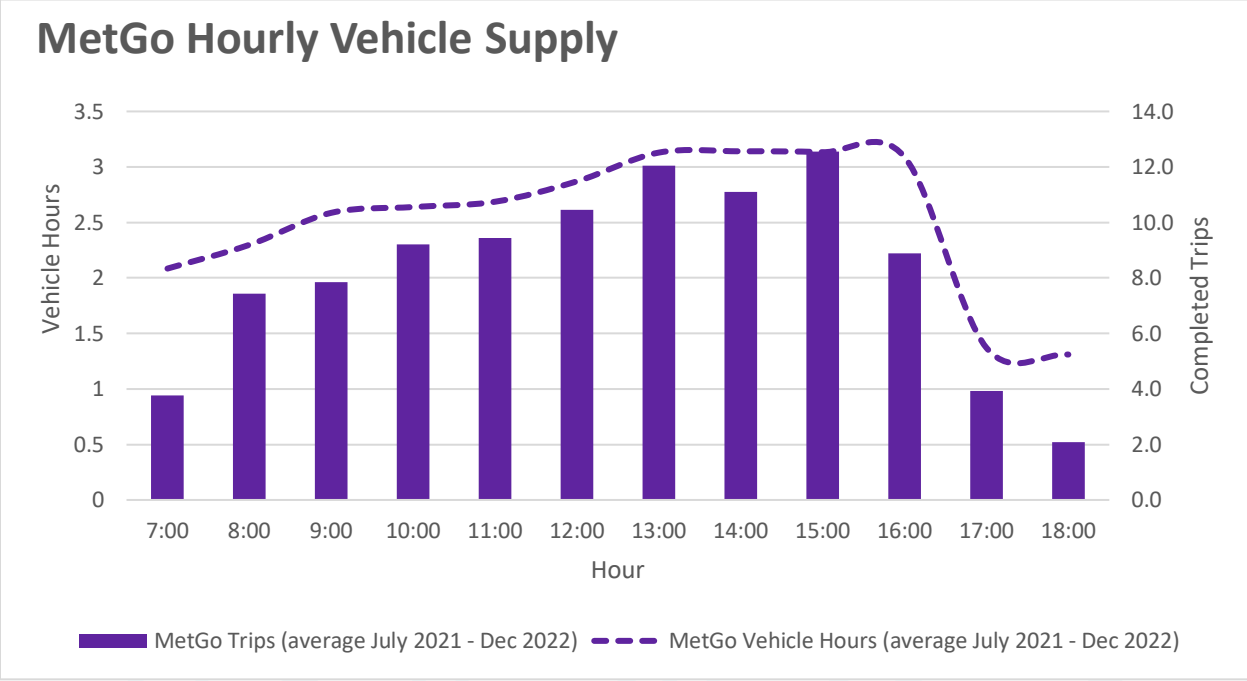
Figure 8 Month-to-month vehicle supply



Hourly Supply Breakdown

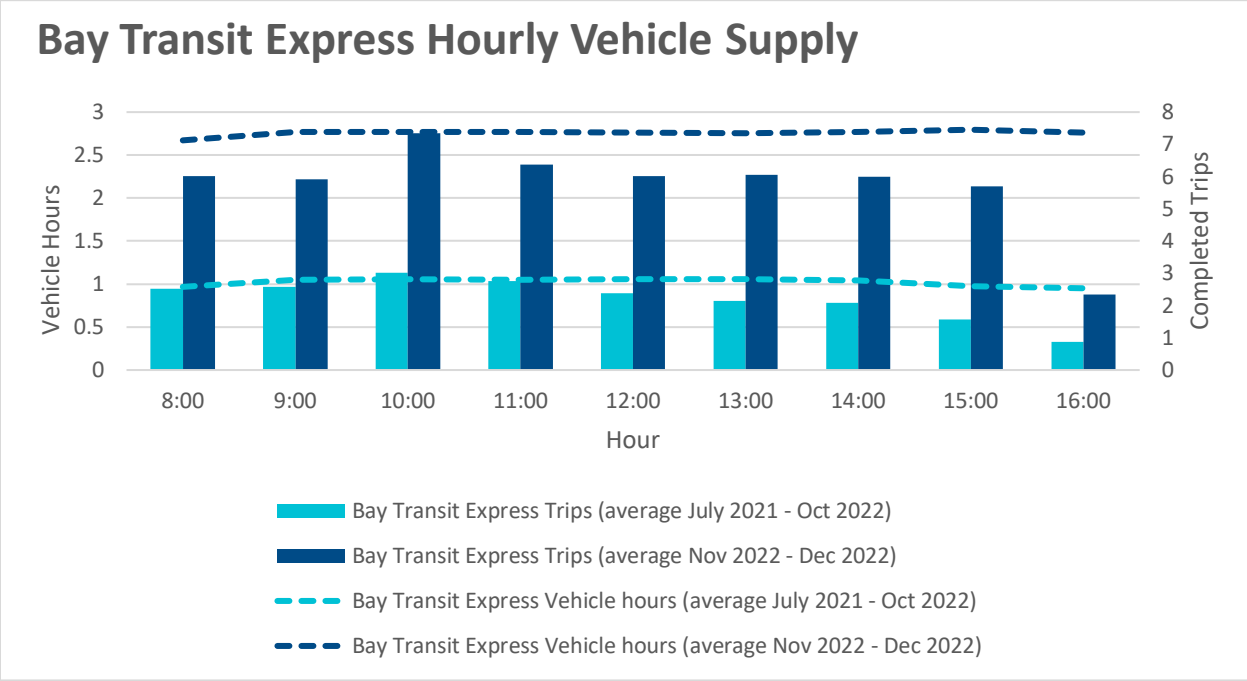
The hourly vehicle supply for the MetGo service is charted against the hourly total completed trips in Figure 9. The supply pattern mostly matches demand, with the most notable exception during the period after 4 PM, when the service becomes somewhat less efficient, as the average number of completed trips declines but the number of vehicle hours increases.

Figure 9 MetGo Hourly Vehicle Supply



A similar illustration for these patterns for the Bay Transit Express is shown in Figure 10, and it includes the periods before and after the service expansion to Gloucester Point. Service hours and trips more than doubled throughout the day after the zone expanded. Ridership is lowest during the last hour of service; however, vehicle hours are otherwise relatively consistent throughout the day.

Figure 10 *Bay Transit Express Hourly Vehicle Supply*



Customer Metrics and Quality of Service

Both microtransit services have significantly improved the quality-of-service that riders experience. Compared with other, pre-existing demand-response services operated by Bay Transit and MEOC, which require riders to book their trips the day before they need to travel, microtransit significantly improves the rider experience by offering on-demand rides and more modern, responsive communication tools to improve the waiting experience.

As discussed in the **Repeat Customer Usage** section, customers returned to both services with high frequency, and positive customer experiences are likely one determinant of this level of repeat ridership. Riders noted their satisfaction with service by providing an average ride rating of 4.9/5 stars for MetGo trips, and 5/5 stars for Bay Transit Express rides. Over 95% of demand was met over the first 18 months of service.[2] Customers were offered average estimated wait times of 20 minutes for MetGo and 10 minutes for Bay Transit Express. For riders with

[2] An alternative way to express this is that fewer than 5% of riders had their ride requests declined, in cases when no vehicle was available to pick them up within the maximum permissible wait time of 30 minutes.

disabilities, microtransit by providing an equality quality-of-service, with comparable wait times for customers using wheelchairs as for those who did not indicate they had a disability. As discussed in the **Accessibility** section, the observed difference in average wait times between ride requests in wheelchair-accessible vehicles (WAVs) and non-WAVs was small, about 3 minutes for each service.

Wait Times

Estimated Time of Arrival (ETA) is the time it takes a vehicle to pick up a customer after they request a ride, i.e., the amount of time a customer waits for pickup. ETA is an important metric by which customers experience the service – low ETAs offer a convenient, high-quality service for customers. At the same time, high ETAs may be less convenient or frustrating for customers with urgent travel needs; in the worst-case scenario, they can significantly increase overall travel times and may cause customers to miss important medical appointments or be late for work. Maximum ETAs for on-demand rides in both services were set to 30 minutes; if a vehicle could not pick up a rider within this threshold, the ride request was declined and the rider was directed to try requesting a ride later.

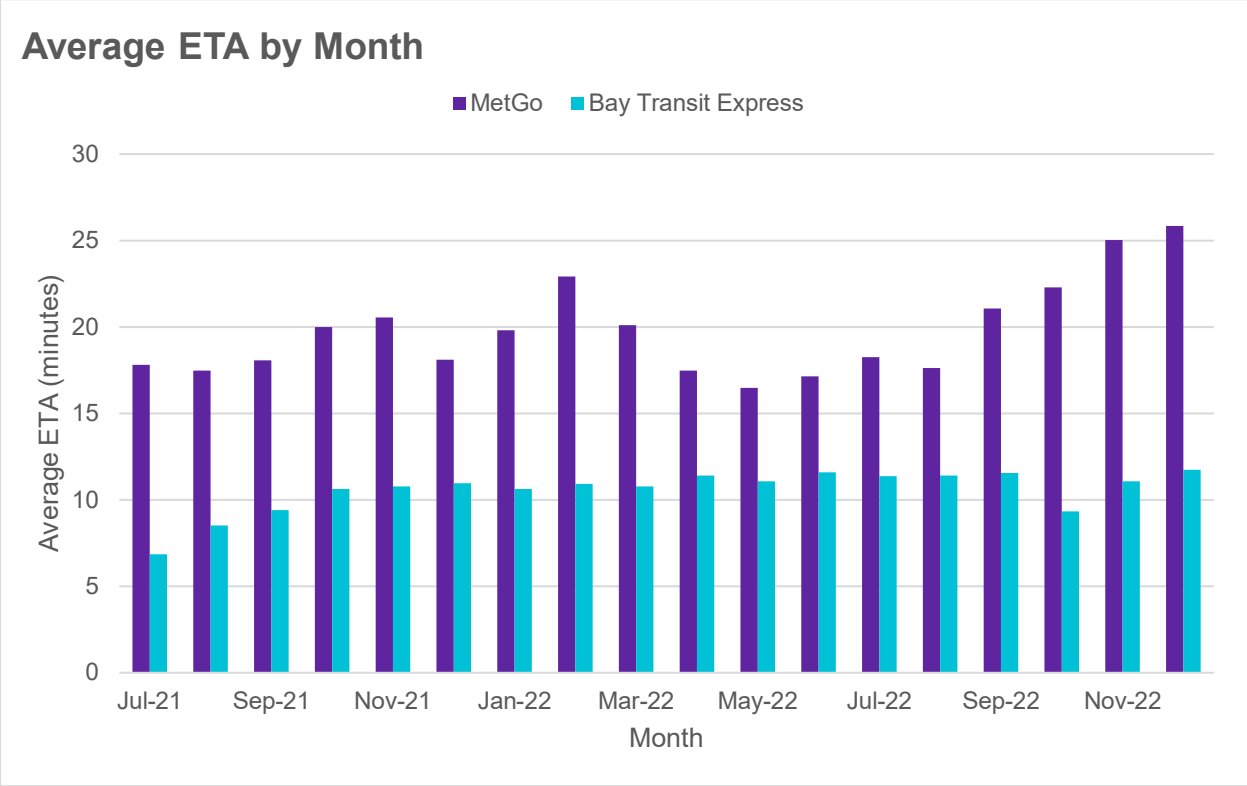
For MetGo, about 60% of rides are booked on-demand (as opposed to in advance through pre-booking). MetGo has an average ETA of about 20 minutes for on-demand rides. In comparison, all of Bay Transit Express's service is booked on-demand, and on average, ETAs are about 11 minutes. Only 8% of trips taken on Bay Transit Express have ETAs above 25 minutes, compared with 29% of rides taken on MetGo (see Table 3). Bay Transit Express served somewhat lower overall ridership compared to MetGo, with more than adequate vehicle supply, resulting in its comparatively lower average wait times.

Table 3 Wait time summaries

	MetGo	Bay Transit Express	Comparative Services
Percent of rides booked On-Demand	61%	100%	n/a
Average ETA	19.9	10.7	17.8
% Rides with under 15 min ETA	47%	75%	n/a
% Rides with over 25 min ETA	29%	8%	n/a

Average ETAs for MetGo varied monthly and have been increasing between May 2022 through the end of 2022 (Figure 11). Most recently, in December 2022, the average wait times were over 25 minutes, which may indicate that current levels of ridership are outstripping available vehicle supply. Wait times have been relatively consistent throughout the pilot period for Bay Transit Express, especially after the first few months of service, with average wait times of about 10 minutes.

Figure 11 . Average ETA by month for On-demand trips



A significant minority (39%) of MetGo's rides are booked in advance. Pre-booked requests can either be made based on the time a passenger wants to arrive at their destination (referred to here as requests by arrival time) or based on what time they would like to be picked up for their ride (referred to here as requests by departure time). Once a request has been made, a twenty-minute window is provided for the scheduled pickup time within one hour of the requested trip time. On the day of their trip, passengers receive an updated scheduled pickup and dropoff time for their requested trip and can track the vehicle's status in the MetGo app.

Most pre-booked requests are made based on arrival time (89%). For these rides, the scheduled pickup window ensures that riders will reach their dropoff location within 60 minutes of their requested arrival time.

Based on the first 18 months of service, trips based on arrival time are scheduled an average of 18 minutes earlier than the passenger's requested arrival time. In actuality, riders arrived an average of 9 minutes after their scheduled arrival time. In other words, passengers arrive, on average, nine minutes before their original requested arrival time. For example, if a rider requested a trip to arrive by 10 AM, they would, on average, be given a trip proposal that schedules them to arrive by 9:42 AM. However, on average, they arrive at 9:51 AM (9 minutes before 10 AM). Many people use pre-booking to ensure they will arrive on time for work shifts or appointments. Therefore, arriving early is better than arriving late for trip requests based on arrival time.

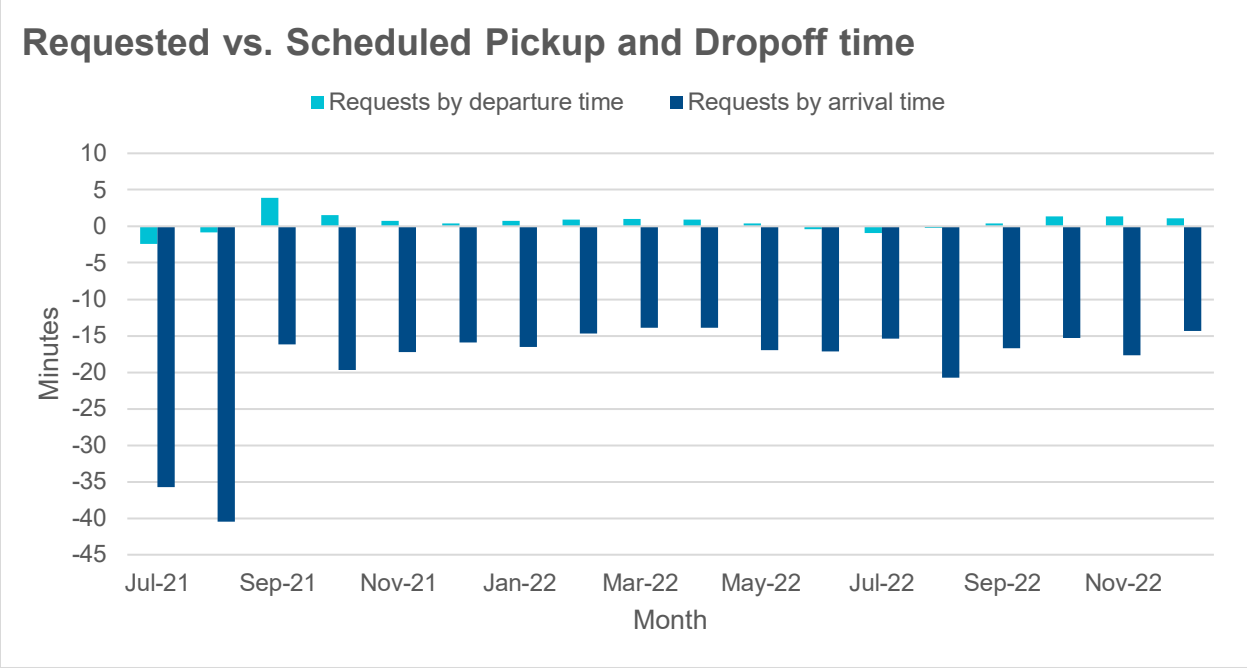
Trips scheduled by departure times are usually for when shifts or appointments end. MetGo's trips based on departure times are scheduled, on average, within one minute of their requested time, and the actual pickup times are within one minute of the scheduled time. The on-time performance of MetGo's pre-booked trips is summarized in Table 4.

Table 4 Pre-booking wait time summaries (MetGo only)

Request Type	By Departure Time	By Arrival Time
Percentage of pre-booked trips by request type	11%	89%
Average requested vs. scheduled pickup/dropoff time (min)	0.7	-18
Average scheduled vs. actual pickup/dropoff time (min)	0.4	8.8

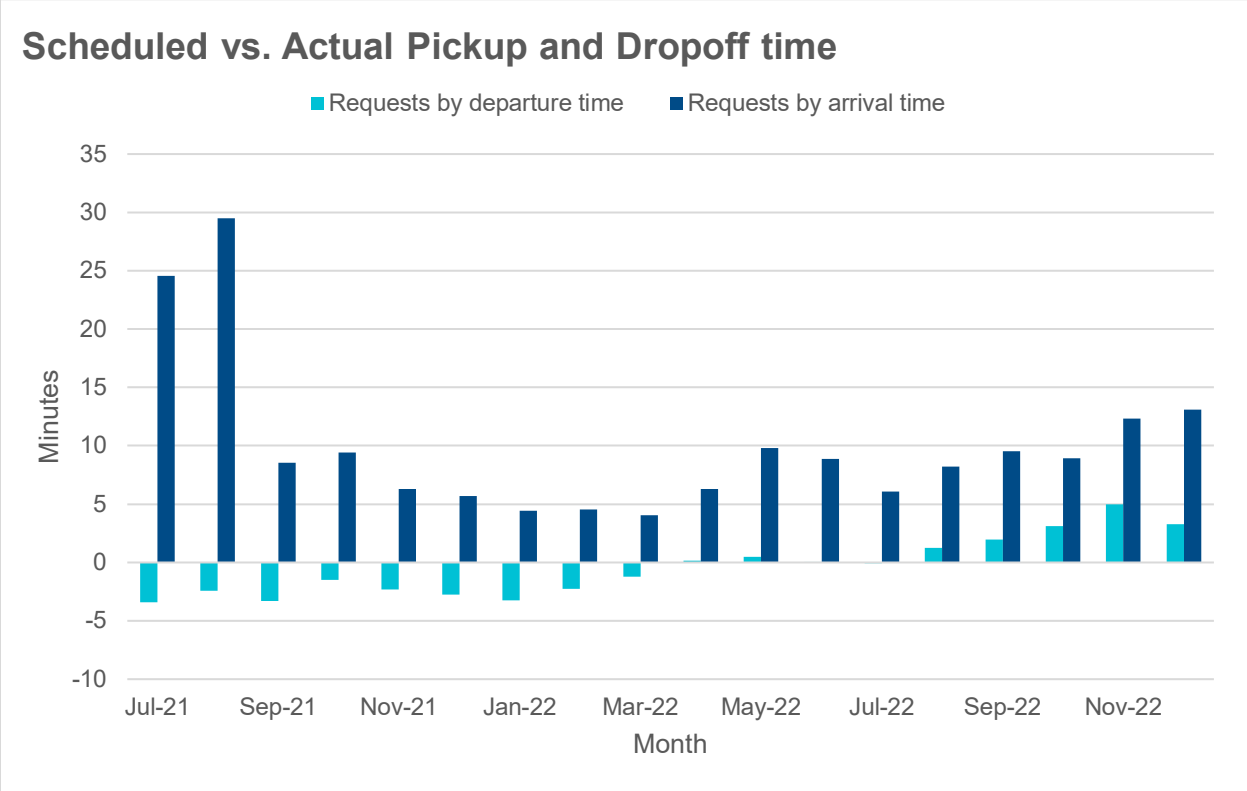
The comparison scheduled versus actual pickup and dropoff times is one means of measuring MetGo's service reliability; to ensure sustained ridership and provide customers a high quality-of-service, customers need to know that they will be picked up roughly within the appointed pickup window and will be dropped off no later than their requested dropoff time (or pick them up no earlier than their requested pickup time, as the case may be). The chart below, Figure 12, compares the requested and scheduled times by departure and arrival times by Month. Values below zero indicate that the scheduled time is earlier than the requested arrival or departure time. Since launch, requests by departure time have been scheduled relatively close to requested times. During the first few months of launch, the difference between the scheduled and requested arrival times was more significant than the difference during the remaining months of the analysis (-35 and – 40 minutes in July and August 2021, respectively, compared to the 18-month average of -18 minutes).

Figure 12 Average requested vs. scheduled pickup/dropoff time by month.



Below, Figure 13 compares the scheduled and actual pickup and dropoff times by request type (departure or arrival) and month. While during the first two months of service trips were scheduled much earlier than their requested arrival times, they also actually arrived much later than the scheduled times. During the first nine months of service, on average, requests made by departure time had pickups earlier than the scheduled departure times; however, this amounted to an average difference of fewer than 5 minutes. Generally, the difference between scheduled and actual pickup times for trip requests based on departure time is smaller than the difference between scheduled and actual dropoff times for trip requests based on arrival times.

Figure 13 *Average scheduled vs. actual pickup/dropoff time by month.*



Walking Distance

Via's microtransit software, as well as other comparable software, aggregates customers by asking them to walk a short distance to designated pickup locations – allowing vehicles to pick up more customers with fewer deviations from the shortest-path routing between requested origins and destinations. Designated pickup locations are typically found at intersections, major driveways, or other landmarks. The walk to pickup is the distance a customer is asked to walk between the place where they made their ride request and the point that the routing software asks them to meet their assigned vehicle. Shorter walks are generally more appealing to customers, but some amount of walking is desirable to help the system aggregate customers. Riders are seldom asked to walk farther than one-quarter mile to a designated pickup point, and in most comparable microtransit services the average walking distance riders experience ranges from 300-800 feet. Riders who indicate they have a disability, however, are offered curb-to-curb service, and are not asked to walk any distance.

Both services offered short walking distances while still encouraging short walks to help the system aggregate customers, as shown in Figure 14. The average person can walk about 200 to 250 feet in a minute. For both services, the average walk on either end of the trip was about one minute long, or total walking distance of 400-500 feet.

Figure 14 Average total walking distance per trip by month

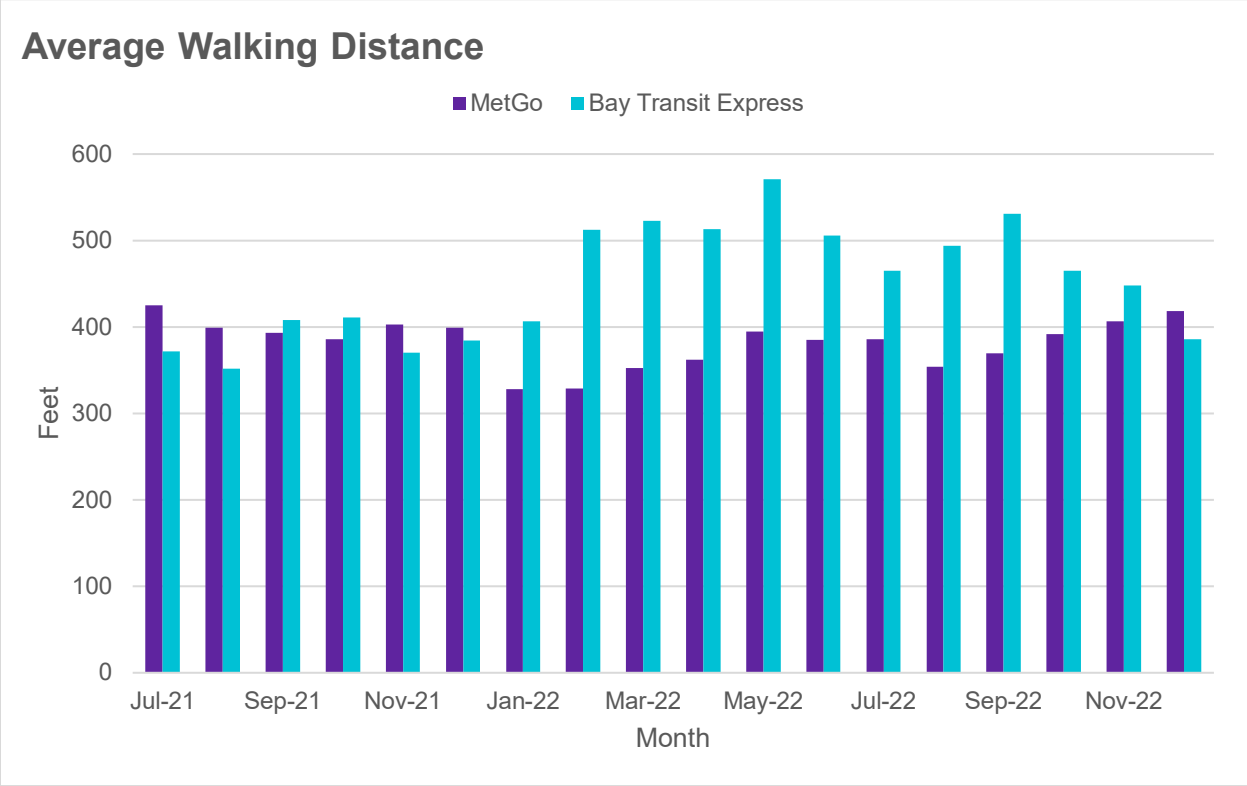


Table 5 Walking distance summary

	MetGo	Bay Transit Express	Comparable Services
Average pickup walk (feet)	195	221	183
Average dropoff walk (feet)	183	233	n/a

Average walk distances were slightly lower in MetGo, though still relatively low in Bay Transit Express and not much higher than the comparable services.

Ride Availability

Ride availability metrics explain what happens after a customer requests a ride. Ride availability is measured by the percentage of trips that are met with a ride proposal (i.e., the system has the capacity to pick up the customer rather than telling the customer a ride isn't available). Completion is measured by the percentage of customers who actually accept that proposal and complete the trip.

Via collects detailed information for each trip requested through the system – tracking trip requests through booking and the eventual outcome of each trip. Hourly data provides a view of

ridership patterns on a typical day of service (based on data collected over the first 18 months of service). The categories of request statuses are as follows:

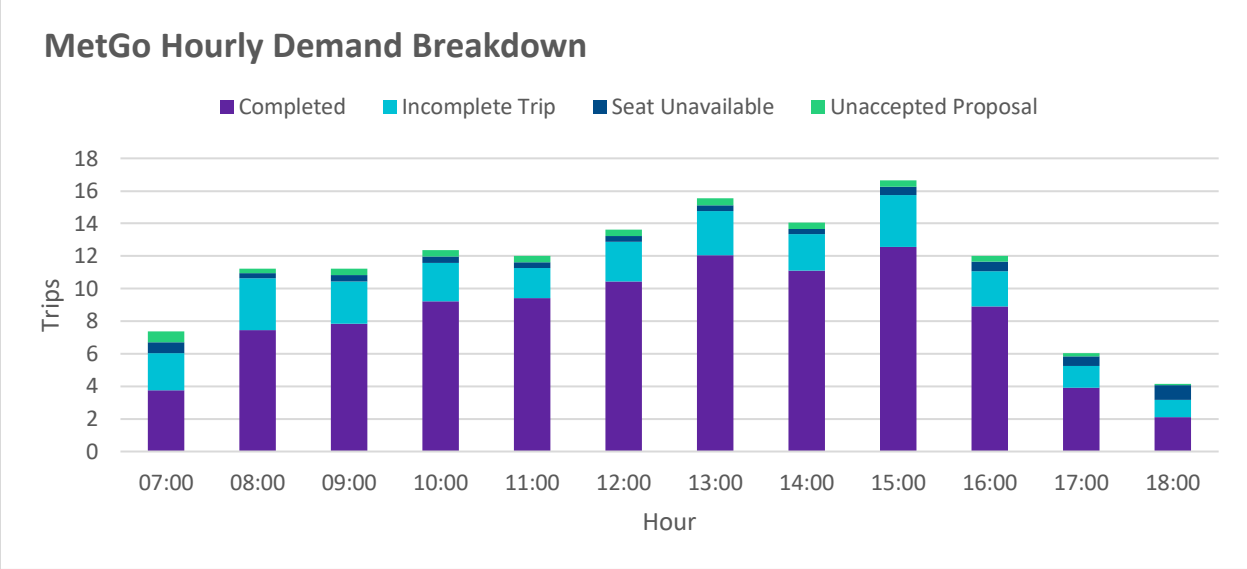
- Completed Trip. A completed trip occurs when a customer requests, books, and completes a microtransit ride (either on-demand or pre-booked).
- Seat Unavailable. Unavailability occurs when the microtransit system does not have the capacity to accept a request and provide a particular trip. After customers request a ride, they are notified that no seats are available and to try requesting later. Seat unavailability is a negative outcome for customers and may discourage customers from relying on the service in the future.
- Unaccepted Proposal. Unaccepted proposals occur when customers request a trip and receive at least one proposal with a possible ride itinerary, but do not book any of the available seats. Customers may choose not to accept a proposal because of a long wait, travel time, or required walk to meet the vehicle.
- Incomplete Trip. Some trip proposals are booked but not completed by customers. This includes customers who booked a trip but later canceled and customers who "no-show" (failed to show up) for their ride but did not cancel.

Both services are considered highly available to customers, and over 95% of trip requests were met with a proposal during the 18-month pilot (Table 6).

Table 6 Trips request met with a proposal

	MetGo	Bay Transit Express	Comparative Services
Trips request met with a proposal	95.9%	97.4%	96.7%

Figure 15 Hourly demand Breakdown MetGo



For the MetGo service, only 4.4% of trips were incomplete because of seat unavailability. The most seat-unavailable requests were during the last hour of service, peaking at about 20% of requests from 6-7pm. Most trips were not completed because customers either did not accept their trip proposal (3%), didn't show up for their ride (4%), or canceled their trip before pickup (15%). This relatively high share of incomplete MetGo trips, compared to that of Bay Transit Express, may be the result of MetGo's fare-free service design. In practice, fare-free microtransit services tend to experience higher rates of trip cancellation or no-shows because riders do not have to weigh the trip's cost when failing to ride. A fare-paying rider who cancels or no-shows, however, loses the fare they paid when they requested their ride and accepted the proposal.

Figure 16 Hourly demand Breakdown Bay Transit Express (pre-expansion)

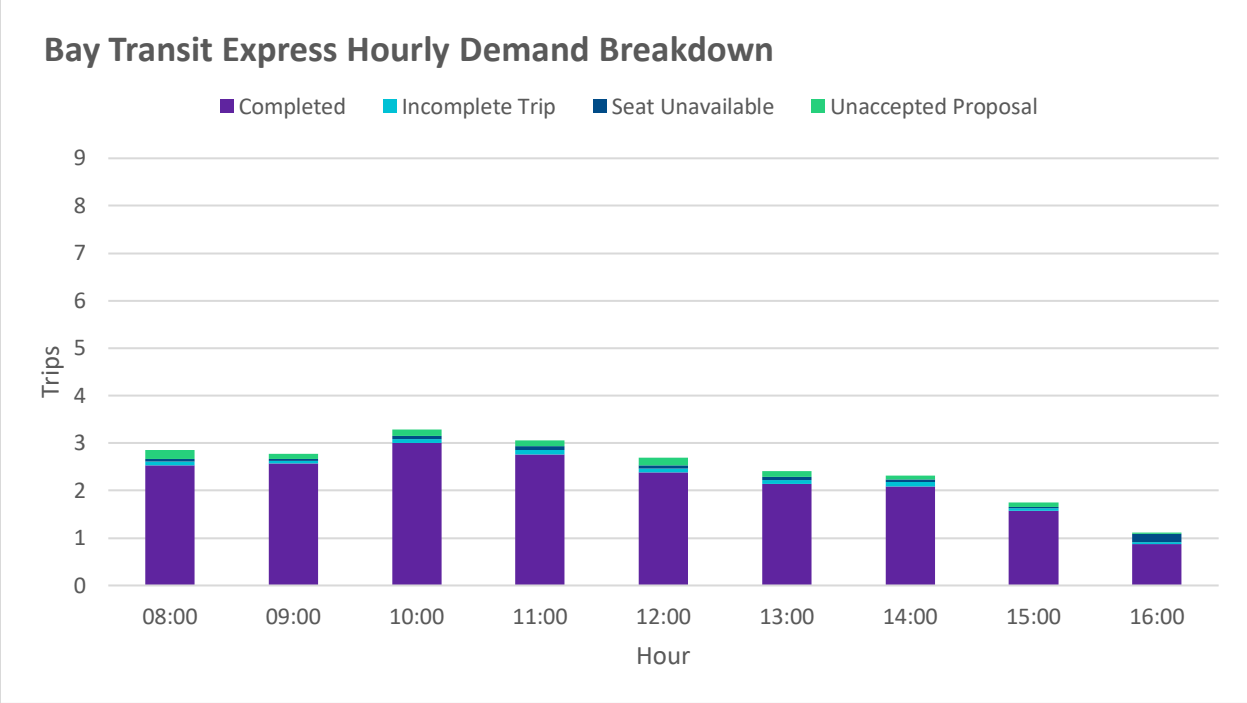
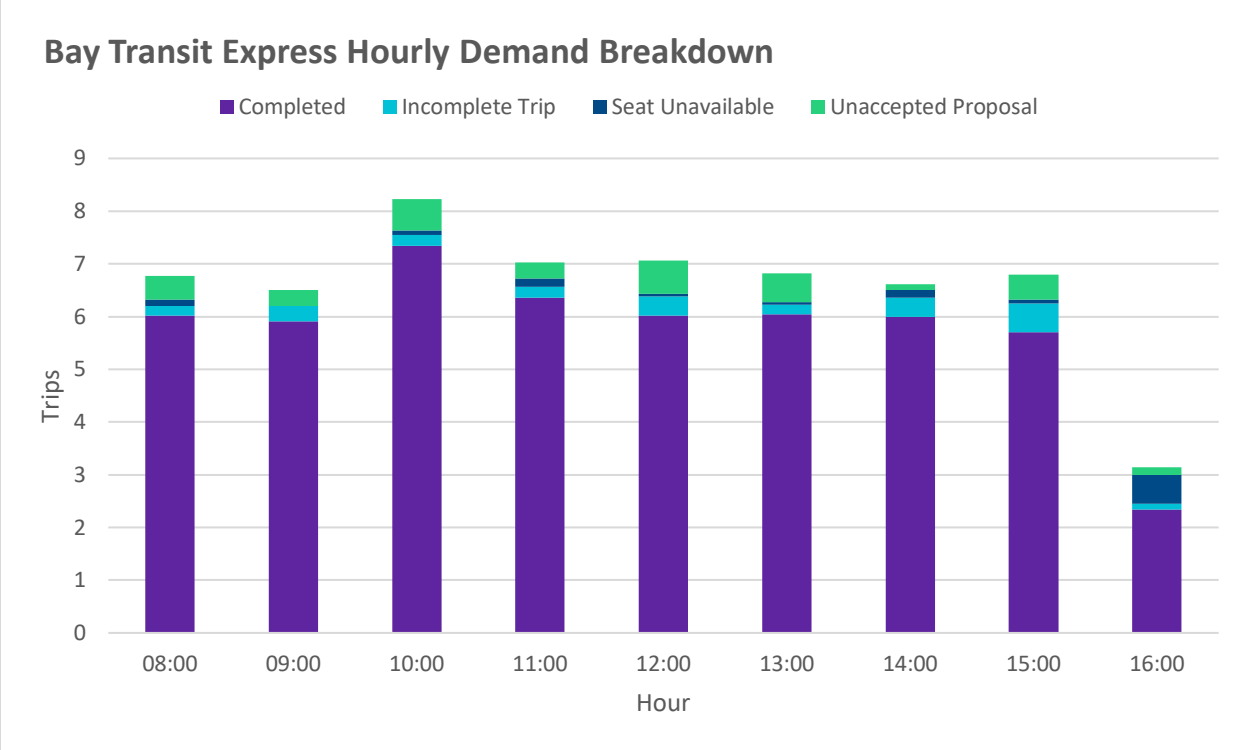


Figure 17 Hourly demand Breakdown Bay Transit Express (post-expansion)



As with MetGo, in the Bay Transit Express service, most incomplete trips were for reasons within customers' control rather than because of seat unavailability. Most instances of seat unavailability occurred during the last hour of service, from 4-5pm, both before and after the zone's expansion. Across the 18-month evaluation period, only 3% of requests were incomplete due to seat unavailability. Bay Transit Express saw fewer canceled trips (around 3%) than MetGo, and only 1% of requests resulted in "no-shows." This is likely because Bay Transit Express is charging a fare, unlike MetGo, and late cancellations and "no-shows" are still charged as completed rides.

Ride Ratings

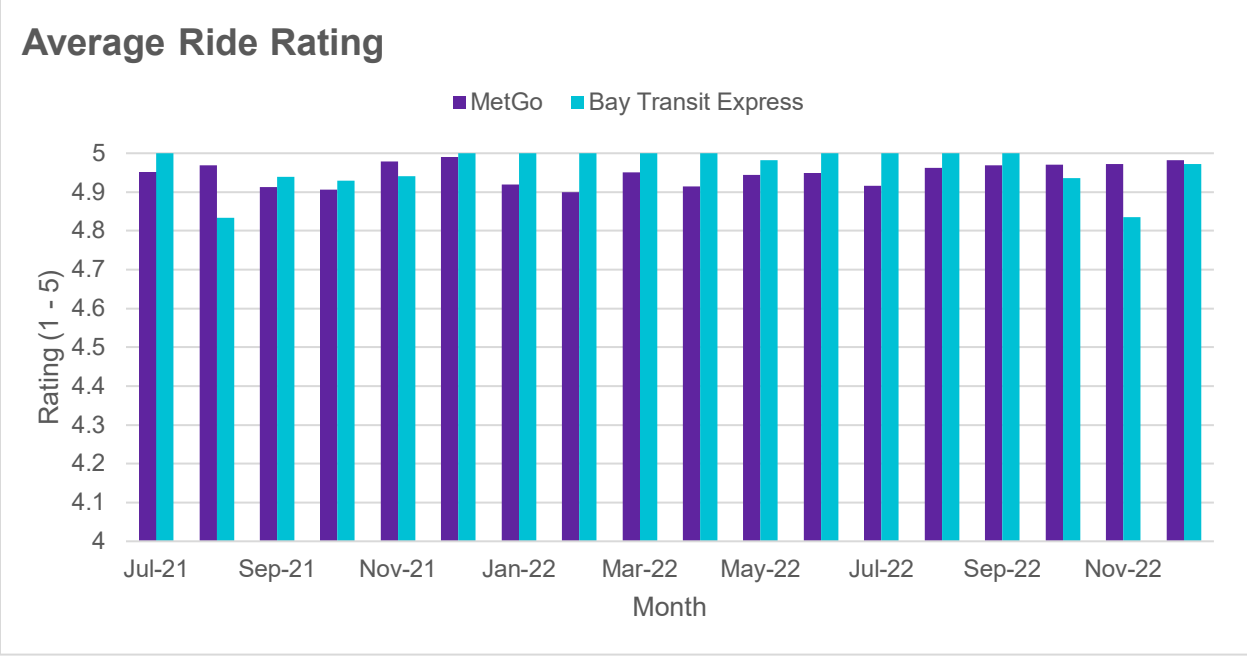
The Via platform allows customers to report their own experience by asking for a ride rating after each trip. Customers can rate their rides between 1 and 5 stars (5 being the most satisfied), and ratings offer a simple indicator of customer satisfaction.

Both services saw above-average ride ratings, with MetGo receiving 4.9 stars on average and Bay Transit Express receiving 5 out of 5 stars (Table 7). Ride ratings were slightly lower for both services during the first few months of service. This is expected as drivers and managers are still adjusting the service and procedures. Similarly, Bay Transit Express saw a slight decline in the average ride ratings in October and November 2022, likely due to the service expansion and influx in demand. However, by December 2022, the average ride rating increased to nearly five stars again, as shown in Figure 18.

Table 7 Ride rating summary

	MetGo	Bay Transit Express	Comparative Services
Average Ride Rating	4.9	5.0	4.8

Figure 18 Average ride ratings by month



Accessibility

Both services made a significant impact in offering readily-available trips for wheelchair-using customers. Requests for accessible rides requiring wheelchair-accessible vehicles (WAVs) represented less than 1% of MetGo's ride requests and 7.4% of Bay Transit Express'. All four vehicles used to operate MetGo are wheelchair-accessible, 7-passenger vans with capacity for one wheelchair. Two of the three vehicles used to operate Bay Transit Express are wheelchair-accessible WAVs with capacity for one wheelchair. While WAVs are widely available in both services, a more important measure of accessibility is the quality-of-service offered to passengers with disabilities,[3] compared with other passengers who do not indicate a disability in their ride request.

The ADA requires transit operators receiving federal funding to provide an equivalent quality-of-service to both groups. According to several performance metrics, both microtransit services meet this standard. Nearly all requests requiring a wheelchair-accessible vehicle were met with

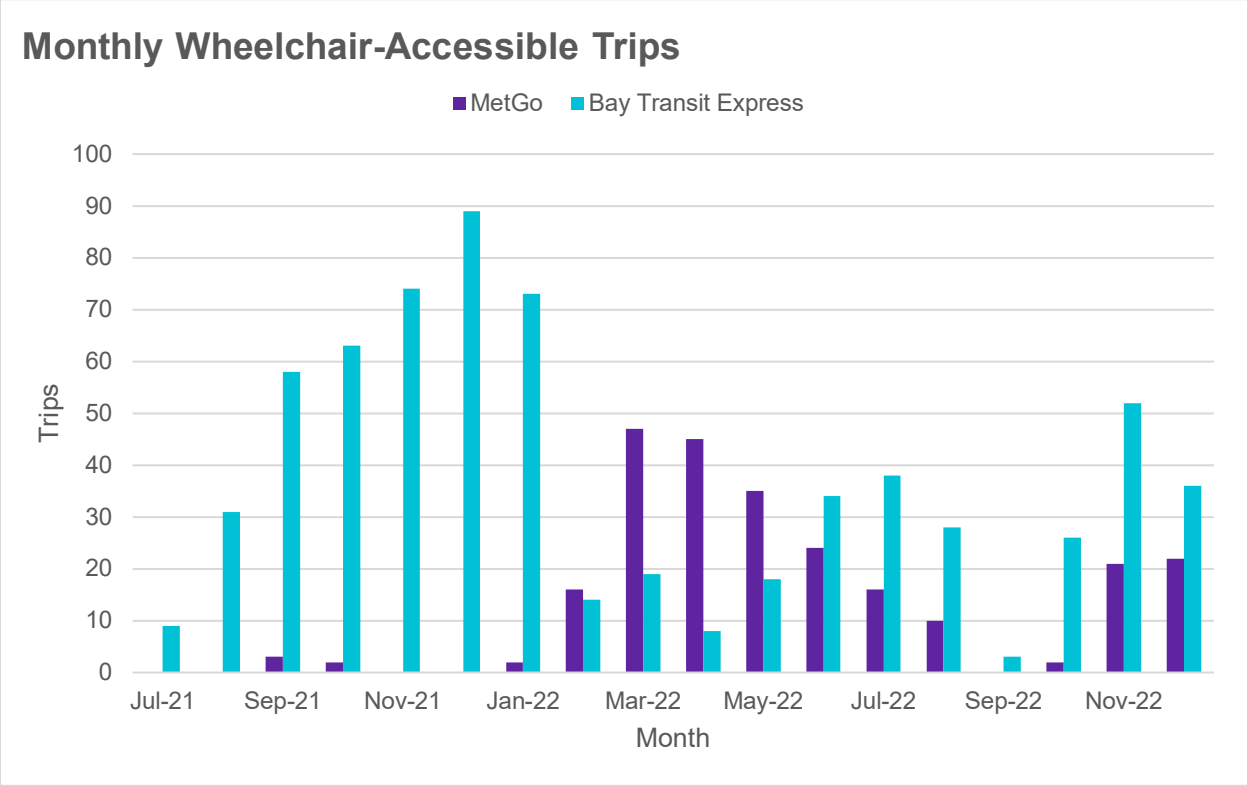
[3] Passengers are directed to indicate if they have a mobility impairment (requiring the use of a wheelchair-accessible vehicle) in the mobile app for either service or by informing the dispatcher at the time of booking.

a proposal, 94.5% and 96.5% of requests for MetGo and Bay Transit Express, respectively. Wait times for WAV rides were, on average, slightly longer than the average for all trips (non-WAV and WAV); however, given the small percentage of WAV requests, this could be due to factors related to the time of day or weekday of the WAV requests, which are not necessarily evenly distributed throughout the hours of service. For example, if most WAV requests are made during peak hours, this could explain the slightly longer wait times for WAV requests, as all requests during peak hours have higher than average wait times. Overall wait times for completed WAV trips for MetGo were around 22 minutes and 12 minutes for Bay Transit Express (Table 8). The average for the comparative services was about 18 minutes.

Table 8 Accessibility summary

	MetGo	Bay Transit Express	Comparative Services
Total WAV trip requests	361	738	n/a
Percent WAV completed trips	0.6%	7.4%	n/a
Average wait times for completed WAV trips (min)	22.47	12.1	17.9
Average wait times for all trips (min)	19.9	10.7	17.8
WAV requests met with a proposal	94.5%	96.5%	95.1%

Figure 19 Wheelchair-accessible ridership by month



Monthly wheelchair-accessible trips fluctuated greatly across both services. MetGo had very few WAV requests before February 2022 and fewer trips during the summer months. For Bay Transit Express, the month with the most WAV requests was December 2022, and wheelchair-accessible trips were more common during the fall and winter. Because such small shares of overall ridership involve WAVs, likely from a handful of individual riders, it is difficult to infer any systemic reasons for these shifts in WAV request frequency over time.

Efficiency and Cost Assessment

Efficiency can be measured in terms of rides per vehicle hour (also known as utilization), costs, and ride sharing (also known as aggregation). Both services showed improvements in efficiency across the first 18 months of service. The key to improving service efficiency over time is continual growth in ridership–this results in more shared rides, higher vehicle utilization, and lower cost per trip.

Utilization Overview

Utilization is defined as the number of rides per vehicle per hour.[4] This measure is an important indicator of overall service efficiency by demonstrating the effectiveness with which vehicle resources are utilized by customers for rides.

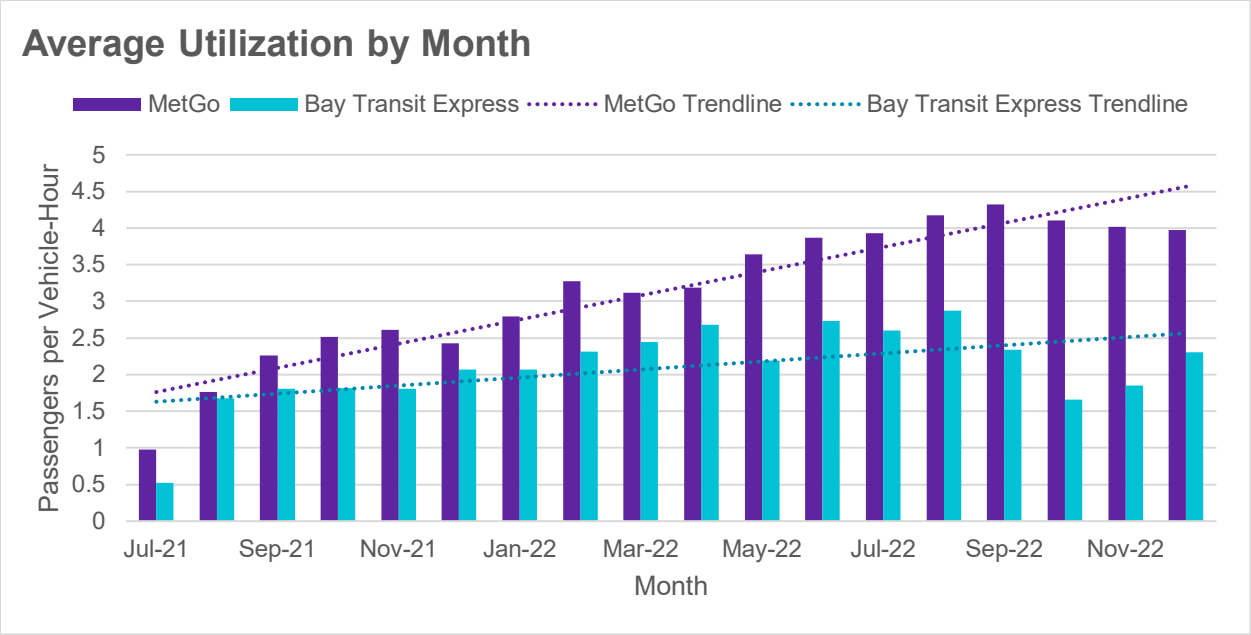
[4] Utilization is similar to traditional transit agency metric of service productivity, which is the ridership volume per revenue-hour. However, it is distinct in that additional vehicle-hours are counted in the denominator of utilization, between drivers' clocking in at the vehicle maintenance facility and the start of their first pickup (and likewise between their last dropoff and travel time back to the

Both services saw growth in utilization over the first 18 months of service. MetGo's average utilization was 3.2 completed rides per vehicle-hour. Bay Transit Express had a lower average utilization of 2.1 rides per vehicle-hour over the 18 months. However, before the service expansion, in August 2022, utilization peaked at 2.9 rides per vehicle-hour. Nevertheless, both services have room to grow in the future and have lower utilization than the average from other comparable microtransit services operating in rural areas (Table 9).

Table 9 Utilization Summary

	MetGo	Bay Transit Express	Comparative Services
Average monthly utilization	3.16	2.12	3.28

Figure 20 Monthly Utilization



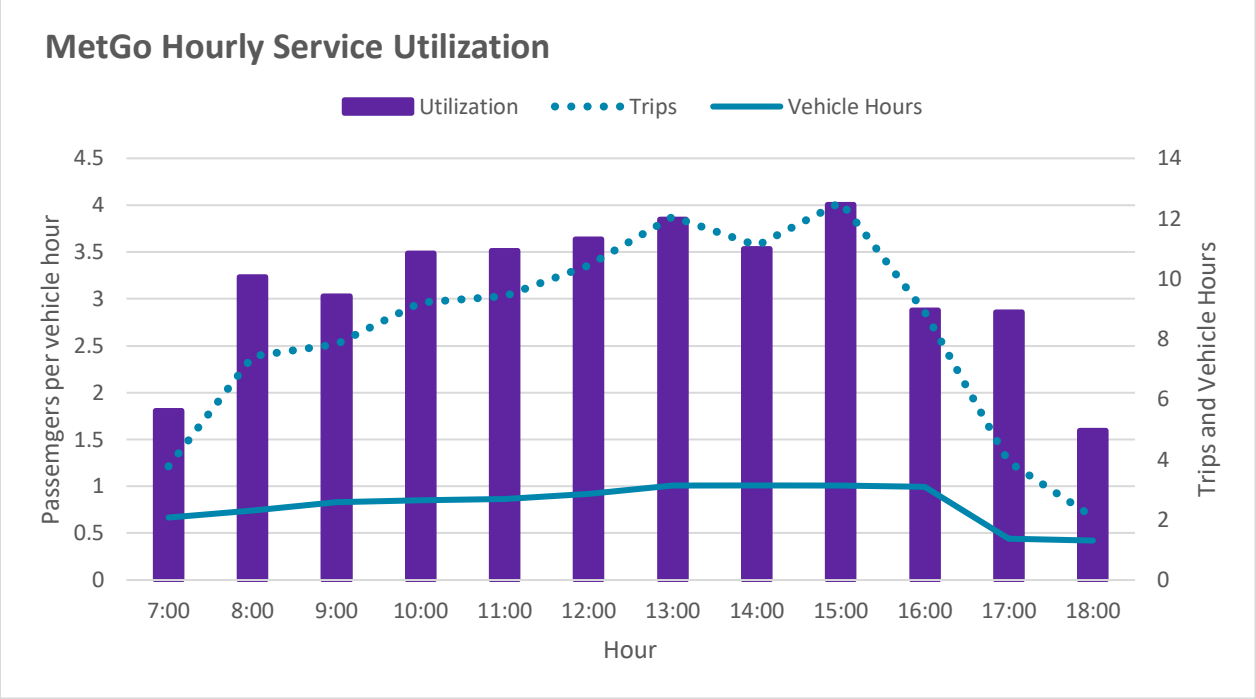
Hourly Utilization

Microtransit service is more efficient at some hours than others. As demonstrated in Figure 21, Figure 22, and Figure 23, utilization is higher during periods of higher demand when the system has more ability to aggregate customers into shared vehicles. MetGo's peak efficiency between 1 PM and 4 PM demonstrates the service's potential to grow over time. It shows that the vehicle

maintenance facility) that would be excluded as dead-head in the service productivity metric. In practice, as a result of this distinction service productivity figures for microtransit is typically 10-15% higher than utilization figures.

fleet has the capacity to accommodate additional ridership (as more trips were delivered during peak hours, while vehicle supply remained consistent throughout most of the day).

Figure 21 MetGo average hourly utilization



Bay Transit Express's hourly utilization patterns are similar before and after service expansion. Between 10 AM and noon, utilization was highest and gradually declined through the remaining service hours. Utilization declines because ridership declines, but the vehicle supply remains constant. Either increasing ridership or decreasing the vehicle supply during the afternoons (e.g., from three vehicles to two) would improve the utilization of the service.

Figure 22 *Bay Transit Express average hourly utilization (pre-expansion)*

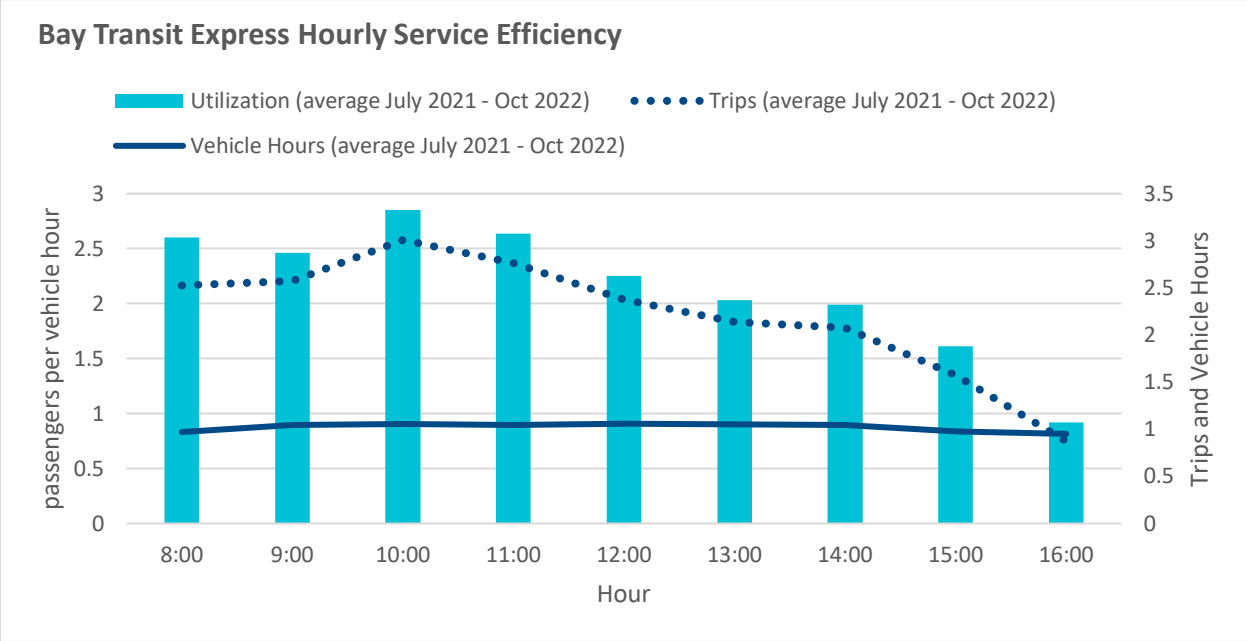
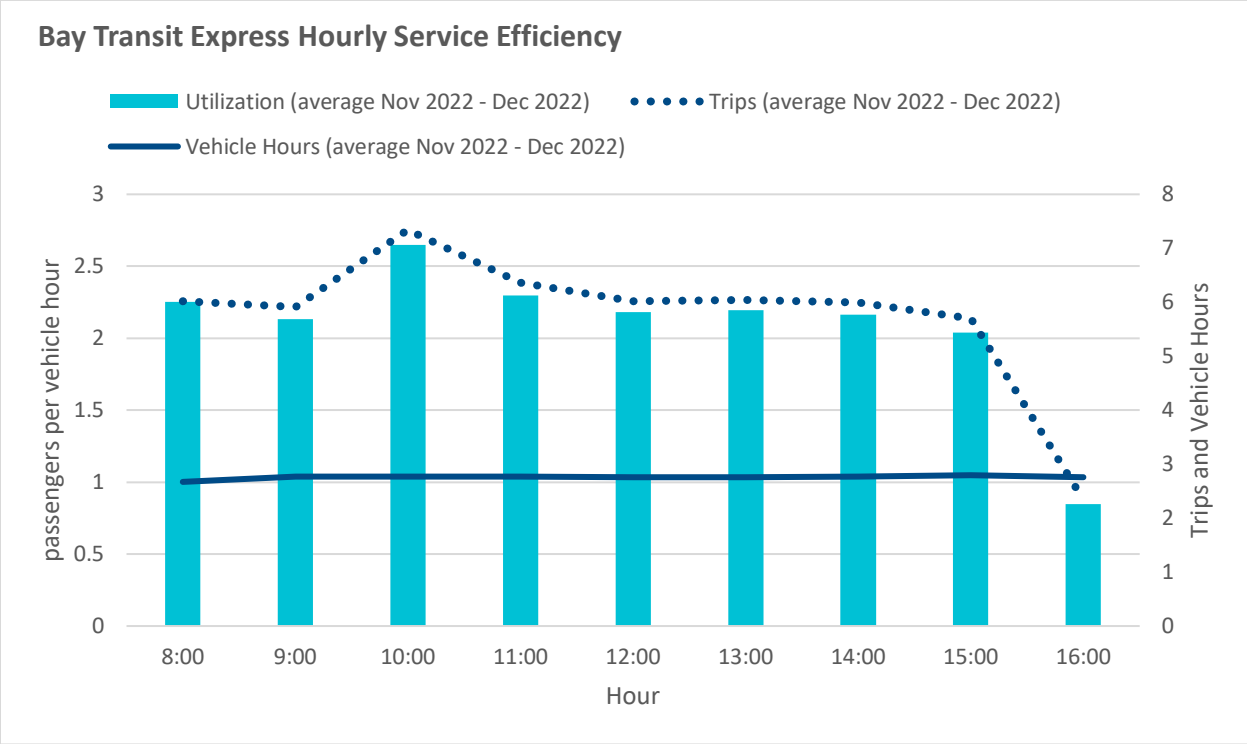


Figure 23 *Bay Transit Express average hourly utilization (post-expansion)*



Shared Ride Analysis

Shared rides are measured as the percent of passenger ride time with at least two passengers on board the vehicle. In other words, it is a measure of a rider's likelihood of sharing a ride with other passengers on any given ride. MetGo's average rate of sharing was 37.4% across the 18-month period. This is higher than the average among the peer services. Bay Transit Express saw less sharing, with an average aggregation rate of 21% (Table 10). This lower rate of aggregation is due to two key factors: lower overall ridership and more diffuse travel patterns within the service zone.

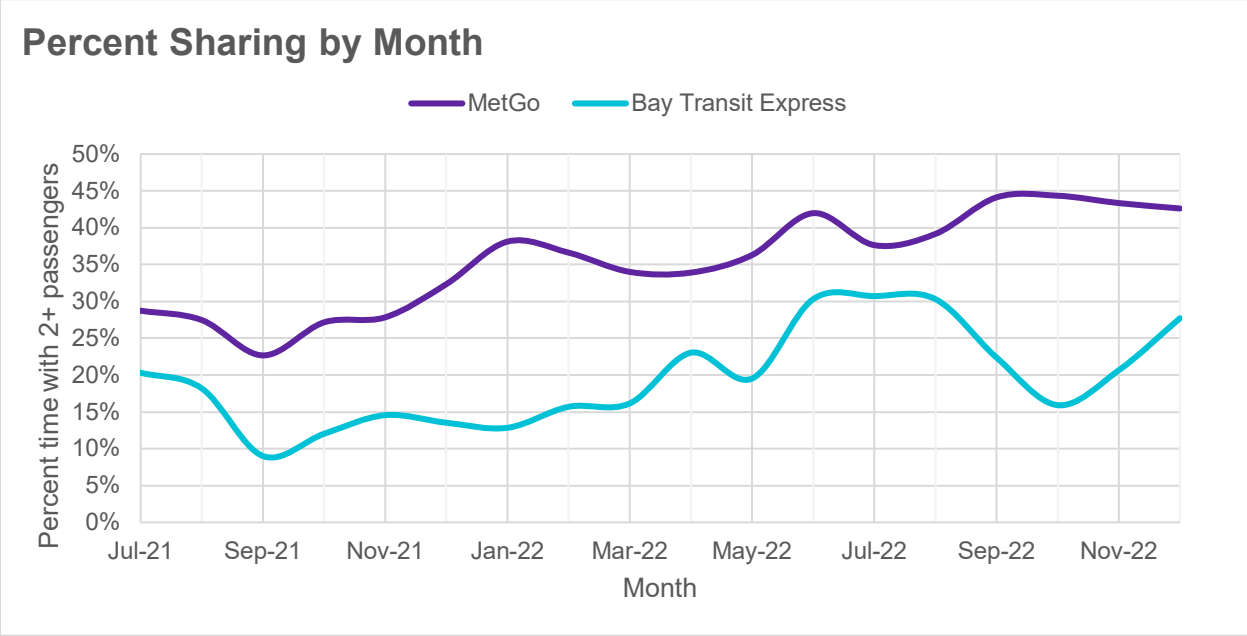
Table 10 Ride sharing summary

	MetGo	Bay Transit Express	Comparative Services
Average aggregation rate	37.4%	21.2%	32.3%

As with utilization, trip aggregation is partially a function of overall demand (as shown by the relatively higher rate of sharing by MetGo's service). With more demand, the system has more opportunities to aggregate customers traveling in similar directions. As the services continue to mature, we would expect an increase in rates of sharing. Rates of sharing are also influenced by the "detour threshold," the amount of time vehicles are allowed to spend detouring to pick up additional customers after a customer has already boarded. Establishing a higher detour threshold may improve sharing in future microtransit services.

Below, Figure 24 shows the monthly percentage of sharing of each service across the first 18 months of service. MetGo's rate of ridesharing fluctuated throughout the pilot period but generally increased since launch, peaking in September 2022 at 44%. For Bay Transit Express, sharing declined when the service expanded but has since begun to grow again, reaching a rate of 28% sharing in December 2022.

Figure 24 Monthly average shared-ride time



Cost Analysis

Both MetGo and Bay Transit Express have an average cost per vehicle hour of around $40. As ridership grows, the average cost per ride and cost per mile will decrease. The summary of the expenses for both services is outlined in Table 11. Cost figures for each service were provided by Bay Transit and MEOC staff.

Table 11 Cost analysis summary

	MetGo[5]	Bay Transit Express[6]
Average monthly cost	n/a	$8,000
Average cost per vehicle revenue hour	$41.46	$40.90
Average cost per ride	$8.06	$18.02
Average cost per mile	$2.35	$3.62

In comparison to other transit programs, MetGo is more cost-effective than MEOC's other demand-response services. MEOC's demand response services cost an average of $27.35 per

[5] Based on data from July 2022 through September 2022.
[6] Based on data from fiscal year 2022.

ride,[7] which is nearly 3.5 times greater than MetGo. Agency-wide, MEOC's trips cost an average of $18.00 per ride and $48.74 per hour.[8]

Bay Transit Express has an average cost per vehicle-hour that is similar to MetGo's however, with less ridership, the cost per ride is more than double. MetGo's overall costs are higher than Bay Transit Express because more vehicles and drivers are needed to serve the higher demand.

Figure 17 shows Bay Transit Express's average cost per ride and the average cost per vehicle hour over a 13 month period (Figure 25). As utilization goes down, the cost per ride and cost per vehicle hour increase, as on a per unit basis, less productive services are more costly.

Figure 25 Bay Transit Express Cost overview

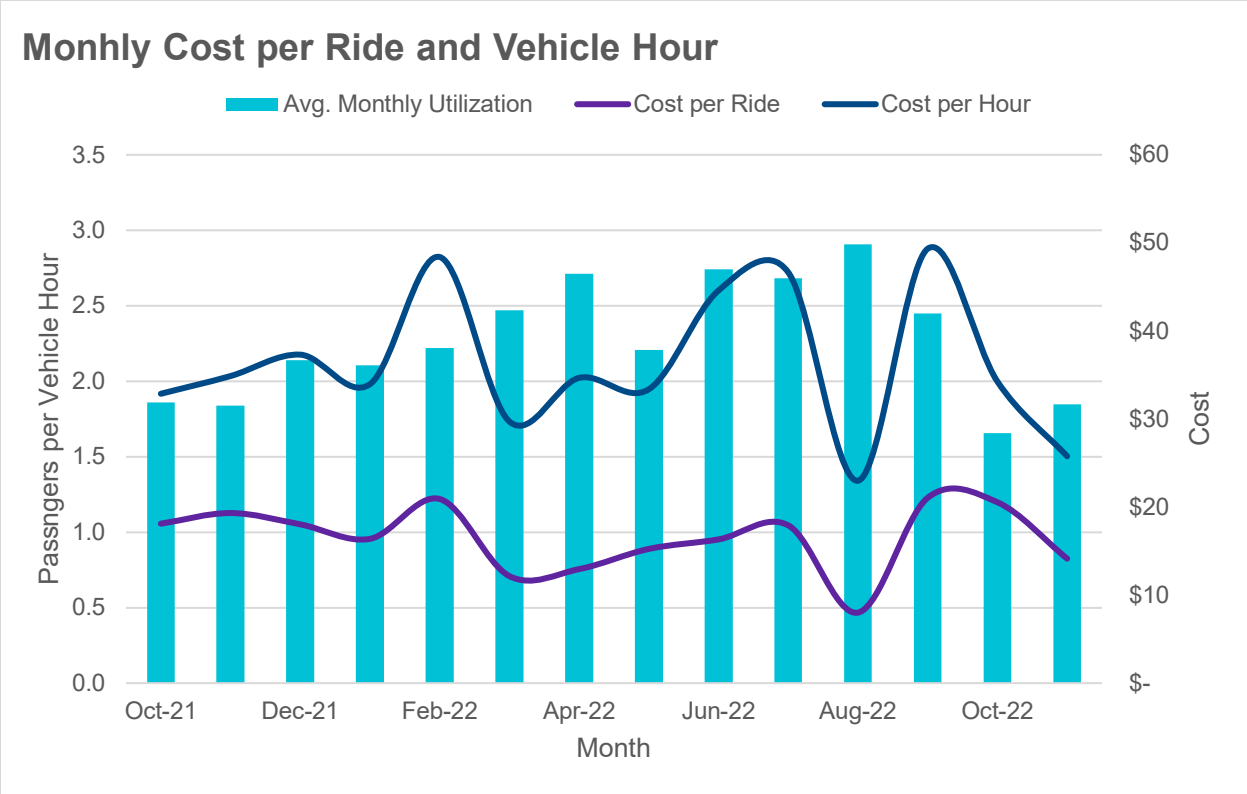
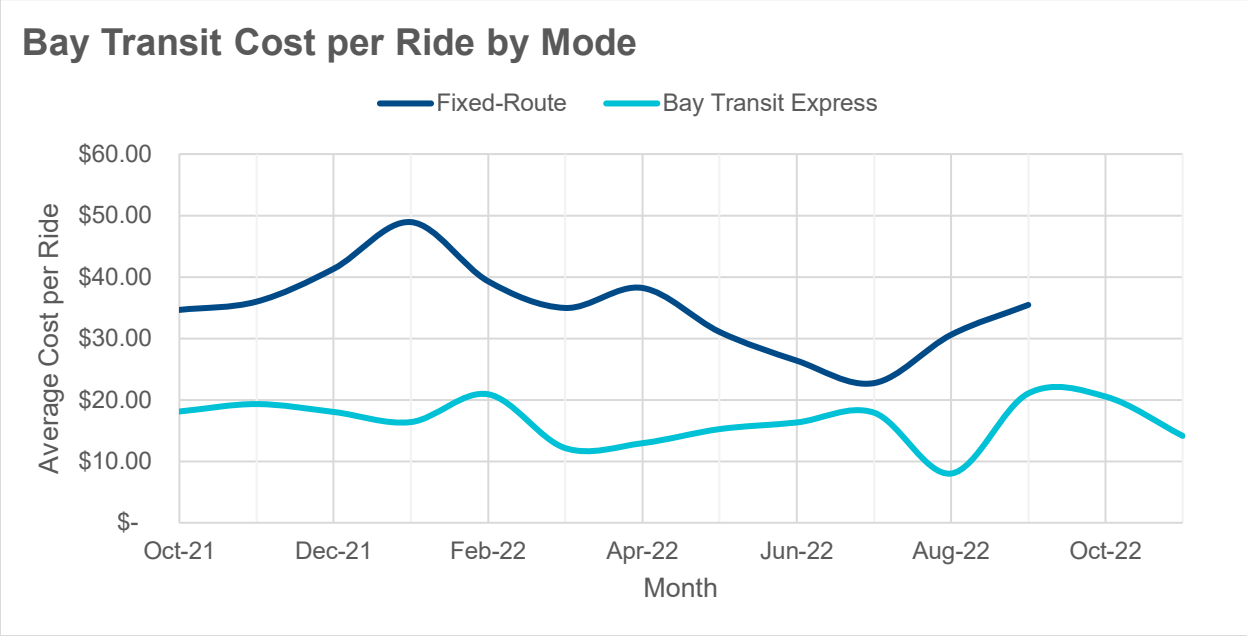


Figure 26 compares the cost per ride for Bay Transit Services. The chart shows that fixed-route operations consistently cost more per ride, an average of about $35, compared to an average cost on Bay Transit Express of $16 per ride.

[7] Based on data from January 2022 through March 2022.
[8] Based on data from July 2022 through September 2022.

Figure 26 Bay Transit Cost per Ride on Fixed-Route buses vs. Bay Transit Express



Trip Pattern Analysis

An analysis of the most commonly requested origins within each microtransit zone can illustrate the specific places and community assets driving ridership for each service. Additionally, understanding the most popular destinations in each service can help transit agencies to prioritize marketing and rider engagement activities as well as seek out potential sponsorship opportunities, such as from employers, hospitals, or business districts that receive disproportionate shares of local ridership activity. The following maps, Figure 27 and Figure 28, indicate the distribution of the most popular community locations within each microtransit zone, as measured by total volume of completed pickups at each location. This analysis uses origins as the measure of relative ridership intensity, under the assumption that most microtransit trips involve a corresponding return-trip, so that the most popular origin locations are also among the most popular destinations. In both zones, these locations include a range of essential services such as shopping centers, grocery stores, social services agencies and nonprofits, and medical centers.

In the MetGo zone, the most popular origins included:

- UVA-Wise campus
- Wise Main Street (inc. Farmers Market / Salvation Army)
- Park Avenue area in Norton (e.g., Post Office, Norton Welfare Dept, farmers market, CVS)
- Food City (Wise)
- Wise County and City of Norton Health Department
- Ridgeview Centre (e.g., Goodwill)
- Walmart (Commonwealth Drive)
- Wise County Central HS

- VA/KY Regional Shopping Center (United Grocery Outlet)
- Mountainview Regional Medical Center
- Norton Community Hospital

In the Bay Transit Express zone, the most popular origins included:

- Riverside Walter Reed Medical Center
- Food Lion
- Walmart
- Main Street Center (inc. YMCA, Library, Post Office)
- Shoppes at Gloucester (e.g., Tractor Supply, Dollar Tree, Big Lots)
- Kroger
- York River Crossing (e.g., Food Lion, Peebles, Gloucester County Public Library)

Figure 27 Popular Origins and Destinations, Bay Transit Express, July – December 2022

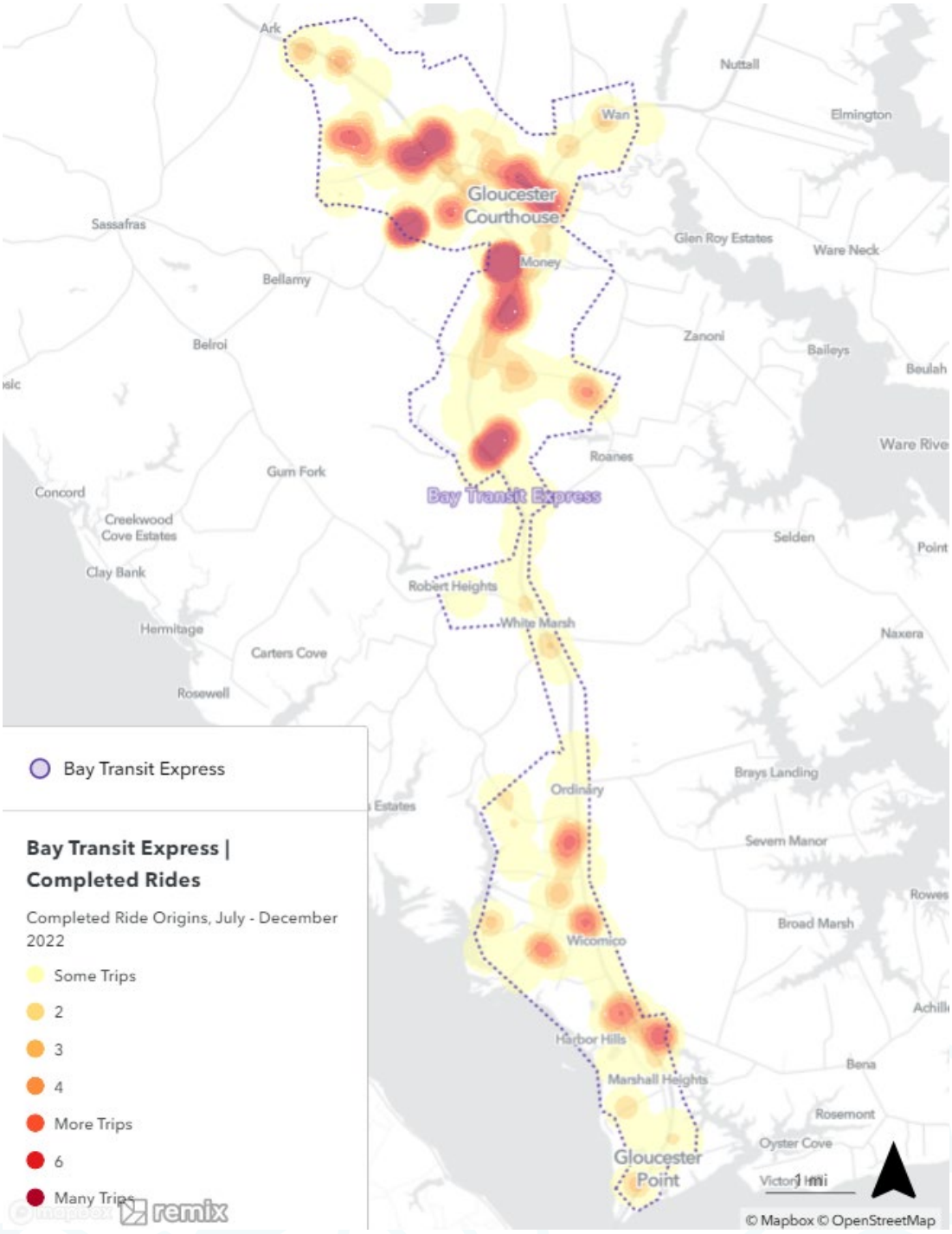
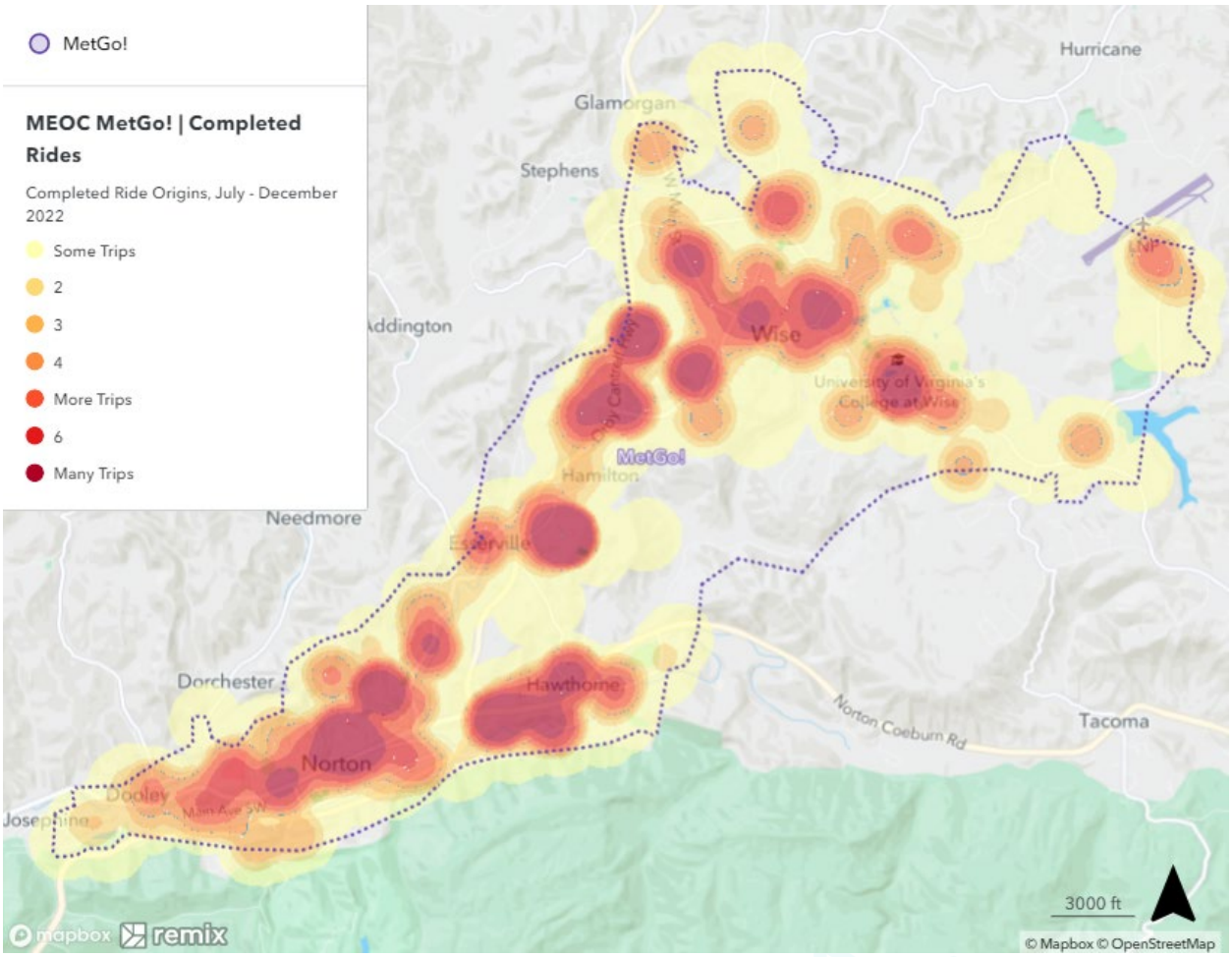


Figure 28 Popular Origins and Destinations, MetGo, July – December 2022



Appendices

1. Stakeholder Discussion Guide
2. Bus Operator / Dispatcher Discussion Guide
3. Rider Discussion Guide
4. Stakeholder Interview Transcripts
5. Bus Operator / Dispatcher Interview Transcripts
6. Rider Interview Transcripts

Appendix 1: Stakeholder Discussion Guide

Organization Overview

1. *[For service providers]* Can you tell us more about your organization? E.g., mission, org structure, local operations and history in the area, number of clients/customers served, etc.
2. *[For public agency staff]* Can you tell us about your agency's roles and responsibilities, mission, and history of working with the community on transportation issues?

General Transportation Issues/Challenges

3. Are there particular pockets or areas where many of your *clients/customers/constituents* live, work, or regularly travel to?
    - 3a. What kinds of trips are relatively easy to make on public transportation? *(e.g., trips around town, shopping, doctor's appointments, commuting, or regional trips)*
    - 3b. What kinds of trips are more challenging?
4. In your view, what are some of the most important transportation challenges or needs in your area?
5. Are these the same challenges your *clients/customers* raised to you in the past? If not, where do they differ?

Operational Issues/Challenges

6. What were the most significant challenges between the project's inception and launch? [examples: funding, stakeholder relationships, procurement, contracting, etc.]
7. Are you aware of any operational challenges the Bay Transit Express / MetGo! Service has encountered since launching? These could include:
    - Acquiring vehicles
    - Recruiting and retaining drivers
    - Vehicle maintenance or safety
    - Software platform (e.g., routing, trip assignment, rider profiles)
    - Rider communications (e.g., no-shows, assistance with booking)
    - Meeting performance targets (e.g., ridership, reliability, productivity, customer satisfaction)

Benefits and Challenges with Rural Microtransit Services

8. [For agency staff] Do people in your community use the service? Why or why not?
    - 8a. Can you describe the demographics of your ridership?
    - 8b. Who is under-represented, and who is over-represented?
9. Based on what you've heard from those in the community about [*Bay Transit Express / MetGo!]* service….

9a. What are riders' general impressions of the service?
9b. Are there any destinations or areas not currently served that could benefit from microtransit service?
9c. Are there additional times of day or days of the week where extra service is needed?

10. How do most of your *customers/ clients* get around when *Bay Transit Express / MetGo!* Is not in service?
11. If you or those you know don't use *Bay Transit Express / MetGo!* what are some of the reasons why not?
    11a. What are real or perceived barriers that make using these microtransit services prohibitive?
        - Examples could include limited hours of operation, unable to use smartphones, language barriers, accessibility for disabled riders, pedestrian conditions near stop locations, or others.
12. Based on your experience with the services, or upon what you've heard from others, what aspects of the *Bay Transit Express / MetGo!* are working well?
    - [potential examples could include wait times, travel times/directness, service reliability (of travel times), seat availability, safety, accessibility, rider experience -- to name a few]
13. What improvements to *Bay Transit Express / MetoGo!* would you suggest based on what you've heard from *clients/customers/constituents*?
14. [For agency staff and operators] What improvement(s) would you suggest to the microtransit service to make it more useful in the community?
15. What did you do to market and promote the *Bay Transit Express / MetoGo!* service?
16. What do you think the biggest challenge will be to getting more people in the *Northern Neck-Middle Peninsula / Wise-Lee-Scott county* to use microtransit, and why?
    - *Examples*:
        - Walking to pickup locations or from dropoff locations to their destination
        - Wait times or reliability of service
        - Convenience of private car ownership (i.e., most residents drive to get around)
        - Cultural barriers (e.g., language or comfort with shared-ride transit services)
        - Accessibility to riders with special needs (e.g., fare payment or booking issues, or riders with disabilities)
        - Affordability of fares/pricing
        - Something else?
17. What would you advise another rural community considering microtransit, based on your experience with the *Bay Transit Express / MetGo!* pilot program?

17a. Would you approach any aspect of the project differently?
17b. Any potential pitfalls or challenges to avoid?
18. Are there other people or organizations we should speak to about the microtransit pilot?

Appendix 2: Bus Operator / Dispatcher Discussion Guide

Note: This discussion could take place as one-on-one interviews or as a focus group.

Introduction:
The goal of this discussion is to hear about your perspective on the Bay Transit Express / MetGo! microtransit service as a *driver/dispatcher*. We're interested in hearing what is working well and where there is room for improvement.

1. *[For drivers]* How long have you driven for Bay Transit / MEOC, and for the Bay Transit Express / MetGo! services in particular? Have you driven for any other transit agencies in the past?
2. *[For dispatchers]* How long have you worked for Bay Transit / MEOC? And how long have you worked in the public transit industry generally?
3. *[For dispatchers]* Can you describe your responsibilities at Bay Transit / MEOC?
4. What do passengers like about the Bay Transit Express / MetGo! service?
5. What is currently working well with the service, from your perspective?
6. What types of complaints do you typically hear from passengers on Bay Transit Express / MetGo!?
    a. *[examples: wait times or reliability, hours of operation, ease of use for the mobile app or call center bookings, affordability of fares, accessibility, pedestrian conditions at pickup locations, safety, cleanliness/comfort onboard, others?]*
7. Do you think these complaints are valid? Please explain why or why not.
8. Do you know of any safety or operating problems on Bay Transit Express / MetGo!? If so, please explain.
    a. *[Examples: traffic congestion, high vehicle speeds, signal timing at intersections, parking enforcement, pickup or dropoff locations that are unsafe for passengers to board or alight, issues with vehicle maintenance, etc.]*
9. What changes would you suggest making to the Bay Transit Express / MetGo! service?
    a. *[examples for drivers: extending service zone to new destinations that are unserved, changes to scheduling or driver shifts, changes to hours of operation, additional vehicles to handle ride requests, changes to driver app, break locations or maintenance facility, etc.]*
    b. *[other examples for dispatchers: changes to the VOC or admin software, e.g., reporting, trip assignment, driver communications]*
10. Is there anything else you would like us to know?

Appendix 3: Rider Discussion Guide

Note: This discussion could take place as one-on-one interviews or as a focus group.

Introduction:
The goal of this discussion is to hear about your perspective on riding the Bay Transit Express / MetGo! microtransit service. We're interested in hearing what is working well and where there is room for improvement.

1. How did you first hear about the Bay Transit Express / MetGo! service?
2. How often would you say you ride the service?
3. *[for Bay Transit riders only]* Do you use other public transportation in your area? (e.g., New Freedom, Medcarry, West Point-Paper Trail, Rivah Ride to Rappahannock)
4. Do you have access to a private car at home?
5. How do you typically get around when Bay Transit Express / MetGo! is not operating?
    a. *[Examples: taxis, rides from friend or family, walking or biking, driving own car]*
6. When you ride Bay Transit Express / MetGo! what kinds of trips do you take most often?
    a. *[Examples: commute to work or school, shopping or groceries, social outings with friends or family, medical appointments, pharmacy, social services, childcare, recreation]*
7. What motivates you to ride Bay Transit Express / MetGo!?
    a. *[Examples: convenience or reliability of the trip, cannot afford a private car, cannot drive due to disability, car is being repaired or used by others, saving money on gas, etc.]*
8. How do you typically book a ride?
    a. Mobile app
    b. Calling the dispatcher
    c. Someone else books on my behalf
9. How do you typically pay for your ride?
    a. Cash
    b. Credit/debit card saved in the mobile app
10. What do you like about the service?
    a. *[examples: shorter travel times, saving money on transportation, shorter wait times, ability to travel on demand, friendly drivers, access to new destinations not available on other public transportation, ease of use of the mobile app]*
11. What improvements would you like to see from the service?
    a. *[examples: shorter wait times, extended service hours, wider coverage to more destinations, easier to use mobile app, easier phone booking process, vehicle improvements, clearer signup instructions]*
12. Which of these improvements is most important to you, if you could only pick one?
13. Would you recommend Bay Transit Express / MetGo! to a friend? Why or why not?
14. Is there anything else you'd like us to know?

Appendix 4: Stakeholder Interview Transcripts

Stakeholder interviews included those with the director for each agency, the MEOC Transit Operations Director, a Bay Transit on-site supervisor / office manager, a Gloucester County community outreach liaison, a representative from UVA Wise, and the Executive Vice President & CEO for the Wise County/City of Norton Chamber of Commerce.

1. [For service providers] Can you tell us more about your organization?
   - [Bay Transit Director] Bay Transit is a division of Bay Aging which serves a ten-county region. Bay Aging started in 1978 doing Meals on Wheels, etc. Expanded to housing, in-home aid care. Bay Transit is just one division; it started in 1996 in one county. Expanded to 12 counties. Over 3,000 square miles. Most service is curb-to-curb demand response. A lot of counties operate as a mini system within the region. Some counties are fairly independent. Bay Transit operates two deviated fixed route services. We are very rural. Demand response buses travel quite a bit to get people where they need to go. Average trip is 10 miles. Due to rural nature of our community it's effective but not efficient. Each county determines how many vehicles to support financially.
   - [MEOC Director / Transit Operations Director] We've been in business since 1974. We're part of an Area Agency on Aging. We provide public transportation for three counties and a city in our area in southwest Virginia. Our area is about as rural as can get. Economy of our area was basically coal. Coal has been in decline. Expect our population to decrease by 10 percent. There are 90,000 people in our service area. All of our service is demand response except Metgo!.

2. [For public agency staff] Can you tell us about your agency's roles and responsibilities, mission, and history of working with the community on transportation issues?
   - [Gloucester County] Don't know if I can speak to that. I'm more on the marketing side. I'm in community engagement. I'm with marketing and public engagement. We partner with Bay Transit. We don't have city bus, have limited taxi service, etc. We were excited to partner with Bay Transit at that time regarding the perceived efficiencies.
   - [UVA Wise] We obviously have a group of students who commute and a group of students who live on campus. We have walking paths but have tried to provide transportation with our own fleet. With insurance and risks we decided not to continue with students driving students. We then partnered with MEOC. That evolved to Metgo! If were to take away the service now it would be a mess. Students rely on it. We want students involved in the community.
   - [Wise County Chamber] We are the Wise County Chamber of Commerce. We get a lot of calls for people who need transportation to different places. Metgo! has been a great addition especially for college age kids.
   - [DRPT] As DRPT we are the state agency responsible for transit in the Commonwealth. We oversee 5311 program. We provide resources to smaller agencies in terms of transit planning. We have a lesser role in engaging the public and community engagement. Our primary function is that we're a big funder of transit. All agencies receive operating assistance and federal funding. We provide funding oversight. We have demonstration projects like this one. We try to provide technical assistance whenever there is a need.

3. Are there particular pockets or areas where many of your clients/customers/constituents live, work, or regularly travel to?

- [Bay Transit Director] There are several throughout the service area. The one with microtransit is the largest pocket. There are no towns larger than 2,000 people. Pockets include three hospitals and three Walmarts. Other retail and other medical sprout from those three points. Work, shopping, and medical are around those three points of interest.
- [Gloucester County] Sure. We are a rural community. We're certainly growing at this time. There are large swaths of forest. The village main street and Gloucester Point (near the Coleman Bridge across from Yorktown).
- [Bay Transit On-Site Supervisor] Yes, definitely. One area that they travel to is Walmart. That's the major destination point. We have various pockets where riders live. With us being rural by nature have some areas that are more developed with housing, mobile home parks, and apartments. Those are higher density.
- [MEOC Director / Transit Operations Director] Yes, our two largest service areas are Norton, a city with less than 5,000 people, and Wise which has the most population of any county and includes services, the courthouse and UVA. MEOC's offices and maintenance facility are located in Big Stone Gap. We're planning to expand to this area. We also have a community college in the Big Stone Gap area. There's an industrial park in Duffield. Duffield / Big Stone has the second largest population in the region. We do not have any outside services such as Uber and Lyft. The only other transportation available is Medicaid transportation and there are several companies. We have a fleet of 48 vehicles. Most are 15-passenger body on chassis vehicles. We use four high-top Ford Transit vans for Metgo!
- [UVA Wise] We have a portion of students that live on campus. And there are apartments adjacent to campus. They use it a lot to go to grocery stores, Walmart, and activity centers. There's not a lot to do. It gives the students an opportunity to be engaged.
- [Wise County Chamber] Mostly within Wise County but we have a lot of requests for transportation to the Tri-Cities area and also the other way to Kentucky. It's about 45 minutes to an hour each way.

3a. What kinds of trips are relatively easy to make on public transportation?

- [Bay Transit Director] Typically trips within the county the rider lives in where the destination is.
- [Gloucester County] Would say up and down 17. Most major retail is along the 17 corridor from Gloucester Point to the courthouse. We do have a community college. If look at original route before it was expanded, it is pretty much along 17 and a mile on each side.
- [Bay Transit On-Site Supervisor] Everything is pretty easy. It's much easier for us to secure a ride if in the zone for Via. For demand response the ratio of accommodation is pretty good. We have a heavy work base. That takes up a lot of slots we have available. It's sometimes sketchy as to whether we can accommodate or not. Via has really helped. That frees up for people out of the zone to be accommodated by demand response.
- [MEOC Director / Transit Operations Director] Easiest are ones to grocery store, Walmart, etc. More difficult are medical for doctor appointments, etc. We don't have a

timeframe for return trips. We have five dispatchers split through the day with at least two at any given time. Need 24-hour notice before can get a trip for demand response.

- [UVA Wise] Most of what we do with Metgo! is pretty convenient. It's convenient to get students out of town, to Walmart, to the movie theater, etc. Some use it for medical appointments.
- [Wise County Chamber] More than likely the most common are shopping or doctor appointments. When Metgo! started we had college employees commuting to work. They used to some extent to commute to work.

3b. What kinds of trips are more challenging?

- [Bay Transit Director] Have twelve counties and only three major pockets. Some counties' residents have to cross over so we have to coordinate transfers and have some buses cross over. Regional trips are the biggest challenge.
- [Gloucester County] Would say the less dense areas. Gloucester area is kind of long. Not sure how to answer that. If go from end to Rappahannock Community College, it could take you 25 minutes. Not all roads are publicly maintained. There are a lot of private roads in Gloucester County.
- [Bay Transit On-Site Supervisor] More challenging trips are the demand response trips early in the morning between 6 and 8 AM. Evening is a little different versus trying to get people there on time. That time used to be a little later to 11 AM or so but Via removed some of that demand from demand response.
- [MEOC Director / Transit Operations Director] Medical trips. Usually more challenging because we don't have set return time. Have to work them into other trips. Most trips are for seniors. All vehicles are wheelchair equipped.
- [UVA Wise] For some of our students for specialty medical appointments where there's a need to cross the state line into Tennessee. That's a challenge for us. We have employees too. Being able to extend to adjacent towns for employers. We don't have any other transportation services here.
- [Wise County Chamber] I would say the more challenging trips are the doctor appointments in the Tri-Cities area about 45 minutes away. We do have Medicaid transportation. For college kids and that demographic, we don't have a lot available here.

4. In your view, what are some of the most important transportation challenges or needs in your area?

- [Bay Transit Director] I think regional connectivity. Because we're a rural transportation system. We don't have a regional authority or board. We have to go to counties each year to ask for funding. Some want regional. It's not consistent. That's why we don't do a lot of commuter service. It's not feasible. It's not consistent.
- [Gloucester County] I think this has really been great. In my opinion, the hours. I think this service is awesome. Would like this service in evening hours and weekends. Transportation barriers/challenges might be an issue. Major roads are maintained by VDOT but not all roads are public.
- [Bay Transit On-Site Supervisor] For the people that live in the northern part of the County and to the east and west of the zone it's challenging due to sparsity. Those people are less likely to be accommodated.

- [MEOC Director / Transit Operations Director] Some of the most important challenges are afternoons and weekends. Funding will only permit us to do so much. One of the greatest challenges is that Valley Health purchased all medical facilities and conglomerated them in Kingsport, TN. It's about 50 miles. It's been a challenge for us to meet that demand. Another challenge for us is that in our area we're more than twice the state's poverty level. Many don't have a vehicle.
- [UVA Wise] We don't have anything other than Metgo! Have tried other services like Uber but they haven't worked.
- [Wise County Chamber] Just distance basically. From one end of the County to the other it's close to one hour or more. We do have really good roads, but the distance. From one end of the planning district area, from Bluefield to Lee County, it's 2 hours.
- [DRPT] I think one of the proverbial issues of providing transit especially in rural areas is to adequately provide links where people want to go. And meet changing demographics. It kind of depends region by region. In northern Virginia congestion has always been a challenge. Transit has been a solution to address congestion. That doesn't apply as much in other areas. Particularly in rural areas, needs are all over the place. We try to address those needs. We try to come up with a cost-effective solution that meets their needs and is something the local government can rally around. Rural transit is fairly expensive. We want to identify how we can leverage technology to improve efficiencies and make the service model fit the needs. In terms of funding and business case, finding the right solution tends to be more expensive and a deterrent for local governments. A lot of the solution has been marketing and engagement. We work to identify how they can work together collaboratively. And we encourage through statewide contracts or more platforms for rural agencies to connect. At the end of the day, it's more about the education and training piece.

5. Are these the same challenges your clients/customers raised to you in the past? If not, where do they differ?

- [Bay Transit Director] I think that [regional connectivity] is one of them. Feedback we get from riders is how far in advance it takes to schedule a trip. Passengers sometimes not accommodated. Software is not able to fit them in and they weren't notified in a timely manner. Accommodating demand with the number of vehicles we have is their biggest complaint.
- [Gloucester County] We have traffic concerns. Really only have one major thoroughfare. Especially when have bridge openings we have backups. Some people talk about traffic and access to public transportation although this service has definitely improved that.
- [Bay Transit On-Site Supervisor] Yes.
- [MEOC Director / Transit Operations Director] Those are a good portion of what's been relayed to us. The 24-hour thing is a big challenge. If you have to suddenly go to the doctor for example, it's a big challenge.
- [UVA Wise] Yes, there's still challenges. Transportation in general is a challenge. We've learned about Virginia Breeze. If people can get over to Bristol, they do have that opportunity. It can be a challenge to get to work. Without Metgo! it would be difficult.
- [Wise County Chamber] Yeah, it's basically the same types of challenges. Metgo! has done a good job to help address and alleviate some of those.

6. What were the most significant challenges between the project's inception and launch?

- [Bay Transit Director] First was funding. Obviously, we started with the pilot money. Explained to Gloucester County Board how it would work. Needed their commitment. They were skeptical. They didn't know microtransit or how it would work. Stakeholder relationships were very good. Gloria Williams was key. We like everyone else experienced staffing challenges. We haven't gotten vehicles from manufacturer yet. Think will be more efficient once get fuel efficient vehicles. We've had a good experience working with Via. Only issue has been the time taken to get technical assistance and get issues resolved. Software itself works very well. Biggest challenge to success is apprehension of riders to take leap from demand response and use it. Once they use it, they love it. Then getting them to download the app. Some don't have smart phones. We did some training but weren't able to reach a majority of the population who are technologically challenged. Now have 40-45 percent using the app.
- [Gloucester County] Ridership continued to grow. Feel like this question would be better for Ken Pollock. Seemed to be pretty seamless to me. We played the role of a significant partner. I came to board meetings. Anytime you can help provide improved services you take that opportunity. We didn't experience a ton of challenges. And Via did a good job. We have a really good working relationship with Bay Transit. They are always looking at ways to innovate. I'm just excited for them and our community.
- [Bay Transit On-Site Supervisor] Most challenging part was trying to determine the area. Make sure to have everyone covered as far as what we could and the radius that we had. It was really interesting. We knew we were coming up with something that would be beneficial to the community. It wasn't really a challenge.
- [MEOC Director / Transit Operations Director] Our earliest challenge that we had to overcome was the doubt that it wouldn't work. It took us a while to pinpoint destination points. Zoom training was okay. Showed us how to operate the system and gave us fake routes to practice and an opportunity to try what we saw. We were supposed to have two days of training with the drivers. However, the system ended up locked and we couldn't use it until the day of the launch. We had to learn the system ourselves. We had to troubleshoot ourselves. The service is the best thing that's happened in a long time. It's been a success to change lives. It's elevated lives and helped people have jobs for the first time. When had issues, the response was we'll get with our team. We had to figure things out ourselves. If want anything done like a zone expansion, might as well plan for 2 months. We extended hours from 7 AM-5 PM to 7 AM-7 PM and also extended the zone. We had people walking a mile to book a trip. The expanded hours tremendously helped with employment. That change took two months. Didn't think it should have taken so long just to change the times. We think Via was trying to learn the system in a rural setting. All that said, we would deal with all the negative to have how it's truly impacted our community. / Also fixed picking up people at certain locations. Even with the vehicle there, it wouldn't release the vehicle for 10 minutes. Wish could override in the system to say that the passenger is already on. Think we lost a lot of passengers during that time. Could have saved time and picked up another passenger. / Would like to have a comment box so rider and driver can communicate. The software has it in there, you just need to turn it on. Riders can say I'm at the Family Dollar or I'm at the front entrance to Walmart. That would be a huge asset and would save time allowing us to book more trips. / At a focus group a couple of things were brought up. A gentleman who is legally blind finds it hard to book a trip on his phone. If there was some type of voice prompt, it would help.

- [UVA Wise] For us it seemed seamless. Getting kids to download an app and get started. They are tech savvy. Our students enjoy the service and the drivers. The challenge would be if there was no more Metgo!
- [Wise County Chamber] I would say basically getting the word out, to learn what it is and how to use it. Getting on the phone and learning how to use the app. We did a lot of training. Overall getting people to trust it, know that it will work, and use it.
- [DRPT] I think from our perspective some of the challenges were related to getting the technologies procured and getting from concept to buses rolling on the ground. As a state agency, we had various hurdles to procuring the technology. To be able to extend the technology to agencies to remove the time and need for additional resources for the procurement process. For microtransit, we assumed DRPT would procure and allow agencies to use it. The Virginia IT agency has to bless any procurement. They poked holes. It became burdensome. We felt it wasn't worth our time and effort to go through that process. We approached Bay Transit to procure on DRPT's behalf. If had to procure again, we would try to push through at the state level. We ended up receiving a burdensome FOIA request. The lesson learned is that we really need to do what we can. We were lucky that Bay Transit had someone on staff with procurement experience. It's understandable that rural agencies wouldn't have someone like an agency such as GRTC. Other than procurement it was straightforward. We applied for the grant from FTA. We brainstormed ideas. We reached out to Bay Transit. Got award. Did procurement. Between procurement and launch, there were minor challenges because the concept was so new. At that time there were few case studies for truly rural areas. Agencies had the challenge of learning the lingo of the transit world. Via had little experience with such small agencies. There could have been more training of staff teams. It was done in the middle of COVID. We ended up delaying the launch 6 months. We weren't sure of what to expect with transit ridership. We had to overcome the uncertainties caused by the pandemic. For training and local troubleshooting, there were times that agencies felt Via wasn't very responsive. There could have been more training for call centers that provide transportation information about this new service available for use.

7. Are you aware of any operational challenges the Bay Transit Express / MetGo! Service has encountered since launching?

- [Bay Transit Director] We weren't sure what targets would be. Weren't sure what to expect. Grant funded one vehicle. Weren't sure of capacity. Started by trying to get 15 rides/day. Then tried to get 20 rides/day. In 8-hour span 30 rides/day would be capacity. Then set goal for 100 rides/week completed. That took some time. Before expanding service in October were doing 100 rides/week. Since expansion we received second vehicle with second grant. Took fixed route and have 3 vehicles operating. Could fully fund three small vehicles without asking County for additional funding. Ridership has taken off. Now 350 rides/week. Had 1,300 rides in December which has been the best month ever. We took a month to wean them off the fixed route. We expanded the zone so every stop on the fixed route is covered. Nobody using the fixed route is without service.
- [Gloucester County] No, unfortunately. Ken and Mike Norvell have been the biggest promoters. They've been all over the place. In my role I work with schools. They've handed out flyers, placed in library, etc. They've done a good job to get the word out and used any avenues they can. Can't beat the price. It's very accessible.

- [Bay Transit On-Site Supervisor] The problem that we had that just got corrected and is still presenting a little is that we had information coming up for drivers and ourselves that would tell a rider to walk to a corner versus having the bus drive to their location. As we expanded from one bus to three buses and expanded the area, the volume took off and became hectic. The driver would not know where to go and was calling in to dispatch to find out where they were supposed to be. It was changed to exact address. This will take the drivers a little bit of time to learn the addresses. Would like to incorporate points of interest with certain physical addresses. The service is very popular. It's working well. A lot of people are signing up. Used to be able to get a ride in 4 to 5 minutes. Now it might take 15 minutes depending on the time.
- [MEOC Director / Transit Operations Director] One thing we've asked for and it creates an issue at the end of the shifts. It won't let them book return until dropped off at Walmart for example. If they could book return trip, both A leg and B leg when they book it would be better. Riders have said that if they knew they couldn't get the return trip they wouldn't go. Dispatch can do both. It's just a switch that needs to be turned on. / When booking a trip, it'll require you to go through each timeframe. This takes so much time. It would be better to just show the next available slot. With dispatch needing to run demand response, etc. it can sometimes take 10 to 15 minutes to book. / The great thing about the software is that you can book where you need to go and can cancel out a ride. It's great software if you could just tweak a couple of things. It feels like we have a basic version. If could turn on more features, we could provide more rides. Overall, it's an easy system to go through.
- [UVA Wise] If they've had any, they have not shown them to us. None that I'm aware.
- [Wise County Chamber] When first launched we only had two vans. Now there's three or four. When first launched when calls came in being able to schedule, pick up, and drop off. They've done a great job.
- [DRPT] Remember that Metgo! service was zero fare from the get-go. And they have never collected a fare. Bay Transit started with a promotion but then collected fares. They have continued to do promotions. When Bay expanded service, they went from $2 to $1 per trip. Everyone was impressed with the MEOC service. We were trying to compare the two services. That wasn't fair. What MEOC did different that caused the explosion of ridership may have been the lack of a fare. For Bay, it was discussed whether the microtransit service would be replacing the Hive Express. When implemented it wasn't actually replacing the Hive Express but intended to be complementary to and work as a feeder. It would be interesting to talk with Ken to discuss what would have happened if the other model was implemented from the get-go. In a dense area, a feeder makes sense. For rural areas, not sure if that's there. Since October, Bay expanded their zone and they've fully replaced the Hive Express with microtransit. They should be able to compare pre-IMI, the scenario with both, and with it being replaced. Compare the three phases and see what's changed with efficiency method and cost. Then could determine the best practice and whether to step down the change or replace at the outset. MEOC out of the gate made quick adjustments to their zone. They had originally missed some critical areas. They had clients walking 3/4 of a mile. There have been two issues that continue to be sticking points. / Via has virtual bus stops. The intent was to migrate people to these locations. It's been a challenge to riders and drivers. That approach might be better in an area like Richmond. / The new technology has been a challenge for drivers. Drivers forget to log out at the end of the day. That creates an issue on the backend with the data. There's no easy way for Bay to

correct that data. Bay has gone to tracking their hours in their existing system which is a redundant effort. / Don't know if accessibility was an issue in terms of operations. There could have been an analysis on right sizing vehicles for this service. Bay found that the high-top van was well suited. It is more fuel efficient and only 2 to 3 people are on board at a time. And the vehicle is more nimble. Initially with COVID we had capacity restrictions. The high roof Ford Transit vehicles look more sleek and more modern. Cutaways look older and less efficient.

8. [For agency staff] Do people in your community use the service? Why or why not?

- [Bay Transit Director] Yes. It took a while. We were skeptical at first. There are still holdouts that use the demand response that serves the whole county. Bay Transit Express is cheaper to use. We incentivize with 10 free trips. Demand response requires a minimum of 24-hour advance notice. Why? Convenience. People are using it for three major reasons: work, health services, and shopping. There's a large hospital. We have targeted low-income housing, senior housing, and other areas. We tried to encompass all reasons for people that don't have transit independence. Area is rural. Everyone that can afford has a car. Ninety percent of the area has no Uber or Lyft. They just don't have many options.
- [Bay Transit On-Site Supervisor] Yes. Because it's instantaneous versus demand response. Previously some days could do same day and some people not accommodated. Now guaranteed to get a ride. It's very convenient. They like the availability. They are able to spontaneously travel without being on a strict schedule. People may not use the service because they don't like technology. We put in the majority of the rides. Most don't have smart phones. If they do have them, they don't like to use them. We have had those who are elderly come in and have shown them and they use it. Some don't. They may not like the technology or the independence of it. We still do it for a lot of people.
- [MEOC Director / Transit Operations Director] As far as people in the community, they're so excited to be able to use the service. It's kind of become a community in itself. Most has been by word of mouth. We've actually stopped advertising. Everybody wants it in their community. It's been a game changer for demand response. We started out with 5 riders. We now do close to 1,000 trips/week. That's all we can handle. We could use another vehicle. Our fourth driver only works 6 hours. The last hours from 5 PM to 7 PM have only 2 vehicles.

8a. Can you describe the demographics of your ridership?

- [Bay Transit Director] Age wise some of our counties are in the top ten or top ten median oldest in the state. These fall into two groups: wealthy retirees who live along the coast and those who've lived here all their lives. Or those who've reached an age that they can no longer drive. Families with one car with two car needs. Someone needs public transportation to shop or do what they need to do. Not a lot of choice riders at this point. Hoping that will change. We've lowered wait times. Call ahead times are no more than what's needed to hail an Uber or Lyft.
- [Bay Transit On-Site Supervisor] A lot of senior citizens. A lot of young adults that work that don't have vehicles. Probably half and half.
- [MEOC Director / Transit Operations Director] Ours is pretty much a microcosm of the area as a whole. Sixty percent of our riders are over the age of 60. We initially thought the college would overwhelm the system. That was not the case. The app to book a trip

is easy. A person can set up an account in less than 30 seconds. We were told it would never work in our area. That's a myth. That's the beauty of microtransit.

8b. Who is under-represented, and who is over-represented?

- [Bay Transit Director] Senior citizens are overrepresented. Teenagers are underrepresented. For teenagers there is a stigma. We are trying to tap into high schools. Kids could get a ride after band practice, etc. And the parent wouldn't have to leave work. We're trying to work with schools. That population is significantly underrepresented in our ridership.
- [Bay Transit On-Site Supervisor] Underrepresented would be that those who ride are on the lower end of the economic spectrum. We're not serving people on the higher end of the spectrum. If had more hours in the evening and weekend would bring in different demographics. It would be good to serve locations like craft beer and other locations.
- [MEOC Director / Transit Operations Director] It's equitable for all. For seniors. It works for first mile / last mile. Don't think there's anyone in our area that's underserved. If we can't accommodate with microtransit we can shift to handle with demand response. Another thing that's been a game changer for us is that we received a grant to allow our system to be fare free for four years. That's been a driver.

9. Based on what you've heard from those in the community about [Bay Transit Express / MetGo!] service….

9a. What are riders' general impressions of the service?

- [Bay Transit Director] App allows people to rate our trip. We're at 4.8 out of 5. Feedback from riders through the app has been very good. If any complaint it is why we're not doing nights and weekends. Goes back to level of funding at this point.
- [Gloucester County] I think they like it. Before had to do the fixed route, which can require waiting or calling ahead. The team at Bay Transit has given option for those not tech savvy to call in. That made it a better fit for our community.
- [Bay Transit On-Site Supervisor] They love it.
- [MEOC Director / Transit Operations Director] Think it's overwhelmingly positive. Survey we did was overwhelmingly positive. Met with Town Council in Town of Norton. We've heard nothing but positive comments from businesses. Wood came down and rode and spoke with some of the riders. A woman came up to him and cried and asked to keep the system for she and her legally blind husband. It's been a life changer.
- [UVA Wise] They love the service. They love the drivers. We're not aware of any problems. Students brag on the service and the drivers.
- [Wise County Chamber] Overall it's been a positive thing. Like anything, there are always those not 100 percent satisfied. It offers a way for people to get around if they don't have other options. I know we have Mountain Empire Older Citizens still. They both complement each other well. People have been able to take jobs. People have been able to go to school and take classes to be able to get a job. One of the biggest obstacles is being able to get back and forth. The other is childcare.
- [DRPT] The information that's filtered back to us has been very positive. MEOC has shared that the service has been life changing. There has been media coverage on the MEOC service. There have been no complaints including any Title VI violations. A lot of our transit agencies have reached out to Bay and MEOC. We've seen that manifest in

more pilots and studies for microtransit as an additional mode or to replace. Mitch has said there's a potential for similar deployment in the I-81 corridor.

9b. Are there any destinations or areas not currently served that could benefit from microtransit service?

- [Bay Transit Director] Looking at entire service area, absolutely. Contemplating replacing deviated fixed routes in Tappahannock and West Point. Longer term goal is to incorporate as much as possible. Found our operating cost is about half of demand response. Want to decide how to use that funding more efficiently to expand beyond deviated fixed route. We will be replacing our demand response software. That will dictate how we move forward. Want that capability throughout our system. See what we can do with it.
- [Gloucester County] Totally. I'd like to see it across the County. I'd like to see expanded hours across the County. It could be an economic development tool. There's a lot of history here. Pocahontas' family is from here. We have a state park. The service could serve recreational assets.
- [Bay Transit On-Site Supervisor] We have an area called Cedar Lake. We have a few riders over there that use transit consistently. They may come into the area and ride it. If we moved north that might help. Just a little higher northbound.
- [MEOC Director / Transit Operations Director] That's what we're working on now. Every location in our service area is needing and wanting the service. There are several areas where it would be a game changer for providing public transportation.
- [UVA Wise] If allowed to extend into the Tri-Cities area including Kingsport, Tennessee to provide more access to entertainment venues. Expanding Metgo! is the answer there.
- [Wise County Chamber] Not really for sure. If they were able to go to bordering counties. If it served Kingsport, Tennessee and Kentucky for those needing medical care and specialists. That's where the two major doctor areas are for specialists.

9c. Are there additional times of day or days of the week where extra service is needed?

- [Bay Transit Director] We haven't dipped our toe into nights and weekends. Think right now can meet our peak needs with vehicles available. That may change. But don't have that issue right now.
- [Gloucester County] I'd like to see it on weekends, later at night, and in the mornings. Expanded service would be well utilized; at least it could be down the road.
- [Bay Transit On-Site Supervisor] Sure, it would be. If we expanded. Right now, we have demand response. We are in the same area we cover for Via with demand response after 5 PM until 6 PM. And of course, the weekends and expanding past 5 PM to maybe 6 PM. That would also apply in the morning. We pick up demand response in that area starting at 6 AM. That would free up demand response.
- [MEOC Director / Transit Operations Director] Of course. Certainly, in our area the weekends and later hours. Any form of questions is answered by we'd like Saturday service or later service.
- [UVA Wise] We've always talked about needing more evening and weekend service. We want to find things that students could take advantage of. If had to choose, would take weekends.
- [Wise County Chamber] No, I think they serve most every day. I'm not sure about the weekends. You see them transporting about every day.

10. How do most of your customers/ clients get around when Bay Transit Express / MetGo! Is not in service?

- [Bay Transit Director] The service operates from 8 AM to 5 PM Monday through Friday. Demand response is from 6 AM to 6 PM Monday through Friday. There are riders within the microtransit zone that need to get to work before 8 AM or get off after 5 PM that use demand response. Rely on friends and family. There's not much in the way of taxi service available. Options are limited when Bay Transit is not operating.
- [Gloucester County] Other Bay Transit offerings. We really don't have Uber here. We have a couple of taxi companies. We have some medical transport companies.
- [Bay Transit On-Site Supervisor] Relatives. Friends. We don't have any other kind of public transit. We used to have a company called Bluebell. We don't have anything much. Maybe families on the weekend.
- [MEOC Director / Transit Operations Director] They either don't go at all or someone in their family. There are not a lot of options in our area. Due to the economic condition in the area, most people don't have someone that can afford to take them.
- [UVA Wise] If they don't have own vehicle, they find a friend to help get to their destination. If they have a medical appointment, they have to find someone.
- [Wise County Chamber] Probably through friends or relatives. We do have some services; most deal with Medicaid/Medicare services. We have a couple of Uber drivers but no dedicated Uber service.

11. If you or those you know don't use Bay Transit Express / MetGo! what are some of the reasons why not?

- [Bay Transit Director] Some may not know what the zone is. Or they don't live in the zone, and it won't allow them. Ability to download the app. Comfort with their driver that picks them up on the demand response. Particularly those with wheelchairs. Larger vehicles with demand response have good securement.
- [Gloucester County] I would say having your own transportation readily available and income to pay for the gas that continues to rise. Even with those that have their own vehicle, there's still a place for Bay Transit Express especially if the hours are expanded.
- [Bay Transit On-Site Supervisor] Other than the timeframes, maybe because they don't know about us or maybe tried to use us or in a timeframe or slot that we can't get them. Some people we might be able to help, and they have a doctor appointment at 2 PM. We say we can get them there at 1 PM. But they don't want to wait.
- [MEOC Director / Transit Operations Director] Some may have had a bad experience early on. Don't know of any other outstanding reasons. It's safe and reliable. Time factor: they may have to work earlier or later. Does not allow you to prioritize trips. For example, if someone has to be to work at 7 AM and you pick up two others. Some riders have said they'd be willing to ride longer so someone could get to work on time.
- [UVA Wise] If they already have a vehicle or a roommate with a vehicle. Beyond that with no other service they can't travel.
- [Wise County Chamber] Probably one of the biggest reasons is availability at time service is needed. For older adults, they may feel confused about using the app to get service.

11a. What are real or perceived barriers that make using these microtransit services prohibitive?

- [Bay Transit Director] Limitation of zone operating in. Access and ability to operate a smart phone. Familiarity and comfort level with existing demand response drivers.
- [Gloucester County] I think they corrected for it by providing the phone option. Can still call and they'll book it for you. They were responsive to the community's needs when designing this service.
- [MEOC Director / Transit Operations Director] In our area we have very few sidewalks. If physically challenging, that can be a barrier. Driveways can be an issue because of the terrain.
- [UVA Wise] The only barrier I've seen is the limits on hours of operation and what their service area is.

12. Based on your experience with the services, or upon what you've heard from others, what aspects of the Bay Transit Express / MetGo! are working well?

- [Bay Transit Director] Diminished wait times and real time scheduling are the two biggest assets. At least from riders' perspective, convenience has dramatically improved for them.
- [Gloucester County] I think lots of things. It's fast. It's cheap. They're doing a good job getting the word out. There were some incentives. Can book on the phone.
- [Bay Transit On-Site Supervisor] Most of it is working well. Most people that ride with us, overall, everybody is pleased with the service. We do our best to accommodate as many people as we can. Sometimes we're late due to things out of our control such as traffic or weather. The Gloucester Resource Council consistently praises us for having this in a rural area. They're definitely proud of it.
- [MEOC Director / Transit Operations Director] Being able to book same day is the number one thing that is working well. To be able to take more than one trip throughout the day. Being able to make people more mobile. A gentleman that is legally blind that was in the focus group said it's been a life changer for him. He's now able to get a job and get to school.
- [UVA Wise] It's very consistent. It's there when they say it's going to be there. Their drivers and the way they interact with our students.
- [Wise County Chamber] I think they've got some really good drivers that are able to mesh well with the riders. For the most part I haven't heard that Metgo! is not available when needed. At the outset they got two vans. They were able to continue service through the pandemic; they had enough room to separate out riders.
- [DRPT] In general we have been pleasantly surprised at these two projects' success. We will be using this final reporting process to help define success for future deployments. We learned that you can't have the same performance indicators for different projects. It helped to have two pilots on the same technology. We liked how collaborative the effort was. It was good to have multiple agencies together to solve problems. The more of that we can do to encourage a team effort, the better. The data that we've collected through the two services has been useful. It's been good to see how well Bay and MEOC have been able to use the data. It's been useful in terms of what can be collected and used across the state with DRPT's role as a repository of data. It will help us tell a better story for bringing transit to a rural community. There are those that are skeptical about transit. New processes to solve problems has been seen as very positive to elected officials. Uber style transit has been very successful.

13. What improvements to Bay Transit Express / MetoGo! would you suggest based on what you've heard from clients/customers/constituents?

- [Bay Transit Director] It's preliminary but expansion of the zone and increased number of vehicles to cover larger part of the county. Wait times are still under 15 minutes. Scheduling is real time. All that is working well. More hours and weekends; expansion of service time.
- [Gloucester County] I don't know outside of expanded service. I think it's a great tool. They've done a good job getting the word out.
- [Bay Transit On-Site Supervisor] Right now the way we're trending up if we had another bus. We have three now. It would be good if we had four. Wait times have gotten longer. Our normal average/day is going up. Yesterday was about 70. The week before Christmas was in the 70 range. Add another bus. Expand the zone to pick up a few other areas. As far as the actual software, would like to provide drivers with a point of interest (e.g., Walmart, Chipotle, Applebee's). Don't know if it's the Via software itself, but occasionally will have a rider say that their app is stuck. Don't know if it's on the Via side or the rider's.
- [MEOC Director / Transit Operations Director] The number one important thing they'd ask for would be increased time in the afternoon and weekends.
- [UVA Wise] Again just expansion of hours and service area.
- [Wise County Chamber] Availability. I think they have 3 or 4 vans. If they increase their footprint of where they go, they will need to increase the fleet. Increasing the footprint.
- [DRPT] More hours and more vehicles. If money was no object, full weekend service and then greater hours at the end of the day. Especially with MEOC as a college town. They've done good to add hours.

14. [For agency staff and operators] What improvement(s) would you suggest to the microtransit service to make it more useful in the community?

- [Bay Transit Director] Same things I just said. Longer hours and weekends. Expand the zone to cover more areas.
- [Bay Transit On-Site Supervisor] Times, locations. That's about it. More buses. Expanded timeframes and additional locations would make it more useful.
- [MEOC Director / Transit Operations Director] We've probably already talked about it. Want the ability to tweak the booking process. It's an excellent system. It pretty much runs itself. There are just a few things if tweaked would help the service and make it more efficient for us.

15. What did you do to market and promote the Bay Transit Express / MetoGo! service?

- [Bay Transit Director] Utilized local radio. Advertising. Did live interviews on the radio. Social media presence. Press releases to local paper. Put information on Bay Transit website. County government put link on their website. Printed flyers and distributed them in community and posted on our vehicles. We really wanted to make sure those using our other services were aware.
- [Gloucester County] We have a publication called the Beehive. It goes out to every home and business. Placed it in that. We have a podcast, and it was highlighted. Posted flyers. Leveraged social media including LinkedIn, Facebook, and Twitter. Made a video and placed it on our website and on social media. Spotlighted on public access channel. Word of mouth. I work with the school system; talked about families that may have

transportation barriers. If could get a ride what would that do. It's affordable and more accessible that way.

- [Bay Transit On-Site Supervisor] Put out flyers. Did advertising on Facebook. Went into different communities and apartment complexes. Mike Norvel and Kathryn Newman. Drivers passed out flyers. We told every person that called in about it. Flyers on buses. Radio. Flyers in schools and businesses. We did a lot. Spoke about if on the Resource Council every month. There are 50 to 60 agencies on that council every meeting.
- [MEOC Director / Transit Operations Director] Early on Via had marketing materials. Mostly did on Facebook and on our website. Really, it's been a community thing by word of mouth. Early on had drivers pass out flyers. Had a driver that was a champion. He became a salesman himself. Have become afraid to advertise so not to overwhelm the system. When college was out of session it didn't slow ridership.
- [UVA Wise] We mass distributed the flyers that had instructions on the app and how to download. We described the service as part of new student orientations.
- [Wise County Chamber] As the Chamber, we had them for a couple of programs for some of our meetings. Posted information on our website. If anyone would call, we would give them information on the service. We also have pamphlets in the office.
- [DRPT] DRPT first off participated in the ribbon cuttings. We did press releases at the beginning of service. We did briefings to CTB. Don't think we did any local marketing; we left that to Bay and MEOC. Our staff have highlighted rural microtransit and these two projects. We work to promote and raise awareness at the state level. We have included in presentations at CTA, VTA, APTA and the Shared Use Mobility Center Mobility Summit.

16. What do you think the biggest challenge will be to getting more people in the Northern Neck-Middle Peninsula / Wise-Lee-Scott county to use microtransit, and why?

- [Bay Transit Director] Biggest roadblock is convenience of car ownership. Our target audience is those who don't drive or cannot drive. This service is not available except in just one of our counties. Will still face challenges with smart phone access and use. We are very satisfied and looking at ways to expand into other parts of our service area. This has shown us that we can do it very affordably.
- [Gloucester County] Time. Making sure people know what it is. It's a huge area, the size of Delaware. Getting the word out. Making sure we're marketing it and providing good service. These aren't challenges. We're up to it. We don't have taxi service. We are fortunate to have been chosen for this pilot and it has made a difference.
- [Bay Transit On-Site Supervisor] If we put it out there, they will use it. Serve Northern Neck, northern Gloucester, and Matthews (Matthews is less dense). Go to Langley, Hampton, Fort Eustice, etc. A lot of people work there but live in Gloucester. Gloucester is unique. We have some density. It's now about 40,000 people. When you go to the rest of Gloucester, Matthews, Middlesex, they don't have that. There are no militaries or industries to draw on. It will be more challenging.
- [MEOC Director / Transit Operations Director] Again the challenge was through the first process. We have worked through a lot of the bugs. Our people have been promised a lot of things that didn't work out. Take what we've accomplished and continue elsewhere. The challenge is always funding. Success breeds success. That will help us. We have the numbers to prove it.

- [UVA Wise] If Metgo! serves those new areas, it's creating the culture. Metgo! comes to events and sets up a table so students know what it is. Getting information out.
- [Wise County Chamber] I'd say just like anything else getting the word out. Getting people to understand what a great service it is. Getting people to do the rideshare thing, riding with multiple people, and stopping at multiple places along the way.
- [DRPT] We're going to have to figure out procurement and navigate with VITA. DRPT has to be the procurement agency. And we need to provide funding for pilots and for ongoing funding. Regular operations will be a challenge. Even as cost effective as microtransit is, it will be a challenge. Not just long-term but for seed money to get started. We've seen a lot of increased interest. We've asked for a study first before they can ask for a demonstration grant. We've seen a lot of studies. We know the requests for demonstration grants will be coming. We'll have to figure that out and don't know if locals will step up to fund. Right now, microtransit is trendy. Need to know whether agencies truly have the internal capacity to pull it off. Even though the software is internally driven, there's still a lot of work to dynamically address technology gremlins such as scheduling through the app. A very small service may not be able to address the issues. One of the main reasons for the successes of these two pilots has been that Ken and Mitch as directors were all in. They addressed problems as they came up. They didn't pass off for staff to address. It will be an issue of capacity and willpower from the top to dedicate resources, provide training, and work through customer service issues. Will need will and drive from the top.

17. What would you advise another rural community considering microtransit, based on your experience with the Bay Transit Express / MetGo! pilot program?

- [Bay Transit Director] Do it! Make sure you have local government buy-in. I think the pilot grant gave us the courage to take the leap and the funding to do so. Had talked internally but having the grant and support from DRPT gave us the courage. Would encourage FTA and DRPT to make pilots available. We have been pleasantly surprised with the outcome. Economically it makes sense. Local government can put less in. It's a win-win from what we've seen.
- [Gloucester County] Leverage your stakeholders and partners. One thing they did well was reach out to us in the beginning and have a County partner on the committee. I could take information back to County staff. At the end it was the transit partner's call. Social media is great, but we also did it the old-fashioned way through newspaper, etc. Mike was everywhere. Ultimately you must provide really good service.
- [Bay Transit On-Site Supervisor] Recommend that they really go out and survey the residents and find out if they truly have a need for it. For demand response, we have less ridership coming out of Matthews per capita. The average income is more than in Gloucester. Would recommend to others considering microtransit to canvas the community to see if there is a need for it and whether people would ride.
- [MEOC Director / Transit Operations Director] I would be the poster child for saying this is the answer to a lot of your problems. Being involved with demand response, we know the inefficiencies. We do 100,000 trips a year. Within a ten-mile area for microtransit, we did 40,000 trips a year. Forty percent of our trips were done with only four vehicles with two that were part-time. It hasn't been something we've had to micromanage every second of the day. Even some of our own people were skeptic. We proved that all those things were not a hindrance. Give it a shot. Think would work better in a rural area

because most rural areas have no other options. And talk about equitable. What's more equitable than being able to book on your own.

- [UVA Wise] Meet the Metgo! folks and mirror what they did. It was very smooth. From the college standpoint, our ridership was tremendous from the beginning and stayed consistent in time.
- [Wise County Chamber] I would recommend it as far as being able to use it. If they could develop a Metgo! in their area and be able to use it. You could connect it with other Metgos!. I would highly recommend they look at a Metgo!-style in other rural areas.
- [DRPT] A big thing is in the rural context, will need to make sure you have destinations in your zone. Don't try to use it as a feeder service. Both had a good mix of where people lived, and places people need to go. Have a well thought out need for microtransit rather than thinking it will be a silver bullet to solve everything. Think how it works and how it will address key needs.

17a. Would you approach any aspect of the project differently?

- [Bay Transit Director] I don't think so. Because in hindsight the biggest challenge was teaching people how to use their smart phone and download the app. With COVID we couldn't do that face to face. We did a drawing for a free gift card and gave away ten free rides. Would recommend having face to face contact with target population early on. We had 14 proposals for our app. Went through them diligently and selected Via. Finding a reliable partner for your software is important. Don't think would be as successful if went with the cheapest offer.
- [Gloucester County] If there was more money. Keep it moving. Go all the way north and expand it. Via was good and efficient. Sometimes tech companies shuffle us around. Via would show up and make you feel like you were taken care of. They did all the posters and graphics. That was helpful.
- [Bay Transit On-Site Supervisor] No, I don't think so. I think everything was done the right way. We were given funds at the beginning to put a bus out there. Then we got funding from another grant to put another bus out there. I would have had Via be more integral in their training. We got training and some handouts. It still left a little go find it out on your own a little bit. Spend a little more time with it and have a little more coverage of information.
- [MEOC Director / Transit Operations Director] I can't think of anything. Via had a lot of experience.
- [UVA Wise] No, I can't think of anything. Keep it funded and expand it.
- [Wise County Chamber] No, I think they did a pretty good job of approaching and getting it implemented. They didn't try to do it too big too fast. I would recommend growing it in time. At first it was for college students to the Norton area. It was very controlled at first.
- [DRPT] A study would have been helpful to frame expectations. We didn't have a study. We worked with a GPC contractor to do a quick back of napkin.

17b. Any potential pitfalls or challenges to avoid?

- [Bay Transit Director] Can't think of any. Think a critical piece that we didn't pay enough attention to was educating our drivers and dispatchers on how microtransit works and how it would affect them. Make sure front-line staff are educated as to what is going to happen.
- [Gloucester County] Honestly, nothing that I could speak to. No.

- [Bay Transit On-Site Supervisor] The only thing I would say, I wouldn't call it a pitfall. It was a challenge. With Uber, if you don't have a smartphone you don't ride. We offer assistance. It's a challenge. It takes a lot of time to take the calls and personally schedule. I wouldn't want to change it. That would defeat the purpose of those needing it the most.
- [MEOC Director / Transit Operations Director] You have to have the drivers buy into it. Had a driver that was a champion. Drivers buying into the process has been tremendous for us. Select the right people. If you don't have the right people driving it won't be successful.
- [UVA Wise] No. None that I can think of.
- [Wise County Chamber] Growing too fast. Another pitfall to avoid is making sure your drivers are knowledgeable of the area and where they're going. In terms of marketing, have drivers that are passionate and have an upbeat personality.
- [DRPT] Procurement. We learned some lessons through procurement. To avoid FOIA, the request should have clearly told proposers to identify what was trade secret and proprietary. We had a couple that put that on all pages. According to state code, which doesn't do anything for you.

18. Are there other people or organizations we should speak to about the microtransit pilot?
    - [Bay Transit Director] Cannot think of anybody right now.
    - [Gloucester County] Carol would be happy to help if you still need her. For example, if you need more details about transportation and history in the community. They've worked so hard. Via was great. They are very young, but it felt like they've been in the business for years.

Appendix 5: Bus Driver / Dispatcher Interview Transcripts

1. [For drivers] How long have you driven for Bay Transit / MEOC, and for the Bay Transit Express / MetGo! services in particular? Have you driven for any other transit agencies in the past?

- [Bay Transit Driver] Started first of September 2022. Doing Bay Transit Express since about first of October 2022. No, this is my first time.
- [Bay Transit Driver] About a year and a half. For Bay Transit Express, from the beginning. No.
- [Metgo! Driver] Almost 24 years with MEOC. Almost a year and a half with Metgo! No.
- [Metgo! Driver] I've been with MEOC 3 years. Been doing this since day one of Metgo! No, I was a door-to-door milkman in Los Angeles, California.

2. [For dispatchers] How long have you worked for Bay Transit / MEOC? And how long have you worked in the public transit industry generally?

- [Bay Transit Dispatcher] Six and a half years. This is my first time. So, six and a half years.
- [Bay Transit Dispatcher] Three and a half years, almost four. The same amount of time.
- [MEOC Dispatcher] I've been here 12 years. Started with the app when it started up.

3. [For dispatchers] Can you describe your responsibilities at Bay Transit / MEOC?

- [Bay Transit Dispatcher] Dispatcher. Scheduler. Help get drivers ready in the morning for their day. Get the money bags and manifests. Make sure they're on the right bus.
- [Bay Transit Dispatcher] I'm a dispatcher and a scheduler. I make sure drivers get out and start their trips. I help riders schedule their trips.
- [MEOC Dispatcher] I book the trips, set up driver schedules, and help set up riders on the app when they call in for help. Pretty much anything needed.

4. What do passengers like about the Bay Transit Express / MetGo! service?

- [Bay Transit Dispatcher] They love the convenience of it. They like being able to call and get the bus within a few minutes. And the price.
- [Bay Transit Dispatcher] The convenience of it and that you can schedule it the same day.
- [Bay Transit Driver] They like how quick we show up and how it's much more available than having to call and schedule a ride the day before. They like how quick it is. We do a lot of moving people from retirement homes to doctor appointments. They like getting to doctor appointments on time.
- [Bay Transit Driver] That they can call that day and when they are ready.
- [MEOC Dispatcher] They really like a lot of different things about it. Like the same day. Usually, the driver is there within 10 minutes. Like ability to connect to the area, anywhere in the area. Like standing order for taking them to work. If get off work early they can cancel standing ride order and rebook. We're there in 10 to 15 minutes to take them home.
- [Metgo! Driver] They like it because they can get to work. They can get to the grocery store within 24 hours. They can book a ride and get there and back.

- [Metgo! Driver] I think it's very convenient. It's very reliable. We're able to bend the rules sometimes for riders with special needs. Me personally I think they understand we try to treat the passenger as the star of the show regardless of their age. We're the supporting cast.

5. What is currently working well with the service, from your perspective?
   - [Bay Transit Dispatcher] The convenience of it. Everybody likes that they can download and do it themselves. More call us than don't. They can call and get a ride. Convenience of it.
   - [Bay Transit Dispatcher] I guess them being able to schedule. It is working good.
   - [Bay Transit Driver] We actually probably need more drivers. They can call then and get a ride and not wait to get a ride the next day. Ninety to ninety-five percent of the time they are able to get to doctor appointments and work on time. Especially in the morning. Picks up at lunch and gets busier in the afternoon.
   - [Bay Transit Driver] It has picked up a great deal from when we started. It moves pretty good. We work with the dispatcher when we can't find someone to pinpoint where they are.
   - [MEOC Dispatcher] Having our buses available on demand. Where we have extended our hours in the afternoon for those that get off work later.
   - [Metgo! Driver] I think it all is working really well. The app is working well. Getting people from point A to point B is working great.
   - [Metgo! Driver] I think it's all working well. I really do. We're able to get from point A to point B to point C to point D. These people have developed a new set of families on the bus.

6. What types of complaints do you typically hear from passengers on Bay Transit / MetGo!?
   - [Bay Transit Dispatcher] Here lately that the addresses have been wacky. Wasn't clear where they were supposed to go. Believe they worked on that. That was the biggest complaint.
   - [Bay Transit Dispatcher] Sometimes when it gets delayed, they complain.
   - [Bay Transit Driver] Using the app. The app is the biggest problem. Doesn't give us the addresses correctly. It says destination. Destination should be where they're going to and not where they're at. There's a lot of confusion with the app. Sometimes they put in incorrect address. One guy going to physical therapy puts in an address across the street or down the road. Now we recognize his name, so we know where he needs to go. When picking up someone we must be in that area to take them off. Drop offs are not a big deal. With pickups the app won't let us take off that pickup if they're in the wrong location.
   - [Bay Transit Driver] On our busiest time, them having to wait so long. Or they have to walk somewhere, and they have a lot of groceries or laundry.
   - [MEOC Dispatcher] They try to book their trips and if they can't book the trip, they are setting up another profile. Sometimes they call to book when there's no availability. We'll try to put them on MEOC buses.
   - [Metgo! Driver] Most complaints we get is they'll book a ride and if someone books in front of them it will knock them out. They would like weekend service.
   - [Metgo! Driver] Two things you hear are you're 3 minutes early or 3 minutes late. Vans are always clean. You treat people professionally. It's a family. When we see them in

public, they say here's the Metgo! Guy. We're able to adapt and think on our feet. These people realize it.

7. Do you think these complaints are valid? Please explain why or why not.
- [Bay Transit Dispatcher] I do. Because we would type in one address, and it would show us somewhere else. That was definitely a valid complaint.
- [Bay Transit Dispatcher] I don't know. I really don't.
- [Bay Transit Driver] Yes. Because we have issues with the app on our tablets. App burns up charge on the tablet. Tablet can't keep up and we have to bring it in to charge. One tablet will overheat.
- [Bay Transit Driver] Yes, it's valid. If we don't know where to find them, it can be rough.
- [MEOC Dispatcher] In the area that we live some of the people that are booking the trips don't have the capability to understand. Don't think it's the app. A lot of people call in to book; it's easier.
- [Metgo! Driver] They holler they can't get to work on time if a trip is booked in front of them.
- [Metgo! Driver] We really don't get a lot of complaints. We're pretty good at what we do. Some of these customers are totally different in their background. We're able to work with these people.

8. Do you know of any safety or operating problems on Bay Transit Express / MetGo? If so, please explain.
- [Bay Transit Dispatcher] The only thing I can think of is that the van that we use is not real compatible to wheelchairs. We have two vans and a bus. It's just one of the vans.
- [Bay Transit Dispatcher] No.
- [Bay Transit Driver] No.
- [Bay Transit Driver] With my bus I have the van; it's a little hard for the people to open and close the door. And when I get in and out of the vehicle it slows down the service. It's also hard for them to step up. And then if have a wheelchair, we can carry just one. It's just that tight.
- [MEOC Dispatcher] No, no complaints at all.
- [Metgo! Driver] No.
- [Metgo! Driver] I don't know of any problems. We have a very good group of guys that take care of maintenance. We do a precheck before pulling out. We immediately let each other know if taillight problems. We don't get speeding tickets.

9. What changes would you suggest making to the Bay Transit Express / MetGo! service?
- [Bay Transit Dispatcher] I believe just making them wheelchair accessible. Everything else is working: times and price. We have a hospital across the street, and they use us quite a bit with wheelchairs. For the software, everything seems to work and is user friendly. It's working pretty good.
- [Bay Transit Dispatcher] I guess for it to run longer in the afternoons. The software runs pretty well. When there's a certain location like Sentara, it will take them to another location and won't take them to Sentara.
- [Bay Transit Driver] Maybe sometimes we could use another bus. We might sit for a few minutes in the morning. Need some kind of break in the middle of the day. It's constant when it starts. We need a way for drivers to stagger for 15 to 20 minutes and take a

break to eat. It's a 10 to 10 ½ hour day. We come in at 7 AM. Riders would like us to have extended hours and run on Saturdays. Bay Transit would have to make arrangements for staffing.

- [Bay Transit Driver] First of the month when at busiest have people waiting 2 hours I've been told. If had an extra bus it would help out a great deal.
- [MEOC Dispatcher] Where the riders set up multiple profiles, we're not able to cancel. We can deactivate but can't cancel. When start to book their trip don't know which are deactivated. Would be nice if they were color coded so know which ones not to use. / It would be nice when booking a trip if could add an extra rider. / The app uses Google maps which is not accurate sometimes. Address will not come up correctly. Have to stop and put it in because the system doesn't pick up the correct one. / Whenever we book the trips, if the time would come up for the next available instead of having to try each time.
- [Metgo! Driver] I really wouldn't change anything. I think it's going great.
- [Metgo! Driver] There's a couple of things that happen that we're left field on. Went to go get a trip and they looked out the window and cancelled. Should make them wait before able to reschedule. I'm no expert but we have had some issues with iPads and programming of them.

10. Is there anything else you would like us to know?

- [Bay Transit Dispatcher] There is an area that is not covered. They are right outside the service area. They are apartments on Cedar Lake Drive. We have four or five people that ride a couple times a week. They would benefit from this service. It's a great service. It's really picked up. Everybody that's used it loves it. Might need another bus or two.
- [Bay Transit Dispatcher] No.
- [Bay Transit Driver] If could get the app to shut up for five minutes when you know where you're going. For example, we know how to get to Walmart. We don't want to cut the sound down because another pickup could come in. If had an option like Routematch to shut off the navigation sound. Even some customers have complained about it. It's a constant sound giving step-by-step directions. The program is working good for customers. It's been a Godsend for them. It's been a plus here.
- [Bay Transit Driver] Software can throw you off a little bit. Had me turning before I got to a rider. For me it's easier because I've been doing it from the beginning.
- [MEOC Dispatcher] No, I think that's it. Responses we get from all our riders are very positive. They are enjoying the new service. For this area it's been great.
- [Metgo! Driver] No.
- [Metgo! Driver] I really think we need a refresher course every 6 months. When started was me, Judy and another driver. We taught ourselves. Me showing someone else is like the blind leading the blind. When get someone new, need expert training. There are things that come up where we'd say I wish I'd known about that. We are a vital link for our community. Eighty percent of people we haul do not have a driver's license for one reason or another. Metgo! Is the most talked about thing in Wise County.

Appendix 6: Rider Interview Transcripts

1. How did you first hear about the Bay Transit Express / MetGo! service?
   - [Bay Transit] A friend.
   - [Bay Transit] One of the drivers through a brochure.
   - [Bay Transit] When I called them. They mentioned it to me. Helped me download the app. Been using it ever since. I love it. Great service. I do not drive.
   - [Metgo!] The shelter office in Norton.
   - [Metgo!] My wife seen a van and Googled it.

2. How often would you say you ride the service?
   - [Bay Transit] Probably twice a month.
   - [Bay Transit] Almost every day / four days a week.
   - [Bay Transit] One day a week. Sometimes more than once.
   - [Metgo!] Used to ride all the time until I got a vehicle.
   - [Metgo!] Three to four times a week.

3. Do you use other public transportation in your area?
   - [Bay Transit] No.
   - [Bay Transit] Only use the regular on demand buses. Sometimes, very rarely use Medicab for longer trips not covered.
   - [Bay Transit] Use Freedom when I have to go across the river.
   - [Metgo!] Just MEOC and Metgo!
   - [Metgo!] No, just Metgo! Don't have anything other than Metgo! and MEOC.

4. Do you have access to a private car at home?
   - [Bay Transit] No, I don't.
   - [Bay Transit] No, I do not. Haven't had a car for 10 to 12 years.
   - [Bay Transit] I have a vehicle but I'm not driving it.
   - [Metgo!] Yes, now I do.
   - [Metgo!] I'm blind. My family does. I don't personally.

5. How do you typically get around when Bay Transit Express / MetGo! is not operating?
   - [Bay Transit] Family member.
   - [Bay Transit] I usually don't or call a friend. Usually don't go.
   - [Bay Transit] I try to do everything during the week when it is operating.
   - [Metgo!] I don't go nowhere.
   - [Metgo!] My family. My daughters or my wife, or I walk.

6. When you ride Bay Transit Express / MetGo! what kinds of trips do you take most often?
   - [Bay Transit] To laundromat or Walmart.
   - [Bay Transit] Doctor appointments, shopping, restaurants.
   - [Bay Transit] Doctor appointments, shopping, post office, things like that. Service is great. Hope one day will do weekends.
   - [Metgo!] Most of times to the grocery store and to work.
   - [Metgo!] To the gym or doctor appointments.

7. What motivates you to ride Bay Transit Express / MetGo!?
   - [Bay Transit] I can get where I'm going. Can schedule ride the same day.
   - [Bay Transit] I control it when I want to go and when I finish as opposed to a schedule. And the price is right. Right now, it's only one dollar.
   - [Bay Transit] It's nice. Drivers are friendly. It's clean. Engage in conversation. Like family. You get to know driver. They get to know you.
   - [Metgo!] It's the only transportation in town.
   - [Metgo!] Service. Quickness of trips. Ease of booking rides.

8. How do you typically book a ride?
   - [Bay Transit] Calling the dispatcher.
   - [Bay Transit] At first through the office. Now through app on my phone. Makes it more convenient.
   - [Bay Transit] Now through the app.
   - [Metgo!] On my phone with the mobile app.
   - [Metgo!] Through the app.

9. How do you typically pay for your ride?
   - [Bay Transit] Cash.
   - [Bay Transit] Cash.
   - [Bay Transit] Cash.
   - [Metgo!] It's free.
   - [Metgo!] It's free.

10. What do you like about the service?
    - [Bay Transit] I can get a ride to anywhere I want to go in the area.
    - [Bay Transit] It's quick, convenient. It caters to my needs. I can do multiple things as opposed to just one. Makes me more mobile. It's cheap. I get a lot for my money's worth.
    - [Bay Transit] Love that it's same day. Previously if I have an appointment, I'd have to book 72 hours ahead. This is same day.
    - [Metgo!] You have excellent, courteous drivers. They have excellent manners, and the buses are always clean.
    - [Metgo!] Customer service. Drivers. Ease of getting appointments. Locations it takes you to.

11. What improvements would you like to see from the service?
    - [Bay Transit] I don't have a problem with it at all.
    - [Bay Transit] Something about their software, their program doesn't allow me to plug in exactly where I am. It will sometimes show me in a different location than where I'm at. There's confusion as to where I'm at. They need to fine tune pickup locations. Be more specific with them.
    - [Bay Transit] None. They have expanded the drivers. It's great. Maybe one day it'll be on the weekend.
    - [Metgo!] Maybe twice a month on a Saturday for us single parents to get out with our kids.

- [Metgo!] Expand its route a little bit. Right now, it only goes to a certain radius. Would like to see it expand its radius a little bit.

12. Which of these improvements is most important to you, if you could only pick one?
    - [Bay Transit] N/a.
    - [Bay Transit] Fine tuning the pickup locations in the software. Would save a lot of time and anxiety.
    - [Bay Transit] N/a.
    - [Metgo!] Saturday service. They already extended hours to 7 PM for workers who work past 4 o'clock.
    - [Metgo!] Expanding the radius.

13. Would you recommend Bay Transit Express / MetGo! to a friend? Why or why not?
    - [Bay Transit] Yes, because I don't have no trouble with it. Will be able to get where they're going whenever they call.
    - [Bay Transit] Oh sure. It's come a long way. Sometimes it's full and says it's overloaded which is kind of scary. Need to add drivers. Why? Because you control it. It's at your convenience. Don't have to wait. Will be there in a reasonable amount of time. Convenient. Can get around. And it's affordable.
    - [Bay Transit] Yes. My granddaughter uses it. Why? To a person that is not driving. Until she gets her license, she uses the service. That's her means of transportation. The service is a help, a plus.
    - [Metgo!] Yes, I would. They are very courteous. Normally get you where need to get on time but there is sometimes a delay.
    - [Metgo!] Yes. The convenience of it and where it will take you and stuff. Absolutely I'd recommend it to anybody. It's one of the best services this area's gotten in a long time as far as transportation.

14. Is there anything else you'd like us to know?
    - [Bay Transit] No.
    - [Bay Transit] No, I think they've come a long way to make bus riding convenient. It's an interesting idea. Something new. We're rural. Passengers need to do their part. Express can only be so fast when in the boonies.
    - [Bay Transit] One day maybe seven days a week. They have increased the drivers. Is a plus. It's pleasant and clean.
    - [Metgo!] No, that'll be it.
    - [Metgo!] No, that's all.

2.1 Funding and Program Development

A common challenge that transit agencies face when operating on-demand services is identifying and securing sustainable, long-term funding for ongoing operating costs. The temporary Integrated Mobility Innovation (IMI) grants that provided significant start-up funding for the Bay Transit Express and MetGo services will soon expire, and the services will therefore require additional investment to be sustained. One of the first steps for both transit agencies will be determining the most suitable, long-term funding sources to meet their current and future operational needs. Several potentially suitable funding sources are outlined in the subsequent sections including federal funding programs, local funding, and fares.

FTA formula funding.

Costs for microtransit can be divided into operating and capital expenses. Capital costs include vehicles, vehicle depots and maintenance facilities and software. Operating costs include driver wages, fuel, and administrative costs associated with the service. Federal formula funds for small urban and rural areas with populations below 200,000 residents, will cover up to 80% of capital costs and 50% of operating expenses.[9] In the case of turnkey services, where contracts include both operating and capital costs, the federal formula funds can be used to provide 65% of the overall contract (known as the "capital cost of contracting" rule), requiring a 35% match.

There are two main federal formula programs that apply in rural areas of Virginia:

Section 5310 Enhanced Mobility of Seniors and Individuals with Disabilities [10]

This program provides formula-based funding for the purpose of assisting transit agencies and nonprofit organizations in meeting the transportation needs of older adults and people with disabilities when existing transportation services are insufficient. Section 5310 funding is directed to transit agencies and other local government bodies designed as direct recipients or sub-recipients to FTA funding. In Fiscal Year 2023, Virginia received $1.9 million in Section 5310 funding allocated to small urban areas (population 50,000 to 200,000) and about $2.3 million for rural areas with less than 50,000 population.[11]

Section 5311 Formula Grants for Rural Areas [12]

The 5311 program provides formula-based funding for capital, planning, and operating expenses for public transportation in rural areas, defined as incorporated or unincorporated communities with a population of less than 50,000. This funding is distributed at the state level

[9] Large urban areas with population above 200,000 may not use Section 5310 formula funds to cover operations costs.

[10] FTA. "Enhanced Mobility of Seniors and Individuals with Disabilities - Section 5310." Accessed May 25, 2022. https://www.transit.dot.gov/funding/grants/enhanced-mobility-seniors-individuals-disabilities-section-5310.

[11] FTA. "Table 8. FY 2023 Section 5310 Enhanced Mobility of Seniors and Individuals with Disabilities (Full Year). Table 8. FY 2023 Section 5310 Enhanced Mobility of Seniors and Individuals with Disabilities (Full Year). https://www.transit.dot.gov/funding/bpa-resources/table-8-fy-2023-section-5310-enhanced-mobility-seniors-and-individuals

[12] FTA. "Formula Grants for Rural Areas." https://www.transit.dot.gov/rural-formula-grants-5311

by DRPT. Other states have used this funding to support microtransit services in rural areas, such as Alabama's Baldwin Regional Area Transit System (BRATS)[13] and the Capital Area Rural Transportation System (CARTS) in Bastrop, Texas. For large urban areas (regions with more than 200,000 residents) or small urban areas (regions with more than 50,000 people but less than 200,000), Section 5307 Urbanized Area Formula Grants would apply. In Fiscal Year 2023, Virginia received about $24 million in Section 5311 funding for rural areas with less than 50,000 population.[14]

Section 5399(c) Low or No-Emissions Vehicle Program [15]

The FTA Low or No Emission competitive program provides funding to state and local governmental authorities for the purchase or lease of zero-emission and low-emission transit buses as well as acquisition, construction and leasing of required supporting facilities. Eligible applicants include direct or designated recipients of FTA grants, states, and local governmental authorities. As a result, Bay Transit and MEOC would only qualify for this funding program for purchases/leases of new electric vehicles or electric vehicle charging facilities.

Federal discretionary grants.

In addition to the federal formula grants administered through the Federal Transit Administration, agencies can apply to various grant programs that would cover (or partially cover) the costs of microtransit service. The first three grant programs described here, administered by USDOT and FHWA, respectively, are formula programs distributed to state DOTs on the basis of population and other factors.

USDOT Rural Surface Transportation Grant [16]

As part of the Infrastructure Investment and Jobs Act, Congress authorized a new federal grant program, known as the Rural Surface Transportation Program (also known as "Rural"), to address gaps in transportation infrastructure in rural areas. On March 23, 2022, the Department of Transportation announced the availability of $300 million in Rural funds, along with the INFRA and MEGA programs totaling $2.9 billion altogether. States, local governments, tribal governments, transit agencies and regional transportation planning organizations may apply for funding for projects located outside a Census-defined Urbanized Area, or within an Urbanized Area with a population of less than 200,000. Federal funding may be used to cover up to 80% of eligible costs. Microtransit can be funded if bundled as a capital expense such as the turnkey purchased transportation approach. On December 21st, 2022, USDOT awarded $274 million to 12 project selections, one of which featured microtransit and mobility. North Carolina Department of Transportation (NCDOT) received a $10.4 million award to expand on-demand transit services across 11 communities in the state. Their ability to be competitive hinged on

[13] Shared Use Mobility Center. 2022, September 26. "A County-Wide Transformation of Demand-Response Service into Microtransit, Baldwin County, Alabama." *Mobility Learning Center* (blog). Accessed February 22, 2023. https://learn.sharedusemobilitycenter.org/casestudy/a-county-wide-transformation-of-demand-response-service-into-microtransit-baldwin-county-alabama/.

[14] FTA. "Table 8. FY 2023 Section 5310 Enhanced Mobility of Seniors and Individuals with Disabilities (Full Year). Table 8. FY 2023 Section 5310 Enhanced Mobility of Seniors and Individuals with Disabilities (Full Year). https://www.transit.dot.gov/funding/bpa-resources/table-8-fy-2023-section-5310-enhanced-mobility-seniors-and-individuals

[15] FTA. "Low or No Emission Vehicle Program - 5339(c)." https://www.transit.dot.gov/lowno

[16] US Department of Transportation. 2022. "The Rural Surface Transportation Grant |." March 21, 2022. https://www.transportation.gov/grants/rural-surface-transportation-grant.

their statewide approach, which DRPT could replicate in the next round of funding (spring 2024).[17]

USDOT Carbon Reduction Program

USDOT will distribute roughly $6.4 billion over the next five years ($1.234 billion this year) to states and metropolitan planning organizations (MPOs) to reduce carbon emissions in the transportation sector. Within each state, some portions of this funding must be allocated to communities based on population size. Virginia will receive $31.9 million in annual funding during this first year (2022) and should expect to receive a similar amount annually over the next four years through 2026. Of this total, $5.3 million is designated for communities with less than 5,000 residents, and $945,000 is designated for areas with between 5,000 and 15,000 residents; these allocations are most relevant for the communities served by Bay Transit and MEOC. An additional $11.2 million can be allocated to any community, irrespective of population size, at DRPT's discretion. State DOTs, such as VDOT, are required to submit their "Carbon Reduction Strategy" by Fall 2023, which will ultimately set the framework for competitive projects. This funding can be allocated towards any eligible project that supports the facilitation of transportation emission reduction; this includes on-demand transportation service technologies such as microtransit.

FHWA Congestion Mitigation and Air Quality (CMAQ)

The CMAQ grant program is administered by the Federal Highway Administration to support projects and programs that work to improve air quality and maintain or attain the requirements set forth by the Clean Air Act. This competitive program is typically administered locally through metropolitan planning organizations such as the Hampton Roads Transportation Planning Organization (HRTPO), of which Gloucester County is a member jurisdiction. Funds may be used for a transportation project or program that is likely to contribute to the attainment or maintenance of a national ambient air quality standard, with a high level of effectiveness in reducing air pollution, and that is included in the MPO's current transportation plan and transportation improvement program (TIP). Typically, CMAQ funds are dedicated to areas that are outside of attainment of air quality standards set by the Clean Air Act. About $60 million in CMAQ funding is distributed annually to qualifying projects in Virginia.

Congressional Earmarks/Appropriations

U.S. Senators and Members of Congress are increasingly using the recently revived congressional earmark process to advance promising transportation projects in their communities, including microtransit. A Community Project Funding (previously referred to as an earmark) is a funding provision that is inserted into an appropriations bill in Congress that directs funds to a designated recipient for a specific project. For example, during FY23, 37 Members of Congress and 38 Senators submitted earmark requests to the House/Senate Appropriations Committees. In both chambers, more than half of earmark requests ultimately received funding. Both of Virginia's current Senators, Tim Kaine and Mark Warner, have been highly supportive of the earmarks process, securing more than $200 million for Virginia transportation projects in FY2023.[18] Many transportation-related earmark requests are focused

[17] Descant, Skip. 2023. "Federal Funding Helping to Boost Microtransit in Rural Areas." GovTech. January 4, 2023. https://www.govtech.com/fs/federal-funding-helping-to-boost-microtransit-in-rural-areas.

[18] U.S. Senator Tim Kaine. 2023, January 9. "What Virginians Are Reading: Federal Funding for Local Projects Headed to Communities across the Commonwealth | U.S. Senator Tim Kaine of Virginia." n.d. Accessed January 18, 2023.

on capital projects, such as bike/pedestrian facility construction or roadway improvements. However, earmarks could also fund microtransit fleet replacement or electrification, software, or operations (through the capital cost of contracting rule). Via microtransit services in Valdosta, GA; Salem, MA; and Wilson, NC have each received significant funding through earmarks during FY2023. Unlike a competitive grant process, transit agencies must approach their Members of Congress directly to request support for their microtransit project through the annual appropriations process and see the request through to fruition.

Transit Zero-Fare for Working Families Grant

Temporary Assistance for Needy Families (TANF) is a federal program that helps low-income families support their children, aging parents, and maintain access to jobs. The Virginia Transit Association was awarded $500,000 in FY2023 from the Virginia TANF block grant program to enable the group to offer grants to transit agencies that provide transportation to needy families earning below 200% of the federal poverty threshold. The Zero-Fare grants are a reimbursement program, and transit agencies may request reimbursement monthly. There is no match requirement. However, for Bay Transit or MEOC to become eligible for this grant, they must adopt a discounted fare program that includes a means test for low-income riders, to ensure they are eligible for TANF. Currently, neither agency offers such discounts nor collects this information from riders. The next round of TANF grants (FY24) will open up this spring 2023.

State funding programs.[19]

In addition to federal funding programs, various state-wide programs can be used to fund microtransit in Virginia. These programs can be divided into operating assistance, capital assistance, and discretionary grant programs. They are particularly important because state funds count as part of the local match required of transit agencies to qualify for FTA formula grants.

Operating Assistance

DRPT provides funding for operating expenses for eligible public transportation services. DRPT uses a performance-based methodology to determine the specific allocation of operating assistance funds to each operating transit agency. The program funds no more than 30 percent of all operating expenses borne by public transportation operators. MEOC receives 3.6% of its funding from DRPT's operating assistance program. And similarly, Bay Transit receives 5% of its funding from the state's operating assistance program programs.

Capital Assistance

DRPT uses a prioritization process to allocate and assign resources to capital projects and investments. Under this process, DRPT scores and prioritizes projects in the following categories:

- **State of Good Repair:** Projects or programs to replace or rehabilitate an existing asset (state match: up to 68%)

https://www.kaine.senate.gov/press-releases/what-virginians-are-reading-federal-funding-for-local-projects-headed-to-communities-across-the-commonwealth.

[19] Virginia Department of Rail and Public Transportation. "Ongoing Grant Programs." https://www.drpt.virginia.gov/ongoing-grant-programs/merit/

- **Minor Enhancement:** Projects or programs to add capacity, new technology, or a customer facility with a cost of less than $2 million or that include a vehicle expansion of no more than five vehicles or five percent of the existing fleet size (state match: up to 68%).
- **Major Expansion:** Projects or programs to add, expand, or improve service with a cost exceeding $2 million or that include an increase of greater than five vehicles of five percent of fleet size, which is greater (State Match: Up to 50 percent).

Applicants that are eligible for federal public transportation grant programs may combine federal and state capital assistance grant funds to decrease the local match needed for each project. However, a minimum four percent local match is necessary for all projects.

Only Bay Transit receives capital assistance from the state and the funds cover 11% of the agency's capital expenses.

DRPT Demonstration Project Grant

The Demonstration Project Assistance grant program, or Transit Pilot Projects, supports local efforts to improve transit reliability, access and connections to housing and employment centers, and transit mobility options. The goal of the program is to incentivize the implementation of new transit services and test innovative and non-traditional public transportation solutions by minimizing the financial risks assumed at the local level. The program guidelines have been designed to fill funding gaps for projects and activities that may not be directly suited for other State and Federal formula-based capital and operating grant programs. The projects that are eligible include:

- **New Service**: the deployment of new traditional public transportation services in an area not currently served by public transportation or in a currently served area that will provide additional connections.
- **Technology and innovation:** the deployment of projects designed to test the "proof of concept" for new technologies used in the provision of public transportation services, including deployment or testing of autonomous vehicle technology, micro-transit demand response system, and new Intelligent Transportation Systems solutions that would augment the provision of service and/or data collections.

Local and regional funding.

Local and regional funding accounts for a majority of transportation funding in the United States. Local sources include transit fares, local government budgets, sales tax revenues, ballot measures, and local partnerships. Bay Transit gets 3.8% of their total operating expenses from local sources and MEOC gets 30.7% of their operating expenses from local funding sources. These funds are allocations from the counties in which each agency operates. For Bay Transit the funding is from Gloucester County and for MEOC the funding is from Wise County.

Below are some additional potential sources of funding and new partnership opportunities that a microtransit service in rural Virginia could leverage:

Fare revenues.

If the microtransit service charges a fare, fares can offset a small portion of operating expenses, around 3 to 25%, depending on ridership. Currently, the MetGo service is fare-free, while Bay

Transit Express charges $1 per ride. Bay Transit Express has a farebox-recovery ratio of about 6%. If MetGo charged the same $1 fare as Bay Transit Express, it would make approximately two thousand dollars in fare revenue per month, with a fare-box recovery ratio of 8%.

Private-sector funding.
Some microtransit services are partially funded through private-sector partnerships with large employers, universities, or hospitals. For example, MetGo may look into partnerships with UVA Wise, as they have a strong relationship with MEOC and many of the students and staff rely on the service for regular transportation. Furthermore, MetGo may look into partnerships with hospitals such as the Lonesome Pine Hospital in Big Stone Gap, Norton Community Hospital, and the Mountain View Regional Medical Center in Norton. These hospitals are already major travel generators for the MetGo services and could generate a partnership based on non-emergency medical trips. MEOC should explore whether or not local hospitals maintain transportation budgets for these types of trips and if they do, propose partnerships to share in the costs of providing local transit service.

2.2: Long-Term Service Design and Strategy

The Long-Term Service Design Strategy outlines long-term recommendations to improve Bay Transit Express and MetGo services. These recommendations include service design changes, operational guidance, and marketing and rider engagement direction to help grow the services and keep them efficient and sustainable for the future. Some of these recommendations are already being further evaluated and implemented by the agencies.

Bay Transit Express

Transition from corner-to-corner to curb-to-curb stops model
The Bay Transit Express service currently uses as “corner-to-corner” stops model, in which riders are asked to walk a short distance from their requested trip origin to a designated pickup location, and likewise from between a designated dropoff location to their requested destination. Designated pickup and dropoff locations, specified in the smartphone app, are typically located at the nearest intersection to the rider’s requested origin or destination. This service design is used to improve the efficiency of microtransit services by limiting the length of detours vehicles must make to pick up and drop off riders. In Bay Transit Express service, the walking distance at pickup and dropoff are set to never exceed ¼ quarter mile (400 meters), and walking distances are typically less than 200 meters on average. However, riders with disabilities are *always* offered curb-to-curb service, and they are not asked to walk any distance. Riders with disabilities notify their status in the smartphone application or by telling the dispatcher if they book their ride by phone. While corner-to-corner service is sometimes more efficient, after 18 months of service, Bay Transit operators have observed that it does not yield sufficient improvements in vehicle hours savings or wait times to justify asking passengers to walk. Furthermore, as some older adults and passengers with disabilities are already receiving curb-to-curb service, this change will simplify service delivery by providing the same stop type for all passengers.

Increase the detour threshold

The detour threshold is a parameter that dictates how much a vehicle can deviate from its direct route to aggregate passengers. Detour thresholds can be measured both in time and distance compared to the base route (the shortest-path route from the origin to the destination using the available road network). For example, for a trip where the base route is 20 minutes and 10 miles, with a detour threshold of 1.5, the algorithm would not allow any trips longer than 30 minutes or 15 miles. While expanding the detour threshold will make some journey times longer, it will also increase the flexibility of the service and allow for more aggregation of trips, a more efficient use of vehicle hours, and in some cases reduce wait times by routing vehicles to requested pickup locations more quickly.

Encourage growth through marketing and promotions

Bay Transit should continue its efforts to market and promote the service to attract new customers. Refer to this study's Rural Microtransit Implementation Toolkit for specific marketing strategies that could be implemented by Bay Transit. These strategies include press releases for any new service changes, social media advertisements, and informational videos describing the service and how to book rides. In addition to marketing efforts, Bay Transit can continue to provide fare promotions such as free rides for new customers, referral credits for existing customers, or discounts during off-peak hours.

Expand the service zone to the Indian Road corridor or Tidemill area

Bay Transit should consider small zone expansions to residential areas just outside of the current Bay Transit Express zonek, such as the Indian Road corridor or the Tidemill area. Since these would be relatively small zone expansions, they could be added into the service zone without an increase in vehicles or operating cost, but they would attract additional customers and improve the overall usefulness of the service.

Consider new microtransit zones

Bay Transit should also explore expanding its service to new zones, such as in Tappahannock, to replace Rivah Ride (deviated fixed-route service), or in Kilmarnock. Microtransit could be a useful solution to either expand transit options in areas with no existing service but that may not have enough demand to support a dedicated fixed-route service, such as Kilmarnock. Or a microtransit service could be used to replace underperforming services (with low productivity or high cost per ride) or services with low ridership. Replacing fixed-route services with microtransit often results in an increase in the population with access to transit and growth in ridership. Moreover, with Bay Transit Express already in service, some of the administrative costs for launching and operating a new service can be distributed across multiple services.

Enhance IVR features for low-vision riders

Interactive voice response or IVR is a technology that enables low vision customers to use the microtransit app to book rides. Interviews during this study's Summary of Findings suggested that there could be improvements with the IVR technology and its implementation for Bay Transit Express. Bay Transit should work with Via, the microtransit software provider, to learn more about how to best use these features and effectively serve low-vision riders.

MetGo

Consider new microtransit zones or expansions of the current MetGo zone

Depending on funding availability, MEOC should consider the expansion of microtransit service into the Big Stone Gap area. This will require about three additional vehicles, assuming riders can travel between a Big Stone Gap service zone and the existing MetGo zone in Norton/Wise. An expansion to Big Stone Gap will increase service to the second-most populous area in the region. Given that there are no ride-hail services in the area, the only transportation (beyond personal cars) that is available in Big Stone Gap consists of Medicaid-eligible trips, which could also be provided through a microtransit service. Furthermore, the industrial area in Duffield is likely to generate demand for workers traveling to and from work. A second priority for MEOC should be expansion into Pennington Gap, another area where few local transportation options exist beyond private cars.

Supply one additional vehicle to the current MetGo service zone

During the most recent months of service, MetGo's Norton/Wise zone saw average wait times as high as 25 minutes. One way to reduce wait times for a microtransit service is to increase the number of vehicles in a service zone. While long wait times can mean a service is maximizing efficiency, it can also lead to a poor experience for customers, especially if wait times vary significantly throughout the day and make it difficult for customers to plan trips. Expanding the MetGo fleet from three to four vehicles in this zone should reduce wait times sufficiently to ensure service availability and adequate quality-of-service are maintained.

Communicate proactively with riders

Direct and clear communication with customers is important and increases overall trust in the service. MetGo should proactively communicate with riders about any service changes or changes to their trip itineraries. Moreover, because MetGo is fare-free, there is a relatively high rate of last-minute trip request cancellations and no-shows that impact the overall efficiency of the service. One way to mitigate these last-minute cancellations and no-shows is to proactively advise customers that these behaviors negatively impact the entire service and other riders. Another way is to introduce a nominal fare for the MetGo service. If fares are introduced to the MetGo service, it is recommended to introduce a nominal fee for last-minute cancellations or no-shows to minimize these behaviors. In other Via-operated services, services that charge fares typically see lower rates of last-minute ride cancellations and no-shows because riders have already committed to paying a fare and seek to avoid losing this sunk cost.

Expand service hours

This study's Summary of Findings indicates that there may be latent demand for early morning service. MEOC should consider expanding service hours to start one hour earlier in the mornings at 6 AM. This expansion in service hours may flatten the peak during the first hour of service by spreading out some of the trip demand for riders that currently travel around 7 AM but would prefer to travel earlier and also increase the utility of the service for some customers who may need to travel before 7 AM and are currently unable to do so. MEOC could pilot this change in service for a certain time period to better understand early morning demand before making the service change permanent.

Add Saturday service

Like the previous recommendation, the study's Summary of Findings indicates there may be demand for microtransit service on Saturdays. Transit-dependent customers who work during weekdays may not have time to complete other trips, such as shopping and grocery store trips, during weekday service hours. Others may use the service for recreational purposes or for commuting purposes. Like with the extended service hours, MEOC could pilot this addition in service for a few months to determine if there is sufficient demand for the service expansion and to better understand how many vehicles may be needed to operate the service.

3.1 Microtransit Overview

Microtransit, also known as on-demand transit, uses technology to route a fleet of vehicles based on real-time rider demand. Microtransit is similar to fixed-route bus service, in that passengers are asked to walk to meet a vehicle at a designated location, that may, in general, be up to a five-minute walk from their requested location.[20] However, it is different from a fixed-route bus service in that there are no fixed schedules or routes. Instead, passenger trips must start and end within service zones that are typically determined based on anticipated travel needs in the area. Riders may book a trip using a smartphone application ("app"), a website, or through a call center. Each microtransit service maintains specific operating hours and service zone geographies, determined by transit agencies and operators, which constrain where and when a passenger can travel.

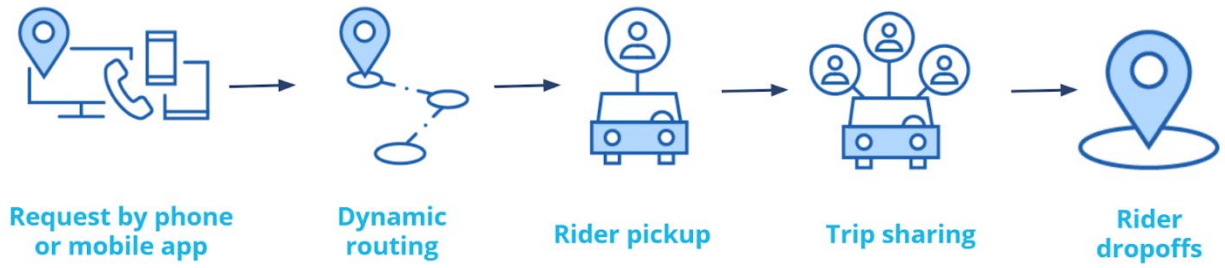
To book a microtransit ride, a passenger starts by indicating the number of passengers in their party and their desired pickup and drop-off locations. When booking using the app, passengers will clearly see the geofenced zone in which service is offered. Requesting a trip beyond this zone is not possible, so passengers always know where the microtransit service is available. Once the passenger submits a trip request, they are given a proposal that tells them when the vehicle will arrive and where to meet it. Typically, passengers must wait between 5 -20 minutes for a trip, although this may vary depending on the level of demand and the number of vehicles available within the zone. Passengers can track the vehicle in real-time using the smartphone app. The passenger is provided with vehicle information—e.g., license plate, driver name, driver photo, and vehicle ID number. Passengers can usually cancel a ride at any time before pickup, but as cancellations may negatively affect other passengers, a small fee is often charged to discourage last-minute cancellations.

Once the vehicle arrives, the driver confirms the passenger's details using the driver app. Passengers can pay using credit and debit cards, transit passes, cash, vouchers, and more. Microtransit services typically include multiple payment options for people without credit cards or bank accounts to ensure that the service is accessible to all.

The passenger is then taken to their destination. Along the way, the vehicle will pick up and drop off other passengers heading in the same direction, but care is taken to avoid lengthy detours for passengers already on board. The passenger can track their progress using the app. After each trip, passengers may be automatically emailed a receipt. Passengers may also be able to provide real-time and post-trip feedback through the app. The key components of the microtransit process flow are illustrated below in Figure 29.

[20] Riders who indicate they have a disability will always be offered curb-to-curb service and will not be asked to walk any distance.

Figure 29 Microtransit process flow



3.2 Glossary

Aggregation: When multiple passengers are onboard a given vehicle at the same time. High aggregation is beneficial as it reduces the cost per passenger. Also known as “shared-ride percentage.”

Booking: Every passenger must make a booking to travel. A rider, agent, or parent/guardian “requests” a booking when they want to travel (or in advance for a pre-booked service). If a booking is not canceled, the booking will eventually transition to an active trip.

Booking window: See ‘Pick-up time window’ or ‘Drop-off time window’.

Corner-to-corner: These are trips where a passenger gets picked up and dropped off at a safe stopping location at a nearby corner rather than at the exact address they requested (as would be the case in a door-to-door or curb-to-curb trip).

Curb-to-curb: These are trips where a passenger is picked up directly outside their requested address and dropped off directly outside their requested address. They are not assisted to or from the vehicle to the building entrance.

Detour: The base route is the shortest-path route between a rider’s pickup and drop-off points. A “detour” refers to deviation from this “base” route. Detours allow the algorithm flexibly to aggregate passengers into shared rides and increase utilization.

Door-to-door: These are trips where passengers are assisted from the curb to/from the entrance of the building if required. This is typically offered for services that are focused on meeting the needs of those living with a disability. Drivers often require additional sensitivity training to ensure they have the required skills to assist passengers with complex needs.

Drop-off time (or drop-off time window): This is the time a passenger leaves the vehicle at the end of their trip. For pre-booked trips, passengers may book their trip based on their preferred drop-off time window, which is the earliest and latest times between which a passenger requests to be dropped off.

Microtransit: Microtransit is a general term used to describe all forms of technology-enabled, demand-responsive, public transportation. Also known as “on-demand transit.” With regards to

booking requirements, “on-demand” refers to a trip where a passenger books at the time they wish to travel, and a vehicle is instantly confirmed during the booking process.

Pick-up time (or pick-up time window): This is the time a passenger enters the vehicle at the start of their trip. For pre-booked trips, passengers may book their trip based on their preferred pick-up time window, which is the earliest and latest times between which a passenger requests to be picked up.

Productivity: This is the average number of passengers per revenue-hour and is a measure of the efficiency of the service.

Quality of service: This refers to common rider experience metrics such as average wait time, average walking distance, average trip duration, and others specified by the transit agency and/or microtransit operator.

Wait time: The length of time a passenger waits between requesting a trip and being picked up (for on-demand microtransit services).

Walking distance: In a service using a corner-to-corner stops model, the walking distance refers to the distance a passenger is asked to walk from their requested pickup location to the location where they meet the vehicle, or from their drop-off point to their final location.

Utilization: Similar metric to Productivity above. However, utilization uses vehicle-hours, not revenue-hours, as the denominator and as a result is about 10-15% lower typically than productivity because it includes some non-revenue hours (deadhead) at the beginning and end of driver shifts as they travel to/from the maintenance facility and the first pickup / last drop-off location.

3.3 Rural Microtransit Suitability Checklist

Overview

To assist rural transit agencies as they explore opportunities for microtransit, we have developed an analytical framework or "checklist" that explores common characteristics of different models and applications for microtransit, the goals and trade-offs associated with implementing them in rural areas.

Important Note: *To determine whether it makes sense to launch a microtransit service in a particular location, it is important to understand how efficiently a microtransit service will aggregate passengers. The efficiency of a service depends on several factors including the road network, expected travel patterns of passengers, and the service's routing algorithms and parameters. This assessment is typically completed using modeling and on-demand transit simulation software to accurately compare alternatives.*

List of Use-Cases

DRPT has identified five potential microtransit use-cases that are most appropriate for rural service areas in Virginia. Each application is not exclusive to a particular community, and several applications can be offered with the same on-demand service in the same geographical areas. For example, a service intended to replace fixed-route bus operations can be expanded to increase coverage in a larger area that was not previously served by any fixed-route transit. Likewise, a microtransit service designed to serve older adults and people with disabilities (or another high-need population) can be expanded to replace an older demand-response service primarily used by these communities. The five applications identified for microtransit in the rural Virginia are:

1. Provide a new service focused on high-need populations (e.g., seniors, individuals with a disability)
2. Replace fixed-route buses with microtransit
3. Replace older demand-response (e.g. dial-a-ride) service with microtransit
4. Expand service into areas with limited or no existing public transit
5. Provide first-and-last mile connections to other transit routes (e.g., Virginia Railway Express, Virginia Breeze)

Use-case #1: Provide a service focused on high-need populations (e.g., seniors, people with disabilities)

Description

Microtransit services can be limited exclusively to (or primarily marketed to) seniors, people with disabilities, service-sector workers, or other high-need populations. They may be door-to-door, if the population served requires that additional level of assistance, or they can operate using any other bus stop model (see SELECT A BUS STOP MODEL).

Rationale

The goal for this type of service is typically to help improve mobility for the most transit-dependent populations of a service area as well as to reduce demand for (often more costly) ADA paratransit, demand-response, or non-emergency medical transportation (NEMT) services. These paratransit services are often more expensive and less flexible for passengers; most require ride bookings to be made at least one day in advance, which limits many individuals' ability to travel spontaneously.

Benefits and Risks

- The most significant benefit of this model is the increased freedom and quality of life provided to those who currently rely on older demand-response or paratransit service.

- By providing an improved quality of service, it is likely that demand for the service will grow relative to the older paratransit, NEMT, or demand-response service. This may result in increased total operating costs even if the cost per trip is reduced. Transit agencies should ensure there is sufficient additional budget available if this occurs.

- Particularly for services focused on seniors, trips may require additional customer support relative to a microtransit service aimed at the broader public. This is because a higher proportion of trips are likely to be booked using the call center, due to lower smartphone ownership and usage rates among older adults. In many rural areas, aging populations mean demand for this type of service is likely to continue to grow over time.

Use-case #2: Replace fixed-route buses with on-demand transit

Description

Underperforming or inefficient bus routes or route segments may be replaced with microtransit. Underperforming bus routes are defined as those with a high cost per passenger, low levels of ridership or service productivity and/or poor service levels, such as infrequent headways or long, circuitous routes. An evaluation of the potential for fixed-route replacement with microtransit on the basis of service productivity and cost per passenger trip is shown in the table below. Typically, routes serving fewer than 10 passengers per revenue-hour or at a cost of

greater than $10 per passenger trip may be good candidates for replacement with microtransit (see TABLE 12).

Inefficient bus routes tend to operate in lower-density communities. Ridership tends to be relatively low due to long wait and travel times as well as high rates of private car ownership in these areas. In many cases, a microtransit service can complete all existing customer trips at a lower cost per trip while also reducing travel times for passengers.

Table 12 Productivity and Cost per Trip Thresholds for Replacing Fixed-Route Service with Microtransit

Route Performance	Candidate For Replacement	Productivity	Cost per Passenger trip
		Passengers per revenue-hour	*Operating expense per passenger trip*
Good	Weak	20+	<$5
Average	Moderate	10-20	$5 - $10
Poor	Strong	<10	>$10

To provide the same coverage as the bus route(s) being discontinued, the microtransit service zone should include all existing bus stops along the routes that are replaced. It is also recommended that the on-demand zone includes, at minimum, the quarter-mile radius surrounding each bus stop along the route to ensure areas within walking distance of existing stops are also served. Adjacent areas may also be included wherever practical.

As existing bus passengers will no longer be able to use the bus route when it is discontinued, if the transit agency elects to replace fixed-route service with microtransit, it is recommended that the microtransit service has equivalent or higher quality of service (i.e., shorter wait times and travel times to key destinations) than the bus route being replaced in order to support the retention of riders.

Rationale

There are typically two common reasons for replacing a bus route with a microtransit service:

1. **Reduce operating costs:** In some cases, a transit agency may be able to reduce operating expenses by replacing underperforming bus routes with microtransit. Lower costs are typically a result of operating using less expensive vehicles (e.g., vans instead of full-sized buses) or due to a lower number of vehicle hours required to serve the same ridership.

2. **Improve quality of service:** Alternatively, if a transit agency has additional funding available, a bus route can be replaced with a microtransit service that offers improved quality of service, even though this may result in similar or higher overall operating costs. Transit agencies may justify this investment in order to attract new ridership to the system or improve mobility in historically disadvantaged areas.

Benefits and Risks

- For bus routes with very low frequencies (e.g., hourly headways or worse), microtransit services can often offer a significant improvement in quality of service, which may translate into ridership growth. For example, replacing an infrequent bus (45-60-minute headways) with a microtransit service with average waits of 10-20 minutes) can be expected to increase ridership by approximately 10-40%. While this is desirable, transit agencies should account for growth in ridership in its cost/benefit analysis of microtransit service—and the impact this may have on fleet-size requirements for on-demand service—when quality of service improves dramatically.
- As existing passengers will be required to change their travel habits, transit agencies should work closely with local communities when planning to replace routes or route segments with microtransit service. We recommend that transit agencies advertise service changes well in advance by and coordinate with other local stakeholders to broadcast these messages. Both fixed-route and microtransit services should operate simultaneously for a minimum of two weeks (but significantly longer where budget allows). This ensures passengers can test the microtransit service at a time that suits them, rather than forcing all passengers to transition at once. During the transition period, passengers that continue to use the bus route can be provided with additional information and guidance to encourage them to test the new microtransit service.

Use-Case #3: Upgrade older demand-response service (e.g. dial-a-ride) with microtransit

Description

A microtransit service can be used to replace older demand-response services operating in rural areas. Rural demand-response services (often termed “dial-a-ride”) typically operate across rural Virginia counties with relatively low transit demand, where a fixed-route bus may not be financially justifiable. Trips must be pre-booked by calling a dispatcher or through a web portal, typically at least 24 hours in advance. Operators often use older dispatcher software with limited vehicle routing, driver navigation, demand aggregation, or automated trip assignment capabilities. Likewise, older demand-response services typically do not feature modern smartphone applications to serve riders, and as a result essential features such as real-time vehicle tracking, updated/live pickup and drop-off times, and other rider communication tools are not available. and the services. By upgrading an older demand-response service to microtransit, transit agencies can operate service through an efficient, integrated technology platform to streamline operations as well as offer high-quality app-based communications tools that riders increasingly demand.

Rationale

Upgrading older demand-response services with microtransit would improve the quality of service for passengers by allowing them to book trips in real-time (or require a pre-booking window as short as one or two hours), rather than requiring advanced bookings days ahead of time. An improved ride booking platform that allows for real-time trip confirmation, vehicle tracking, and fare payment would also benefit passengers. Improved service quality is likely to

also increase the demand for a service and thus lower the cost per trip, as automated trip assignment and demand aggregation enables more passenger trips to be aggregated into each vehicle.

Use-Case #4: Expand service into areas with limited or no existing public transit

Description

Microtransit can enable transit agencies to provide coverage areas without existing public transportation. In many cases, demand in these areas is low due to high levels of car ownership and long travel distances between destinations. For these services to be useful to riders, they need to provide connections to key destinations, either directly or through a first-and-last mile connection (see USE-CASE #5: PROVIDE FIRST/LAST-MILE CONNECTIONS TO OTHER TRANSIT SERVICES) to other local or commuter-oriented transit routes, such as the Virginia Breeze intercity bus service or Virginia Rail Express.

Rationale

In many rural areas, transit agencies are unable to operate fixed-route bus services due to funding constraints. A microtransit service can be a cost-effective alternative to provide coverage in these areas. To determine where transit agencies should invest in service to new areas, whether via microtransit or fixed-route service, we recommend primarily evaluating residential and employment density. The least-dense areas, with fewer than two residents per acre or two jobs per acre are best suited for pre-booked microtransit (see SELECT A BOOKING MODEL), while areas of medium density (2-30 residents or 2-20 jobs per acre) are often more suited to on-demand microtransit or less frequent fixed-route service. High-density areas are where fixed-route services are most suitable, and microtransit may only be suitable for limited use-cases or populations (see USE-CASE #1: PROVIDE A SERVICE FOCUSED ON HIGH-NEED POPULATIONS). These recommendations are illustrated in FIGURE 30.

Figure 30 Microtransit Service Design and Population / Employment Density

New-development areas, such as those found in many exurban communities, may be particularly challenging environments to operate fixed-route service. Launching a new bus route in a newly developed area requires a significant amount of investment, including infrastructure such as bus stops and operating costs to provide a minimum level of service. A microtransit service may be a more cost effective short-term solution and could allow transit agencies to evaluate the level of demand and travel patterns prior to launching a new, fixed-route bus route.

It is important to note that every area has unique demographics that drive demand for public transportation, so it is important to also review other metrics that indicate whether residents and workers are likely to use public transit. Factors to consider include:

- **Income:** Low-income households rely on public transportation more heavily than others, particularly households earning less than 150% of the poverty level. For households with low incomes, the cost of owning and maintaining a private car can be burdensome or infeasible, with transportation taking up a significant share of their household income.
- **Age:** People over the age of 65 or under the age of 24 are often more likely to commute by transit as they are less likely to be able to access or afford other private cars.
- **Disability:** People with disabilities typically use public transit more frequently than those without disabilities. Some people with disabilities may be unable to use fixed-route transit service, even with accessible vehicles, because the nature of their disability prevents them from walking to bus stops or from navigating a transit system. These individuals often rely on paratransit or demand-response services to complete their trips. In the absence of accessible and reliable transit or paratransit service, they may rely on

taxis, ride-hailing services, human services transportation providers, or rides from friends or family in private cars.

- **Zero-vehicle households:** About 6% of Virginia residents (over 200,000 households) do not have access to a private car.[21] Households without a privately-owned vehicle are more likely to use public transit than those with access to one or more vehicles. Zero-vehicle households are typically young or low-income people, or those living in apartments. In addition, some other households may choose to forgo car ownership for legal, medical, environmental, or other reasons.

Benefits and Risks

- Transit agencies must balance investments in fixed-route service frequency against fixed-route service coverage. In areas that contain relatively frequent fixed-route service, there is a risk that expanding coverage by introducing microtransit could come at the expense of increased service frequency in higher-ridership areas where each incremental dollar could deliver a more significant benefit to riders. We recommend that transit agencies develop a transparent and data-driven approach to determining which areas have the required density for transit service (e.g., provide fixed-route transit in areas with predominant density of more than a five residents or jobs per acre, while considering microtransit to provide service coverage for other lower-density areas).

- Transit ridership typically takes several months to reach its potential. This is particularly true for microtransit and areas where fixed-route bus service does not exist. Often many passengers are potentially not just unfamiliar with the new service area, but also the relatively new concept of microtransit. Therefore, it is important to allow at least a year for ridership to reach its potential when expanding into new areas.

Use-Case #5: Provide first/last-mile connections to other transit services

Description

Microtransit can connect passengers in rural areas to local bus, Virginia Breeze, or Virginia Railway Express services (where available) and, in the process, replace private car or taxi trips of riders who would have driven and parked at the transit station or park-and-ride. Providing first- and last-mile connections to Virginia's bus and commuter rail services may be consistent with the missions of some rural transit agencies whose service territories overlap with station locations.

Rationale

There are several primary opportunities to improve connections between rural areas and other intercity or commuter transit routes in Virginia:

- Virginia Breeze, an intercity bus system operated by DRPT, runs four routes with daily round-trip service to/from Washington, D.C. consisting of one northbound and one

[21] American Community Survey. 2021. Table DP04.

southbound trip per day: Valley Fever (Blacksburg – Washington, D.C. via the New River Valley and Shenandoah Valley), Capital Connector (Martinsville – Richmond – Washington, D.C.), Piedmont Express (Danville – Washington, D.C.), and Highlands Rhythm (Bristol – Washington, D.C.). These services each contain numerous intermediate stops at local bus stations and park-and-ride facilities in smaller cities and towns, locations where riders would make transfers between microtransit and Virginia Breeze. Riders traveling to or from rural areas can connect to Virginia Breeze at these transfer points, where feasible, where local fixed-route service is either infrequent or not available.

- Virginia Railway Express service operates commuter rail service between northern Virginia and Washington, D.C. Several of its stations along its Fredericksburg and Manassas Lines are located in isolated, rural or low-density suburban locations, where local fixed-route bus systems do not provide connecting service. Transit agencies in these areas could introduce microtransit service in the catchment areas for VRE stations to alleviate parking challenges at local stations and improve local transit ridership.

- Rural microtransit services may have service zones that overlap with local fixed-route bus services in adjacent jurisdictions. Microtransit is best at facilitating first/last-mile connections to local bus service when service on those routes is relatively frequent (i.e. peak frequencies of 15 minutes or better). As the arrival times of on-demand services tend to fluctuate slightly based on traffic and other trip requests, passengers may be dissatisfied if they arrive shortly after a train or bus has departed. However, if the next train or bus is arriving shortly (e.g., 15 minutes or less), passengers tend to worry less about timing their connection and can simply turn up and travel. This issue can also be mitigated by allowing passengers to pre-book a trip with a specified ‘arrive by’ time, although this may not be possible if the service does not allow pre-booking (see **Select a booking model**). It also reduces the efficiency of the service by applying another constraint to the trip routing algorithm. Transit agencies should investigate whether local bus services in their territory, particularly if service is relatively may support first/last-mile connections to/from rural microtransit services.

Benefits and Risks

- Consider integrated, multimodal trip planning and booking components of microtransit software to facilitate first/last-mile connections between microtransit and fixed-route service. This is because passengers are often unwilling to pay separately for both trips, and the software can provide an essential tool so that passengers don’t miss their connections.

Guide to Evaluating Rural Microtransit Suitability

Service Design Considerations

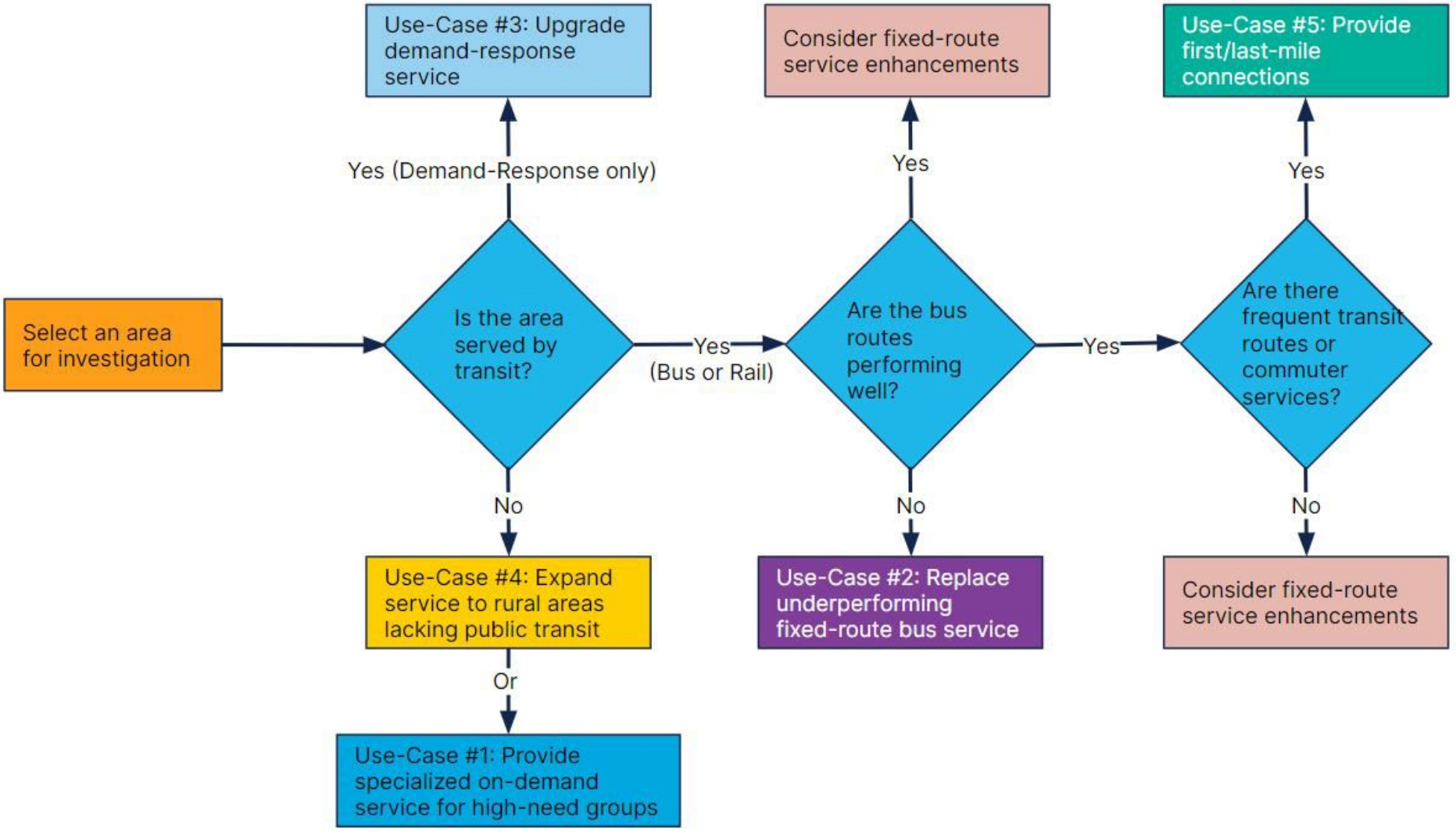
The following decision tree (see FIGURE 31) can be used to determine which applications are most appropriate for a specific rural service area. We recommend that transit agencies select an area for investigation, then consider the following questions:

1) **Does the area already have fixed-route buses, Virginia Railway Express, or Virginia Breeze service?**
   a) If so, this area could be a strong candidate for a microtransit service designed to facilitate first-and-last mile connections (Use-Case #5)
   b) If not, the area may be a candidate for a new microtransit service to expand access to transit (Use-Case #4). It may also be a candidate for a more targeted on-demand service focused on high-need populations like seniors or individuals with a disability (Use-Case #1).

2) For areas with fixed-route bus service, **are the routes performing poorly?** If so, they may be candidates for replacement with an microtransit service. If, on the other hand, local fixed-route bus service is available and performing well, fixed-route service improvements are likely more suitable. These improvements could range from more direct alignments to provide faster travel times, additional service frequency at peak times, or capital improvements (e.g., bus stop amenities, traffic priority measures), to name a few. (Use-Case #2).

3) For areas where older demand-response currently operate (i.e., “dial-a-ride”), **does the service offer riders modern smartphone applications** that provide real-time vehicle tracking, updated pickup and drop-off times, and other advanced communication tools? If not, the area may be suitable for upgrading older demand-response services to microtransit by introducing software platforms to provide advanced rider communications, facilitate automated dispatching and trip assignment, and offer same-day or on-demand service. Due to the higher ridership transit agencies typically serve in microtransit programs compared to older demand-response (particularly on-demand microtransit), additional vehicles may be needed to serve this additional demand.

Figure 31 *Rural Microtransit Suitability Checklist: Decision Tree*



Operational Considerations

As with service-design considerations described above, transit agencies must also consider the operational and administrative needs of microtransit service. These considerations include administrative capacity and available funding, vehicle supply, maintenance facilities, and labor (including drivers, dispatchers, operations managers, and customer support staff). Transit agencies should consider the following operational questions when planning a microtransit service:

- **Does the transit agency possess the funding necessary and administrative capacity to procure microtransit software and/or operations?** Many rural areas, though not all, are served by designated transit agencies designated recipients or sub-recipients of FTA FORMULA FUNDING that supports substantial portions of operations. Areas served by an FTA-designated transit agency should consider their funding needs and administrative capacity to begin operating a microtransit service, which will inform the selection of an OPERATING/CONTRACTING MODEL. Rural areas that are not covered by an FTA-designated transit agency will need to consider partnerships with DRPT or other local or regional public agencies (e.g., MPOs, transportation management associations, or other stakeholder organizations) to gather the funding needed to support microtransit. Alternatively, these unserved rural communities may consider funding partnerships (e.g., interlocal agreements) with transit agencies in adjacent jurisdictions to support service.
- **Does the transit agency have sufficient vehicles, drivers, customer service staff, and dispatchers available to operate microtransit?** Most microtransit operations require at least 2-3 dedicated vehicles to reliably operate with high quality-of-service. If sufficient vehicles and drivers are available, and current operating costs are reasonable, the transit agency may consider selecting an AGENCY-OPERATED SERVICE MODEL in which only microtransit software is procured from a vendor. Alternatively, if there are not sufficient vehicles and operations staff available for microtransit, the transit agency may consider leasing/purchasing additional vehicles, hiring additional staff, or adopting the TURNKEY PURCHASED TRANSPORTATION MODEL, in which it procures bundled software and operations from a vendor which handles all aspects of service delivery.
- **Is a maintenance facility available for microtransit vehicles?** Many transit agencies house their microtransit operations within their existing maintenance facilities, provided there is space available (see MAINTENANCE FACILITY NEEDS). If no space is available, the transit agency should consider either leasing additional property in or near the zone to serve as a maintenance facility or work with a turnkey microtransit vendor to do so.

Key Performance Indicators

In order to assess the performance of on-demand transit, we recommend selecting several Key Performance Indicators (KPIs) to measure whether a service is meeting its goals and objectives. Below, we have suggested KPIs that would be most applicable for each application (see TABLE 13.

1. Provide a new service focused on high-need populations (e.g., seniors, individuals with a disability)
2. Replace fixed-route buses with microtransit
3. Replace older demand-response (e.g., dial-a-ride) service with microtransit
4. Expand service into areas with limited or no existing public transit
5. Provide first-and-last mile connections to other transit routes (e.g., VRE, Virginia Breeze)

Table 13 Microtransit Key Performance Indicators (KPIs) and Benchmarks by Use-Case

KPI	Description	Suggested Benchmarks	Use-Case #				
			1	2	3	4	5
Ridership	The number of passengers using the on-demand service in a given time period.	Boardings per hour of weekday service. • High: >15 • Medium: 5-15 • Low: <5		✓	✓	✓	✓
Cost per passenger trip	The total operating cost divided by the total ridership, which indicates the cost effectiveness of the service.	Cost per passenger trip • High: <$10/ passenger trip • Medium: $10-$25/ passenger trip • Low: >$25/ passenger trip	✓	✓			
Productivity (utilization)	The average number of passengers boardings per vehicle hour, another measure of efficiency	Passenger boardings per vehicle hour • High: >5 • Medium: 2-5 • Low: <2	✓	✓	✓		
Service availability	The percentage of trip requests where a vehicle was unavailable due to high demand.	% of trips denied • Low: <5% • Medium: 5-10% • High: >10%	✓	✓	✓		✓
Shared ride duration percentage (aggregation)	Share of passenger ride time in which the vehicle is occupied by more than one passenger	% of passenger ride time: • High: >40% • Medium: 10-40% • Low: <10%		✓			✓
Wait time (on-demand service only)	The average time a passenger waits between requesting a trip and being picked up (for on-demand services)	Minutes • Low: 5-15 min • Medium: 15-25 min • High: 25 min+	✓	✓	✓		✓
Requested vs. actual pickup time (pre-booked service only)	The deviation between the pickup window provided to passengers when booking and the actual time they were picked up.	Minutes • Low: <5 min • Medium: 5-10 min • High: 10 min+	✓		✓		
Customer satisfaction	The average rating provided by passengers, ranked from one to five stars (one being very unsatisfied, five being very satisfied)	Stars (out of five): • High: 4.8+ • Medium: 4.6+ • Low: <4.5	✓		✓		✓
Average ride duration	The average time a passenger spends in a vehicle.	Minutes • Depends on zone size			✓		✓

3.4 Implementation Toolkit

Several steps and decisions must be made before launching a new microtransit service. This process can be divided into three phases: preliminary service design, procurement, and launch preparation.

Service Design Best Practices

Transit agencies should make the following determinations before issuing a microtransit service procurement.

Select a booking model

Microtransit services can either be on either a pre-booked or on-demand basis.

- **On-Demand:** In an on-demand booking model, the passenger selects their requested pickup and drop-off points at the time they wish to travel. They are then instantly given a trip proposal for the shortest possible wait time and can confirm their seat in real-time. Once confirmed, they can immediately track the approaching vehicle and its estimated time of arrival. On-demand services allow the most flexibility for passengers to choose when they would like to travel. However, depending on demand patterns, wait times may vary and the service may not be able to supply consistent wait times without adding additional vehicles to a service.

- **Pre-Scheduled:** In a pre-scheduled booking model, passengers identify their desired pickup and drop-off locations as well as a requested pickup or drop-off time in the near future. Depending on the preference of the agency, this can be between several hours and several weeks in advance. Riders are provided with an estimated pickup window typically between 15 and 30 minutes and can track their vehicles for more accurate estimated arrival times prior to their scheduled pickup window. A narrow pick-up window limits the flexibility of the vehicle routing but provides the customer with more certainty regarding their departure and arrival time. Upon accepting the ride proposal, the pickup window is confirmed. Pre-booked services provide passengers with the security of knowing they will be able to receive a trip far in advance, this can be important for passengers traveling to and from medical appointments or shift work. Pre-booked operations are also necessary to offer riders recurring rides (also known as “subscription trips”) that pick up at the same time on a daily or weekly basis. Recurring rides can be particularly useful for certain types of medical trips (e.g., dialysis) as well as school or work trips.

- **Hybrid:** Agencies also have the option of providing a hybrid booking model where riders are offered on-demand rides by default and pre-booked rides on a space-available basis. Moreover, some agencies choose to offer pre-booked service for a select group of riders or only in a specific area. For example, an agency can choose to allow people with disabilities or ADA paratransit customers to pre-book trips and get priority for vehicle scheduling.

Select a bus stop model

Microtransit services can be operated with various stop models, each affecting the efficiency of the routing algorithm and the passenger experience. The three most suitable models for rural areas include:[22]

- **Curb-to-curb:** In a curb-to-curb model, passengers are picked up and dropped off as close as possible to their requested locations. This model is recommended in areas with poor pedestrian infrastructure or in areas where the majority of the service is used by older adults and people with disabilities. In low-density, rural areas or large service zones where there is disbursed demand asking people to walk to nearby intersections does not always have a significant impact on the efficiency of a service, and offering curb-to-curb service is typically preferred by passengers.

- **Corner-to-corner:** A corner-to-corner model (sometimes also referred to as a point-to-point model) asks passengers to walk a few minutes to a nearby intersection to meet their vehicle and be dropped off a few minutes from their requested destination. This minimizes the amount of detours that a vehicle needs to make and can improve the overall efficiency of a service (reduce journey times and wait times). The maximum walking distance can be set by an agency in a corner-to-corner model. However, riders who indicate they have a disability, and who are unable to walk to meet a vehicle, may be offered curb-to-curb service. Corner-to-corner models work best in denser areas where there are many intersections that can be easily walked to from most of the zone. During the launch process, the transit agency or operator will need to ensure the possible stopping locations for vehicles are safe for pedestrians to wait at and board vehicles.

- **Door-to-door:** Door-to-door service is similar to curb-to-curb service; however it is intended for high-need rider groups who require additional assistance with boarding and alighting, typically seniors and people with disabilities. This approach involves a driver assisting riders in walking from their front door to board the vehicle at pickup and from the vehicle to their door upon drop-off. Because of the additional level of care involved, this stop orientation requires additional driver training in working with people with disabilities; as a result, the door-to-door model is only appropriate if the transit agency operates microtransit service with its own employee drivers, as contracted drivers rarely have this level of training.

Choose the Quality-of-Service level

There are several quality-of-service parameters that agencies should consider when planning a microtransit service. Generally, increasing the quality of service will result in either a higher operating cost, given a fixed level of demand (more vehicle supply is required) or a lower passenger capacity if there is a fixed budget (fixed number of vehicles). In determining the quality of service and finalizing the service design for a microtransit service, rural transit agencies will need to balance three factors:

Supply of the service: Fleet size, vehicle capacity, vehicle hours, and budget

[22] A third, bus stop-to-bus stop model, is also possible. This approach limits possible pickup and drop-off locations to existing fixed-route bus stops. This typically requires more walking from passengers and works only in denser, urban areas in which a microtransit service is replacing or supplementing existing fixed-route services. Advantages of this model include the familiarity of the pickup/drop-off locations for passengers used to taking the fixed-route buses and potentially the sharing of infrastructure, like bus shelters for those waiting for their microtransit vehicles at pre-established bus stops. In areas with no pre-existing bus stops or in zones where a sizable portion of the residents are not within a reasonable distance from a bus stop, this model would not be recommended.

Demand for the service: Ridership, zone size, capacity for the service
Quality-of-service: Wait times, walking distances, detours.

The fundamental trade-offs between these factors are illustrated in FIGURE 32 below.

Figure 32 On-Demand Service Design Trade-Off Triangle

The three main parameters that an agency can adjust in order to impact the quality-of-service for microtransit include:

- **Wait times:** For on-demand microtransit services, the wait time of a service describes the time from when a passenger confirms their trip request to when the vehicle arrives at their pickup point. Longer wait times provide a more flexible routing algorithm and help facilitate more shared-rides. Shorter wait times typically generate higher ridership but may require more vehicles to provide the service. Being able to provide consistent wait times is also important to ensuring the reliability of a service. Wait times should be set to align with customer expectations, which can vary by service type. For example, in dense urban areas, average wait times are typically between 10 and 15 minutes, on average. However, for large service zones in rural areas, average wait times are typically longer, between 15 and 30 minutes. For pre-booked services, agencies can adjust how far in advance trips can be booked and how wide the pickup windows are (how close to their requested pickup/drop-off times they can be offered a trip itinerary). Typical pickup windows communicated to passengers are functionally similar, from the passenger perspective, to the wait time of an on-demand service. Pickup windows in pre-booked microtransit services typically range from 30 to 45 minutes.

- **Walking Distances:** This parameter applies for microtransit services operating with a CORNER-TO-CORNER STOPS model, in which passengers are asked to walk to meet a vehicle and from their vehicle drop-off point to their final destination. Longer walking requirements improve the overall efficiency of a service by reducing the detours in a

route but also impact the overall customer experience of a service. Typically, services in urban areas are set to require no more than a quarter mile of walking, which results in, on average, one-to-two-minute walk at each end of the trip. Agencies should also consider other factors when setting walking parameters, such as weather and service hours. For example, microtransit services may choose to require less walking during late evening hours of service.

- **Detour Allowance:** Detour allowance is the relative and absolute detour that a vehicle can take to complete other trips when a passenger is on-board. For example, if the direct trip for a request is 10 miles and 20 minutes and the detour allowance is 50%, then additional trips can only be added to the route if they do not make the original passenger's journey more than 15 miles or 30 minutes long, respectively. If the detour exceeds the maximum allowance additional trip requests will be assigned to a different vehicle, resulting in a slightly increased rider wait time. Larger detour allowances make the routing algorithm more flexible and allow for more shared rides and overall service efficiencies. Like with the other parameters, the agency should align the detour allowance to the expectations of customers. In dense urban areas, passengers are generally less willing to detour than in low-density rural areas, where there are often fewer alternative transportation options. In very large zones, an absolute cap (in minutes), as well as a relative cap of detour times, should be implemented, as a 50% detour on a short trip is usually acceptable to passengers. In comparison, a 50% detour on a 1-hour trip is a poor experience for the passenger. In urban and suburban areas, detour allowances are typically set at no more than 50% of the shortest-path route or 15 minutes in duration, whichever is shorter. In rural areas detour allowances are typically set between 50 and 100% of the direct routes or up to 25 minutes in duration, whichever is shorter.

Identify hours of operation

Microtransit service hours are the times of day and days of the week when a passenger is able to request and schedule a ride. Service hours are often a function of the budget available for service. For microtransit services that are replacing other transit services, it is recommended that the microtransit hours of operation be, at minimum, the same as the pre-existing transit service. For microtransit services that are complementing existing transit services without replacing them, the hours of operation could supplement those of the existing service, such as by providing late night or weekend service at times when fixed-route buses are no longer operating. Hours of operation for a service should consider the use cases of potential customers and the types of trips that will be made for a service. For example, if a service is likely to be used by a lot of commuters to access employment opportunities, service hours should be early enough in the mornings and late enough into the evenings to ensure customers can use the service for both ends of their commute.

Determine fares and payment methods

Agencies first must choose how much they would like to charge for a service. Fares are often set to match (or be slightly higher) than other transit services offered by the agency. Discount fares should be available for those who are unable to pay. As noted in the **IDENTIFYING FUNDING SOURCES** section, fare revenue can contribute to the overall costs of a service. Fare-free services are often easier to manage, as no payment infrastructure is required. Fare-free services tend to also have higher ridership than comparable services with nominal fares. However, fare-free services are also likely to see higher rates of no-shows or late cancellations.

To avoid passengers booking a trip and then canceling shortly before pickup, agencies can implement a cancelation or 'no show' fee, particularly for pre-booked services where passengers may otherwise book several days in advance 'just in case' they might travel. For services with fares of more than $1, the cancelation fee should be less than the cost of a completed ride. Cancellation fees should be waived when a vehicle is early or late or other issues arise that are not within the passenger's control.

For microtransit services that charge a fare, transit agencies should consider implementing a range of fare payment methods to ensure the service is accessible to a wide range of riders, including but not limited to the following:

- **Credit/debit cards.** Customers should be able to input their credit card information directly into their profiles on the microtransit app. Credit cards should be able to be used to pay for individual trips or to purchase a fixed amount of ride credit.
- **Existing transit tickets or passes.** For transit agencies that have existing transit ticketing systems, the microtransit service should be configured to also accept these passes as a form of payment. This also ensures passengers can seamlessly transfer between different forms of public transit.
- **Stored value cards.** To support unbanked riders, we recommend accepting commercially available stored value cards such as prepaid Visa or Mastercard accounts (which allows those without a bank account to add cash to an electronic account).
- **Vouchers**. Riders should also have the option to buy ride credit in advance by purchasing a unique voucher code that they can input into the app (for example, a $20, $50, or $100 credit). Agencies can sell these vouchers at various commercial locations to offer an additional option to unbanked customers.
- **Cash.** While a significant portion of riders may prefer to pay cash fares, accepting cash fares onboard the vehicle (as opposed to stored value cards or vouchers purchased in cash at local retailers) carries additional risks. If a transit agency is operating microtransit using its own drivers and vehicles with fareboxes already installed (see OPERATING/CONTRACTING MODEL**),** accepting cash fares onboard the vehicle is relatively straightforward. However, if vehicles do not have fareboxes installed (such as those provided by a third-party vendor operator), accepting cash will carry additional startup cost as well as insurance risk.

Procurement and Implementation Considerations

Once the preliminary service design has been finalized, the transit agency can move onto the procurement process. Once funding is secured, an agency should expect the procurement and launch process to take between six and twelve months, depending on if new vehicles need to be purchased. Vehicle procurement tends to be one of the critical factors in determining the timeline to launch a new service.

Identifying Funding Sources

A common challenge that transit agencies face when operating on-demand services is identifying and securing sustainable, long-term funding for ongoing operating costs. One of the

first steps for transit agencies will be determining the most suitable, long-term funding sources to meet their current and future operational needs. Several potentially suitable funding sources are outlined in the subsequent sections including federal funding programs, local funding, and fares.

FTA formula funding

Costs for microtransit can be divided into operating and capital expenses. Capital costs include vehicles, vehicle depots and maintenance facilities and software. Operating costs include driver wages, fuel, and administrative costs associated with the service. Federal formula funds for small urban and rural areas with populations below 200,000 residents, will cover up to 80% of capital costs and 50% of operating expenses.[23] In the case of turnkey services, where contracts include both operating and capital costs, the federal formula funds can be used to provide 65% of the overall contract (known as the "capital cost of contracting" rule), requiring a 35% match.

There are two main federal formula programs suitable for microtransit services in rural areas of Virginia:

Section 5310 Enhanced Mobility of Seniors and Individuals with Disabilities [24]

This program provides formula-based funding for the purpose of assisting transit agencies and nonprofit organizations in meeting the transportation needs of older adults and people with disabilities when existing transportation services are insufficient. Section 5310 funding is directed to transit agencies and other local government bodies designed as direct recipients or sub-recipients to FTA funding. In Fiscal Year 2023, Virginia received $1.9 million in Section 5310 funding allocated to small urban areas (population 50,000 to 200,000) and about $2.3 million for rural areas with less than 50,000 population.[25]

Section 5311 Formula Grants for Rural Areas [26]

The 5311 program provides formula-based funding for capital, planning, and operating expenses for public transportation in rural areas, defined as incorporated or unincorporated communities with a population of less than 50,000. This funding is distributed at the state level by DRPT. Other states have used this funding to support microtransit services in rural areas, such as Alabama's Baldwin Regional Area Transit System (BRATS)[27] and the Capital Area Rural Transportation System (CARTS) in Bastrop, Texas. For large urban areas (regions with more than 200,000 residents) or small urban areas (regions with more than 50,000 people but less than 200,000), Section 5307 Urbanized Area Formula Grants would apply. In Fiscal Year 2023, Virginia received about $24 million in Section 5311 funding for rural areas with less than 50,000 population.[28]

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[23] Large urban areas with population above 200,000 may not use Section 5310 formula funds to cover operations costs.

[24] FTA. "Enhanced Mobility of Seniors and Individuals with Disabilities - Section 5310." Accessed May 25, 2022. https://www.transit.dot.gov/funding/grants/enhanced-mobility-seniors-individuals-disabilities-section-5310.

[25] FTA. "Table 8. FY 2023 Section 5310 Enhanced Mobility of Seniors and Individuals with Disabilities (Full Year). Table 8. FY 2023 Section 5310 Enhanced Mobility of Seniors and Individuals with Disabilities (Full Year). https://www.transit.dot.gov/funding/bpa-resources/table-8-fy-2023-section-5310-enhanced-mobility-seniors-and-individuals

[26] FTA. "Formula Grants for Rural Areas." https://www.transit.dot.gov/rural-formula-grants-5311

[27] Shared Use Mobility Center. 2022, September 26. "A County-Wide Transformation of Demand-Response Service into Microtransit, Baldwin County, Alabama." *Mobility Learning Center* (blog). Accessed February 22, 2023. https://learn.sharedusemobilitycenter.org/casestudy/a-county-wide-transformation-of-demand-response-service-into-microtransit-baldwin-county-alabama/.

[28] FTA. "Table 8. FY 2023 Section 5310 Enhanced Mobility of Seniors and Individuals with Disabilities (Full Year). Table 8. FY 2023 Section 5310 Enhanced Mobility of Seniors and Individuals with Disabilities (Full Year). https://www.transit.dot.gov/funding/bpa-resources/table-8-fy-2023-section-5310-enhanced-mobility-seniors-and-individuals

Federal discretionary grants

In addition to the federal formula grants administered through the Federal Transit Administration, agencies can apply to various grant programs that would cover (or partially cover) the costs of microtransit service. The first three grant programs described here, administered by USDOT and FHWA, respectively, are formula programs distributed to state DOTs on the basis of population and other factors.

USDOT Rural Surface Transportation Grant [29]

As part of the Infrastructure Investment and Jobs Act, Congress authorized a new $300 million federal grant program, known as the Rural Surface Transportation Program (also known as "Rural"), to address gaps in transportation infrastructure in rural areas. States, local governments, tribal governments, transit agencies and regional transportation planning organizations may apply for funding for projects located outside a Census-defined Urbanized Area, or within an Urbanized Area with a population of less than 200,000. Federal funding may be used to cover up to 80% of eligible costs. Microtransit can be funded if bundled as a capital expense such as the turnkey purchased transportation approach.

USDOT Carbon Reduction Program [30]

USDOT will distribute roughly $6.4 billion over the next five years ($1.234 billion this year) to states and metropolitan planning organizations (MPOs) to reduce carbon emissions in the transportation sector. Within each state, some portions of this funding must be allocated to communities based on population size. Virginia will receive $31.9 million in annual funding during this first year (2022) and should expect to receive a similar amount annually over the next four years through 2026. Of this total, $5.3 million is designated for communities with less than 5,000 residents, and $945,000 is designated for areas with between 5,000 and 15,000 residents. An additional $11.2 million can be allocated to any community, irrespective of population size. This funding can be allocated towards any eligible project that supports the facilitation of transportation emission reduction; this includes on-demand transportation service technologies such as microtransit.

FHWA Congestion Mitigation and Air Quality (CMAQ) [31]

The CMAQ grant program is administered by the Federal Highway Administration to support projects and programs that work to improve air quality and maintain or attain the requirements set forth by the Clean Air Act. This competitive program is typically administered locally through metropolitan planning organizations (MPOs). Funds may be used for a transportation project or program that is likely to contribute to the attainment or maintenance of a national ambient air quality standard, with a high level of effectiveness in reducing air pollution, and that is included in the MPO's current transportation plan and transportation improvement program (TIP). Typically, CMAQ funds are dedicated to areas that are outside of attainment of air quality standards set by the Clean Air Act. About $60 million in CMAQ funding is distributed annually to qualifying projects in Virginia.[32]

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[29] US Department of Transportation. 2022. "The Rural Surface Transportation Grant |." March 21, 2022. https://www.transportation.gov/grants/rural-surface-transportation-grant.

[30] FHWA | Federal Highway Administration. 2022. "Bipartisan Infrastructure Law - Carbon Reduction Program (CRP) Fact Sheet | Federal Highway Administration." April 20, 2022. https://www.fhwa.dot.gov/bipartisan-infrastructure-law/crp_fact_sheet.cfm.

[31] FHWA | Federal Highway Administration. 2023. "CMAQ - Air Quality - Environment - FHWA." Accessed March 1, 2023. https://www.fhwa.dot.gov/environment/air_quality/cmaq/.

[32] FHWA | Federal Highway Administration. 2023. "FY 2023 Computational Tables (Table 1, Part 3, Page 2) - Infrastructure Investment and Jobs Act (Bipartisan Infrastructure Law) | Federal Highway Administration." Accessed March 1, 2023. https://www.fhwa.dot.gov/bipartisan-infrastructure-law/comptables/table1p3-2.cfm.

Congressional Earmarks/Appropriations

U.S. Senators and Members of Congress are increasingly using the recently revived congressional earmark process to advance promising transportation projects in their communities, including microtransit. A Community Project Funding (previously referred to as an earmark) is a funding provision that is inserted into an appropriations bill in Congress that directs funds to a designated recipient for a specific project. For example, during FY23, 37 Members of Congress and 38 Senators submitted earmark requests to the House/Senate Appropriations Committees. In both chambers, more than half of earmark requests ultimately received funding. Virginia legislators secured more than $200 million for Virginia transportation projects in FY2023.[33] Many transportation-related earmark requests are focused on capital projects, such as bike/pedestrian facility construction or roadway improvements. However, earmarks could also fund microtransit fleet replacement or electrification, software, or operations (through the capital cost of contracting rule). Unlike a competitive grant process, transit agencies must approach their Members of Congress directly to request support for their microtransit project through the annual appropriations process and see the request through to fruition. DRPT may support these earmark requests through letters of support, though it cannot initiate these discussions.

State funding programs [34]

In addition to federal funding programs, various state-wide programs can be used to fund microtransit in Virginia. These programs can be divided into operating assistance, capital assistance, and discretionary grant programs. They are particularly important because state funds count as part of the local match required of transit agencies to qualify for FTA formula grants.

MERIT Operating Assistance

DRPT provides funding for operating expenses for eligible public transportation services. DRPT uses a performance-based methodology to determine the specific allocation of operating assistance funds to each operating transit agency. The program funds no more than 30 percent of all operating expenses borne by public transportation operators.

MERIT Capital Assistance

DRPT uses a prioritization process to allocate and assign resources to capital projects and investments.

Applicants that are eligible for federal public transportation grant programs may combine federal and state capital assistance grant funds to decrease the local match needed for each project. However, a minimum four percent local match is necessary for all projects.

DRPT Demonstration Project Grant

The Demonstration Project Assistance grant program supports local efforts to improve transit reliability, access and connections to housing and employment centers, and transit mobility options. The projects that are eligible include microtransit as well as traditional fixed-route bus services in areas currently not served by public transportation.

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[33] U.S. Senator Tim Kaine. 2023, January 9. “What Virginians Are Reading: Federal Funding for Local Projects Headed to Communities across the Commonwealth | U.S. Senator Tim Kaine of Virginia.” Accessed January 18, 2023. https://www.kaine.senate.gov/press-releases/what-virginians-are-reading-federal-funding-for-local-projects-headed-to-communities-across-the-commonwealth.

[34] Virginia Department of Rail and Public Transportation. “Ongoing Grant Programs.” https://www.drpt.virginia.gov/ongoing-grant-programs/merit/

Local and regional funding

Local and regional funding accounts for a majority of transportation funding in the United States. Local sources include transit fares, local government budgets, sales tax revenues, ballot measures, and local partnerships. If the microtransit service charges a fare, fares can offset a small portion of operating expenses, typically up to 20%, depending on ridership. Some microtransit services are partially funded through private-sector partnerships with large employers, universities, or hospitals within the service zone.

Select an operating/contracting model

Agencies can select between several operating models which best suit their budget, capabilities, and access to vehicles. Potential models generally include:

- **Agency-operated service.** In this model, the transit agency procures a software platform for the operation of microtransit service, and delivers service using its own drivers, dispatchers, vehicles, and customer service[35] and operations support staff. Partnerships of this nature may be described as Software-as-a-Service, or "SaaS". Agency-operated services allow the agency to utilize its existing resources and assume high control over service delivery. The primary disadvantage of an agency-operated approach is that it would be required to develop administrative and operational capacity in a potentially unfamiliar service category, which has the potential to create inefficiencies and higher costs as the agency works to develop expertise in this area (vs. a contracted operator with developed expertise in operating microtransit service). When procuring software, we recommend agencies require the following minimum technical capabilities :
    - Dynamic vehicle routing
    - Passenger aggregation into shared rides
    - Ability to book rides in advance as well as on-demand
    - Customer mobile application (available for iOS and Android) providing trip booking and providing real-time estimated time to arrivals (ETAs) and other trip updates
    - Driver mobile application for real-time transmission of routing, rider manifests, and trip information
    - Ability for administrators/dispatchers to book trips on behalf of customers (so customers can book trips over the phone)
    - Passengers should be able to indicate their disability status, either directly through the app or through notifying the customer service agent at the time of booking.
    - Ongoing technical, operational, and marketing support

- **Turnkey purchased transportation (vendor-operated).** In this model, a vendor provides the transit agency with a bundled solution which includes a microtransit software platform, along with the vehicles, drivers, and management services needed to operate service. This partnership model may be described as Transportation-as-a-Service, or "TaaS," and/or as a "turnkey" model. Turnkey services sometimes have lower operating costs and are typically easier to scale quickly when compared to agency-operated alternatives, as third-party vendors can typically adjust vehicle supply or extend operating hours more easily than transit agencies. Turnkey models also ensure the operator and technology platform are designed to work interoperably and efficiently. Disadvantages of using a turnkey model include reliance on a vendor for all aspects of

[35] Some software contracts may also include ongoing customer support and service optimization services for additional fees.

service delivery, and less direct agency control over operational decisions (potentially including vehicle make/model, driver recruitment and pay, and maintenance). However, a well-designed contract can address many of these concerns.

- **Non-dedicated transportation providers.** Rather than introducing microtransit as a dedicated service, an agency can contract with one or more local taxi/Transportation Network Companies (TNCs) on a non-dedicated, or trip-by-trip basis. Under this model, TNCs would deliver agency-subsidized trips alongside trips for private-pay customers. While such a model may be appropriate for services with very low levels of ridership (i.e., a service with projected demand that would not require a single dedicated vehicle resource), we typically recommend against non-dedicated models. Disadvantages include limited oversight of operations, limited availability, higher costs per trip, and ineligibility for FTA funding (depending on whether the TNC is able to meet drug and alcohol testing requirements). Further, trips are typically harder to aggregate in a non-dedicated model, meaning costs increase linearly as demand grows (as compared to a shared-ride model, where cost per trip decreases as more customers are aggregated).

Procure vehicles

If directly operating service, the agency will need to designate a fleet of vehicles for the service prior to commencing operations. If no vehicles are readily available for use, the agency may need to procure new vehicles. Vehicles should be branded with the agency's logo and color scheme, so they are easily identifiable for riders.

Microtransit can be operated with vehicles of any size. However, the recommended vehicle size is approximately 6 to 10-seat minivans or vans. In cases where the agency already has vehicles available for use, even if the vehicles are larger (e.g., 12 to 25-passenger cutaway vehicles), it may make sense to use those vehicles. Otherwise, smaller vehicles tend to be more affordable, and in many cases, drivers do not need commercial driver's licenses to operate the service. When choosing vehicles, agencies should consider balancing space and comfort of the passengers with capital costs of purchasing larger vehicles. Larger vehicles can also become more expensive to operate and maintain, and therefore are more cost-effective for fixed-route options serving a higher ridership.

Agencies should also maintain spare vehicles in their fleets—at least 15% more vehicles than the minimum fleet size needed during peak hours (or a minimum of one spare vehicle if the fleet size is less than 6 vehicles). These additional vehicles may be necessary to cover shift changes or fill in for vehicles that are out for regularly scheduled cleaning or maintenance. Having spare vehicles available also ensures consistent and reliable service in case of a vehicle malfunction or if an incident occurs that requires long-term repairs.

Electrification

Transit agencies will also need to determine whether they would like to implement an electric fleet, which can improve a microtransit service's potential to reduce local greenhouse gas emissions. Depending on the vehicle and service design, additional vehicles may be needed to account for the limited battery range and the charging times of electric vehicles.

As of early 2023, there are no commercially available electric 6+ passenger vans in the US.[36] The larger electric vehicle (EV) options in the US are retrofitted vans or shuttles by companies

[36] Sales for the Volkswagen ID.Buzz, a 6-passenger, battery-electric minivan, and the Mercedes eSprinter, a 12-passenger electric van, are expected to begin in 2024.

such as GreenPower Motor Company and Lightening Motors. These larger vehicles can be more expensive to operate due to the larger vehicle class and driver training and insurance requirements. Alternatively, some OEMs offer hybrid-electric minivans, such as the Toyota Sienna (hybrid) or Chrysler Pacifica (plug-in hybrid). Other microtransit services have also deployed electric SUVs, with 4-5 passenger seats, such as the Chevrolet Bolt EUV, Kia Niro, or Hyundai Ioniq, however these limit the capacity of a service and may require more vehicles and drivers. It is also possible for an agency to implement a microtransit service with a mixed fleet of EVs and non-electric vehicles.

TABLE 14 outlines the key considerations for evaluating whether to select an EV versus an internal combustion-powered vehicle. These considerations include cost, environmental impact, and vehicle layout.

Table 14 Electric Vehicle Considerations in Microtransit Services

Consideration	Benefits and Drawbacks
Cost	**Benefits:** • Lower energy cost: The electricity used per mile is often cheaper than the fuel used per mile • Lower maintenance cost: Less wear & tear (e.g., regenerative braking reduces use of brakes), fewer components to be maintained (e.g., no engine oil changes, no starter or generator), less downtime cost **Drawbacks:** • Higher list price: Especially battery, high-voltage components and reduced economies of scale increase up-front cost; in the short term this can be mitigated by subsidies and grant programs that may be available for electric vehicles • Larger fleet size: Due to the time taken to charge the vehicles, a larger number of spare vehicles may be needed compared to a non-electric fleet. • EV charging station installation: Dedicated EV charging stations for microtransit vehicles will need to be installed at strategic locations in the zone to facilitate overnight and/or mid-shift charging, adding to the project's upfront capital costs. A single Level 2 EV charging station with two charging ports, suitable for overnight EV charging, typically costs $10,000 to install and often requires additional ongoing costs by an EVSE supplier. • All-wheel-drive EV minivans are likely to incur higher costs
Environmental	**Benefits**: • Reduced emissions: Locally emission-free service, though overall emissions will depend on the electricity source used with up to 100% emission-free transit with energy from renewables. • Reduced noise: No or very quiet engine noise, especially at low speeds and when stopped **Drawbacks:** • Potential for increased emissions: Higher emissions during production can only be mitigated over the vehicle's lifecycle

Vehicle Layout	Benefit: • More usable space: More interior space possible due to smaller components at front/back of the vehicle and no transmission tunnel from front engine to rear wheels, batteries use underfloor spaces Drawback: • Limited wheelchair-accessible vehicles: Not every EV option described above offers a wheelchair-accessible vehicle layout, though retrofits are often possible.

Maintenance Facility Needs

Transit agencies will also need to consider the storage and maintenance of vehicles in a depot or maintenance facility, if existing facilities do not have capacity for microtransit vehicles. A suitable depot for microtransit vehicles should have the following attributes:

- Be located in or near the service zone to minimize deadhead miles and operating costs
- Consider safety measures for drivers, such as being well lit, secured by a fence and/or staffed by security personnel
- Be large enough to store all vehicles and spares as well as additional space for drivers to park their personal vehicles.
- Restrooms and other facilities for drivers to use before and after shifts and during breaks.
- Maximum efficiency can be achieved if water and electricity are available on site for vehicle cleaning and regular maintenance tasks.
- In areas with inclement weather, vehicle depots protected from the elements will minimize service interruptions.

Ensure accessibility of the service

Microtransit services should prioritize accessibility to ensure all potential customers have access to service, including passengers with disabilities, and those without smartphones and credit cards. Compliance with regulations such as ADA and Title VI, described through measures below, is mandatory for transit agencies operating microtransit services with FTA funds. The following accessibility measures are recommended:

- **For customers with limited mobility:** The service should include at least 20% wheelchair-accessible vehicles (WAV). If a service only has one or two vehicles, all vehicles should be fully accessible. A fleet with 20% WAVs will ensure an equivalent quality of service can be offered for customers using wheelchairs. To make the booking process simple for passengers with disabilities, the software platform should remember a passenger's need for a WAV, and ensure that a WAV request is the default for future bookings. To avoid operational problems, the system should automatically assign passengers to vehicles with an available wheelchair position.
- **For customers without smartphones:** In addition to the smartphone app for booking trips, offering web-based and phone booking options can ensure passengers without smartphones (or those who prefer not to use an app) can access service. Administrators should be able to easily book microtransit rides for customers calling in. Transit agencies can also partner with community organizations to train workers on how to book trips on behalf of passengers.

- **For customers with hearing, vision, or cognitive impairments:** Transit agencies should consider introducing alternative methods of ride booking in addition to the smartphone app and phone-based dispatch service described above. One option is to offer booking via Interactive Voice Response (IVR), a telephone technology that can read a combination of touch-tone and voice input. This option is helpful for low-vision riders and also enables riders to book trips outside of regular service hours, when the customer service center is closed. Another option is to offer a third-party booking portal for caregivers or medical centers to book rides on a passenger's behalf. This approach is particularly useful in non-emergency medical transportation as well as for handling other trips for passengers with cognitive impairments.

Considerations for areas with poor cellular connectivity

Microtransit software relies on cellular data to perform effectively. In some rural areas with poor cellular coverage, it can be more challenging to effectively operate a microtransit service. Agencies attempting to serve these areas should consider the following mitigation strategies:

- Implement pre-booked microtransit service.
- Agencies should also ensure that the software application for drivers is able to store daily ride manifest and vehicle routing instructions locally on the device (e.g., cell phone or tablet) and remain visible if cellular data becomes unavailable.
- With a pre-booked service where customers are required to book at least the day before their ride, the routing for the entire day of service is known before the service hours begin. Drivers can then download a digital manifest of the day's rides, so that service is not disrupted if cellular coverage is lost in the middle of a shift.
- In the cases where cellular service is interrupted, the software should regularly query for connectivity and automatically download latest changes to the driver manifest whenever reconnection to cellular service is made. This way drivers see the most up-to-date information without having to manually refresh the program.
- Software for drivers should use multiple layers of mapping data to create redundancy in case cellular service is interrupted (e.g., google maps API + vendor applications), to ensure drivers will still be able to receive real-time navigation assistance.

Launch Preparation

Once a service design process has been finalized and a transit agency has procured software agencies must prepare their vehicles and operators to actually launch the service.

Driver recruitment and retention

If a transit agency proceeds with an operating model where its drivers will deliver service (see AGENCY-OPERATED SERVICE MODEL), drivers will need to be trained in delivering microtransit service, including how to use the software platform, best practices for service delivery, and best practices for customer service. Driver recruitment may be a particular challenge in rural areas, and so transit agencies should develop a strategy that makes use of the following best practices for recruiting drivers:

- **Local driver market** – Understanding where current drivers in the area live and work, their demographics, as well as the incentives (e.g. compensation, benefits, or bonuses) needed to effectively recruit them are essential to a new microtransit service
- **Service design** – It is important to staff the service according to vehicle requirements set out by the service design, with shifts broken out throughout the service day plus a number of backup shifts in the event drivers are out sick or on leave. During certain

times, the number of drivers may be higher or lower depending on seasonal variation in demand.

- **Budget** –We recommend allocating some portion of the project's marketing budget (see MARKETING AND RIDER EDUCATION) towards driver recruitment, whether on a one-time basis as part of the pre-launch activities or on an ongoing basis to regularly add to the driver team.
- **Contract types and labor rules** – Understanding the contractual or employer relationship the drivers will have with the transit agency is essential. Different work contracts may require a certain amount of minimum and/or maximum hours a driver is required to drive, particularly in collective bargaining environments. If contractual obligations exist, consider them early in the hiring process, as these will impact shift planning.

Administrator Training

The transit agency's administrative staff (including dispatchers, schedulers, and customer service representatives) will also need to be trained in the use of its selected microtransit platform. Depending on the selected operating model, administrative requirements may include supervision of live service and responding to issues when needed, booking trips for customers making reservations over the phone, and familiarity with microtransit performance indicators (to assess system performance over time). Smaller microtransit services (i.e., 6 vehicles or fewer) typically require the supervision of a single administrator/dispatcher.

Marketing and rider education

Marketing is an important process to ensure the public is aware of the new microtransit service, both to ensure existing transit customers are prepared for changes to service, and to attract new customers to the system. Many potential customers will be unfamiliar with microtransit as a type of public transit and will need to learn how to book rides and use the service. Creating sustained awareness of the microtransit service prior to launch is essential, and some of the following strategies may be useful:

- **Webpage.** Create a dedicated website for the microtransit service with key service information.
- **Press release.** Develop a pre-launch press release for distribution in local media that directs readers to download the microtransit app.
- **How-to video.** Create a short informative video on how to use the service and share on the service website and social media.
- **Targeted outreach.** Targeted emails or print and social media advertisements. Targeted outreach including "how-to" instructions may be particularly useful for seniors and at retirement communities.
- **Community announcements.** Announce microtransit service in municipal communications, newsletters, and through communications of local nonprofit organizations that serve the transportation-disadvantaged.

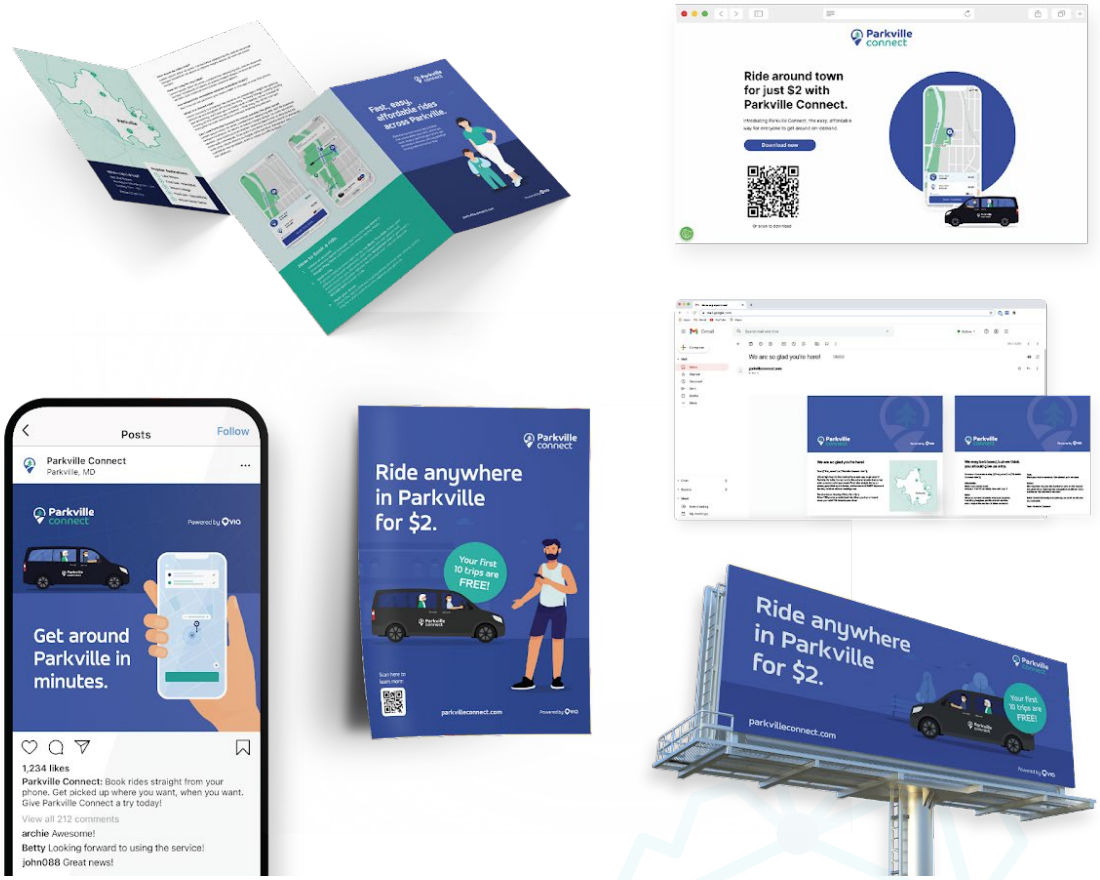
Encouraging awareness of microtransit through word of mouth is especially important. Generating awareness via word of mouth can be achieved through some of the following approaches:

- **Focus groups.** Engage directly with the public through virtual outreach, focus groups, or public meetings held via Zoom or other communication tools. Focus groups can serve as a good opportunity to instruct customers who may be in need of assistance using new technology, like seniors, unbanked customers, nonnative English speakers

- **Street marketing.** Placing a wrapped microtransit vehicle at popular community events (e.g., farmers markets, county fairs, or festivals) can increase awareness and encourage conversation about the service
- **Promotional fare discounts or free rides.** Offer reduced or promotional fares for new users.

Illustrative examples of these approaches are shown in **FIGURE 33** below.

Figure 33 Sample Microtransit Marketing Materials



Mock-up of marketing materials such as pamphlets, posters, social media advertising, websites, and out-of-home advertising.

Transit agencies can conduct marketing activities in phases to ensure success at each phase of the service's lifecycle shown in **TABLE 15**:

Table 15 Timeline of Marketing and Rider Engagement Activities

	Pre-Launch	Months 1 – 3	Months 4+
Focus	• Establish marketing channels and develop materials	• Promote service visibility and attract first-time riders	• Continue attracting customers and retain customers with engagement promotions
Activities	• Design marketing materials • Begin pre-launch awareness: social media, local press, and local government outlets	• Digital (social media) and physical ads (flyers, direct mail, bus station signage). • Press releases • Events and direct public engagement	• Rider surveys and focus groups • Referral campaigns • Promotion of discounted tickets and referral campaigns • Outreach to specific communities

Integration with other public transportation services

Commingling ADA paratransit

Commingling microtransit and existing demand-response programs (such as ADA paratransit) trips can improve the overall efficiency of microtransit service. Operating the same vehicles to transport both paratransit and microtransit customers can lead to higher levels of passenger aggregation and improve the overall productivity of service. Agencies can likely deliver service with a smaller fleet of vehicles than would be needed to manage each service separately. Further, agencies have the opportunity to streamline the administration of both services, potentially using a single administrative structure and software platform to manage both services. Doing so could reduce the administrative burden of managing separate services. Commingling can occur through three primary approaches:

1. Commingled fleets: paratransit and microtransit operate with a shared vehicle fleet, but individual vehicles are assigned to only one mode for any given driver shift.
2. Commingled shifts: paratransit and microtransit riders are served during the same driver shifts, but do not share rides together at the same time.
3. Commingled trips: paratransit and microtransit riders may be grouped into the same vehicle at the same time.

With each of these approaches, a transit agency's drivers must be cross-trained to operate both microtransit and paratransit services. Coordination with the software vendor(s) selected will determine which of the three approaches is most suitable for a transit agency's needs and operating conditions.

Delivering non-emergency medical transportation

Transit agencies should consider whether their microtransit service can provide non-emergency medical transportation (NEMT) using microtransit fleets. Using the same fleet of vehicles can likely deliver NEMT trips with relatively few additional revenue-hours compared to the revenue-hours required to operate separate NEMT and microtransit services. NEMT trips are reimbursable through Medicaid for eligible customers. For customers who are not Medicaid-eligible, many medical centers maintain internal transportation budgets to handle NEMT for patients, particularly post-discharge transportation. These non-Medicaid trips are typically

served by local taxi or NEMT providers, and hospitals are charged "private-pay" rates. Serving these trips through commingled microtransit can offer medical centers significant savings, in paying subsidized microtransit fares (even if they are charged premium fares) compared to older private providers. This type of commingling can also provide a new source of revenue for the transit agency and improve its farebox recovery. To begin delivering Medicaid-eligible NEMT trips, transit agencies should first obtain certification to deliver Medicaid-reimbursable trips from Virginia, then develop an operating plan to deliver them using the microtransit fleet. To serve non-Medicaid-eligible NEMT trips, transit agencies should engage with local medical centers to find out if there is sufficient NEMT trip volume to warrant a formal partnership between the two organizations.

Managing fixed-route bus route replacement

When replacing a fixed-route bus with microtransit, it is important to ensure existing passengers have time to transition between the existing service and the new on-demand service. Therefore, it is recommended that both the existing bus route and the microtransit service operate concurrently for at least two weeks, and potentially as long as several months in situations where the community may be resistant to change and if the operating budget allows.

Post-launch Considerations

Once the microtransit service has launched, transit agencies should take the following steps:

1. **Monitor and optimize service:** One of the greatest advantages of implementing microtransit services compared to other transit modes is how flexible and easy it is to change certain service design decisions after launch. Agencies can use data from live services to identify opportunities to adjust and enhance the service. Examples of this include, changing zone boundaries to include missing key destinations, adjusting approved stopping locations, or changing maximum wait times or detour thresholds to maximize the efficiency of the services.
2. **Continue to market the service:** In can take up to twelve months or longer to reach stable ridership levels for a service. To sustain growth in ridership, the service should be continually marketed after the initial launch. Fare promotions such as free first rides, referral discounts, and subscription models can also be implemented to attract new passengers.
3. **Service Evaluation:** Using the KPIs identified in the **KEY PERFORMANCE INDICATORS** section, agencies can evaluate new services over an extended period of time and see how they compare to various benchmarks.
4. **Manage Growth**: Some microtransit services will see growth beyond the capacity of the available vehicle supply and budget for a service. In these cases, agencies should work to manage the growth of a service by adjusting quality of service parameters, adding additional vehicles, or adjusting fares to limit demand.
5. **Expand service**: If a microtransit service is proven successful and is well-liked by the local community and local leaders, additional funding may be more easily obtained to expand services. Service expansion can be in terms of service hours, quality of service, or the zone in which the service operates.