

Baltimore Regional Transportation Board

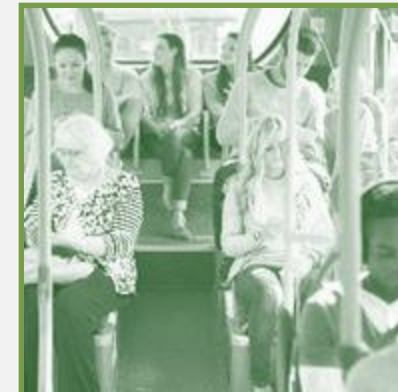
Summary of the Microtransit Solutions Effort

Technical Committee Meeting

January 7, 2025



Prepared by:



Foursquare ITP & Kimley Horn Team



Aileen M. Daney
Project Manager



Alanna McKeeman,
AICP



Steven Schroyer



Thomas Petluck



Elias Frantz



Lucas Muller



Tyler Beduhn



Poonam Patel

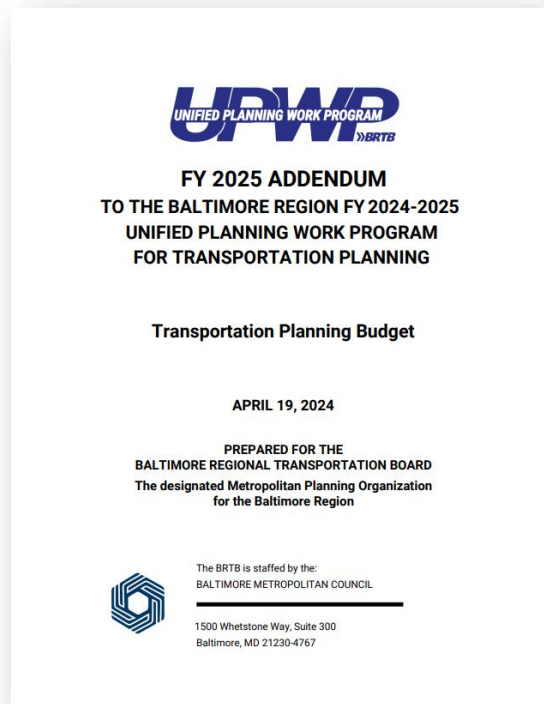


Today's Agenda

- Project Purpose
- Key Interim Project Deliverables
- The Baltimore Region Microtransit Guidebook
- Q&A

Project Information

- Project was approved as a part of the FY 2024 UPWP



- Steering Committee was comprised of:
 - Anne Arundel County
 - Baltimore City
 - Baltimore County
 - Carroll County
 - City of Annapolis
 - Harford County
 - Howard County
 - MDOT MTA
 - Queen Anne's County

Project Purpose

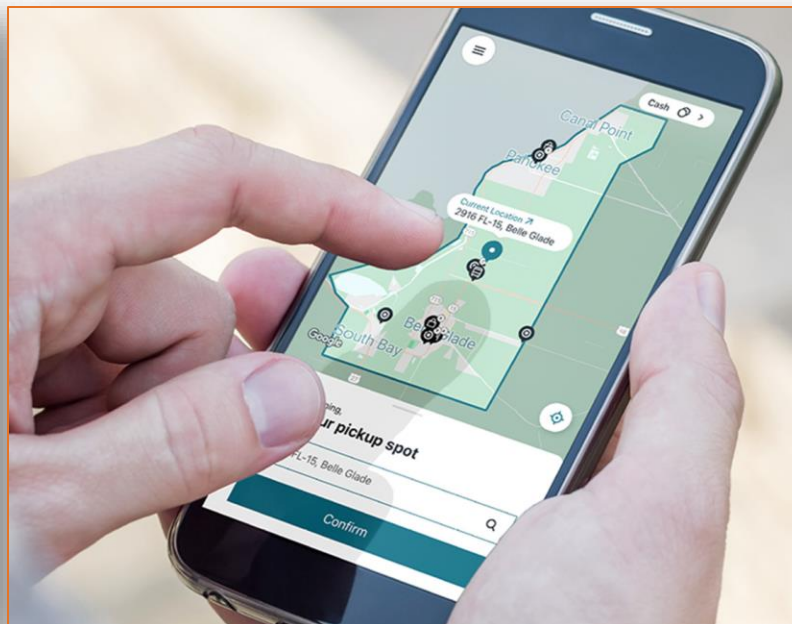
To develop **best practices for implementing, operating, promoting, and funding microtransit in the Baltimore region**, including coordination between jurisdictions and agencies.

Looking at a future that's more integrated to give people throughout the region more seamless travel options

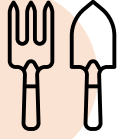


Quick Primer: What is Microtransit?

- A privately or publicly operated technology-enabled transit service that typically uses multi-passenger shuttles or vans to provide on-demand service.



Simplified Project Schedule



April

Project team held project Initiation Meeting with BMC staff and Kickoff Meeting with Steering Committee



June

Steering Committee Meeting #1: Feedback on Microtransit Context report and peer regions to interview.



August

Steering Committee Meeting #2: Feedback on Enhancement Opportunities report and case study interviews.



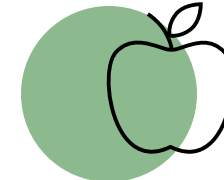
November

Steering Committee Meeting #3: Feedback on Microtransit Guidebook outline and stylized template.



December

Steering Committee reviewed and provided feedback on draft Guidebook.



January

Project team finalizes and publishes Guidebook!

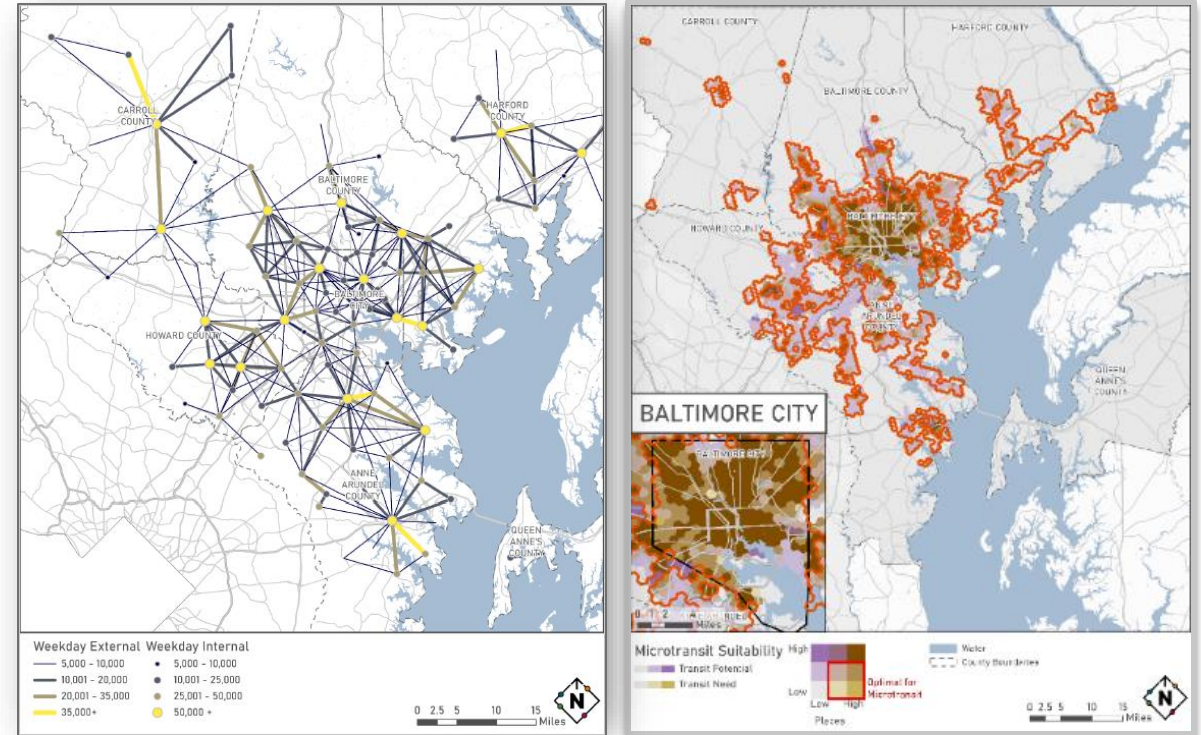


Key Interim Project Deliverables

- i. Microtransit Context Report
- ii. Enhancement Opportunities Report
- iii. Case Studies Report

Microtransit Context Report

- First-of-its-kind state of the system report, answered questions like:
 - What microtransit services exist today?
 - Who needs microtransit the most?
 - Where do people need microtransit to take them?
 - Where might microtransit be a better solution than fixed-route?



Enhancement Opportunities Report

- **Identified areas** in the region where microtransit is likely to be successful and the use cases for each.
- Prioritization framework works in lockstep with *Resilience 2050* policy and technical scoring.
- Investigated other **enhancement opportunities** in policy, training, data collection and reporting, funding, and procurement.

Potential Enhancements: Jurisdiction-Level Use Cases

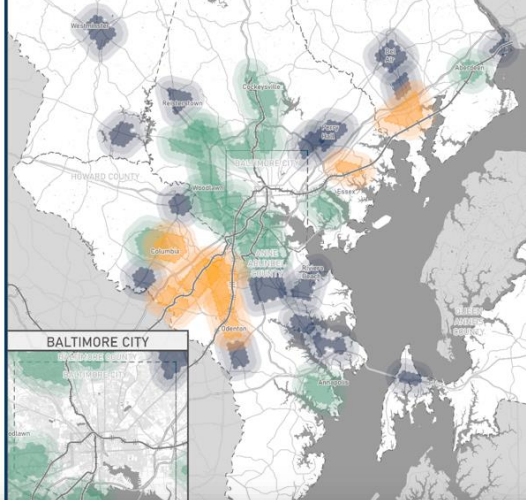
Areas identified in pink in the earlier map were then categorized into three main use-cases based on their interaction with transit service. Categories include:


Internal Circulation: Areas that intersect with lower productivity transit service or no existing regional transit service, as well as serve local points of interest such as retail, medical, and major employment destinations, are identified in dark blue.

First / Last Mile Connection: Areas that intersected higher productivity transit service, providing important connections to transit, are identified in green.

Hybrid: Areas that may have exhibited moderate to low transit productivity, but still provide important connections to regional rail or bus service, are identified in yellow.

Additionally, areas for **potential regional coordination** were highlighted for each county. These are areas where jurisdictional b



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Data Collection & Reporting

Establish regional guidance or standards for microtransit data collection and reporting.

Data that can be shared across jurisdictional boundaries can include, but is not limited to:



Trip information such as daily and monthly trips, anonymized origins and destinations, trip distance and duration, and fare media.



Customer feedback such as complaints and satisfaction levels.



Performance such as wait times and subsidy per trip.

Case Studies Report

- Report covers **12 peer agencies from 5 regions** with similar characteristics to the Baltimore region.
- Developed **agency fact sheets** with system descriptions, and microtransit insights and lessons learned to help the region carry best practices forward.

CASE STUDIES

Wilmington, NC – Regional Case Study

RIDEMICRO

Wave Transit

Service Objective – Expand transit connections and mobility options. Partially replace inefficient and infrequent fixed-route service with more responsive service.

AGENCY SERVICE AREA

- **Size:** 200 square miles
- **Area type:** Suburban, small-town
- **Population:** 230,310 people
- **Population density:** 1,152 people per square mile

MICROTRANSIT SERVICE CHARACTERISTICS

General Information

- **Status:** Operational
- **Service type:** Curb-to-curb
- **Number of zones:** 4
- **Size:** 95 square miles
 - Northern Brunswick: 22 square miles
 - Southeast Pender: 28 square miles
 - Southern New Hanover: 26 square miles
 - Northern New Hanover: 19 square miles
- **Dates in service:** October 2021 – Present
 - Northern Brunswick and Southeast Pender: October 2021 – Present
 - Northern and Southern New Hanover: December 2022 – Present
- **Service hours:** Varies by zone
 - Northern Brunswick: 6:30 am to 7:00 pm from Monday to Friday
 - Southeast Pender: 6:30 am to 10:30 am and 12:00 pm to 7:00 pm from Monday to Friday
 - Northern and Southern New Hanover: 6:00 am to 8:00 pm from Monday to Friday, 6:00 pm on Saturday, 9:00 am to 5:00 pm on Sunday



Source: Wave Transit

CONCLUSION

Lessons Learned

The information presented in this report, particularly within the case study fact sheets and key takeaway examples, is distilled into the following 13 lessons learned organized into service design, procurement, coordination, and service launch categories. These lessons learned should be considered when establishing microtransit service in the Baltimore region.

SERVICE DESIGN

1. **Service Objective:** When planning a microtransit service, define the service objective based on the community's needs and desired destinations, while considering land use, population density, and employment density. Consider whether the desired destinations are points of interest within the zone or if there are connections to higher-frequency transit.
 - Given Baltimore's established high frequency bus and rail network, microtransit could enhance access to these high-frequency services, particularly in areas where fixed-route service is less frequent or harder to access.
 - Like the models in Atlanta and Denver, microtransit could effectively serve Baltimore's suburban and exurban communities, by connecting residents to essential destinations like grocery stores and healthcare facilities.
2. **Service Hours:** If the service is intended to serve work trips, ensure service hours align with commuter peak times or, in industrial areas, cover both ends of work shifts, which may exceed a typical eight-hour workday.
3. **Wait Time:** When setting a target wait time for microtransit, consider the level of service of the surrounding transit options or, if replacing fixed-route service, consider the previous frequency provided.
4. **Fleet Size:** Determine fleet size based on expected usage, zone area, target wait times, and trip length. During the early stages of service promotion and initial education, fewer vehicles may be needed. Additional vehicles can be added as demand grows.

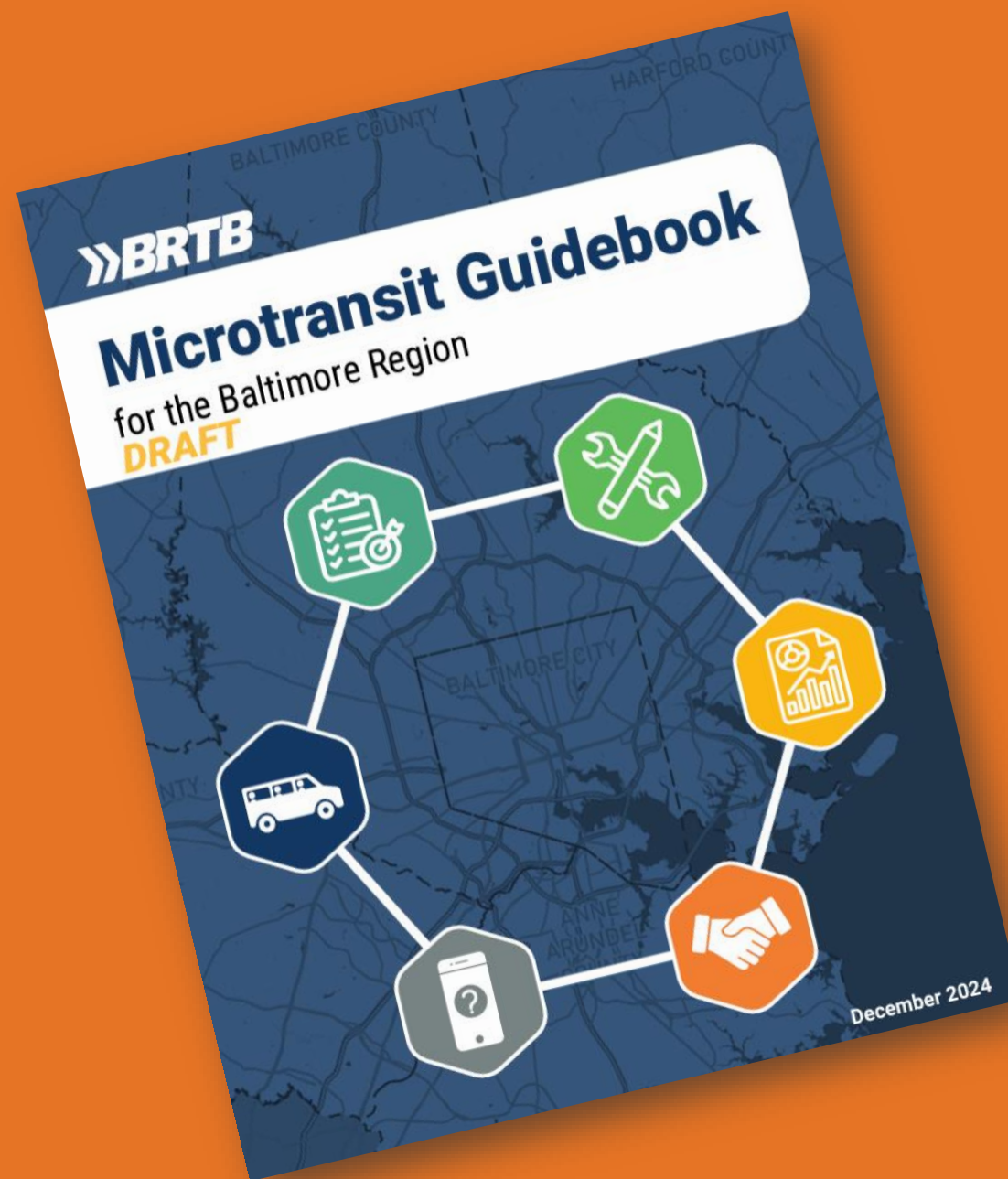
PROCUREMENT

5. **Service Model:** The choice of service model and contracting approach should align with an agency's resources and capacity. Many microtransit programs have utilized a turnkey solution or leveraged existing paratransit contracts to simplify implementation, especially when the agency has limited experience with microtransit, does not currently operate transit service, or lacks the staff capacity to manage a new service type in-house.
6. **Technology Provider Procurement:** Engage with technology providers before the formal procurement process to better understand available technology solutions. Use insights from partner agencies to shape RFP requirements, ensuring the right features are delivered. This includes requiring APIs if technology integration between services and between agencies is a priority.
7. **Operator Procurement:** In response to the national driver shortage, consider contracting with local companies with larger driver networks and a better understanding of the community, or consider collaborating with peer agencies to fulfill trip requests.

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October 24, 2024 ■ PEER MICROTRANSIT CASE STUDIES REPORT

Microtransit Guidebook



Microtransit Guidebook for the Baltimore Region

- Through the analysis and case study research, we used our understanding of the local context, the region's challenges, and national microtransit expertise.
- The Guidebook turns that context, challenges, and expertise into a clear and concise Guidebook to aid decision-making processes.
 - Similar to a “how-to” guide for all things microtransit.

The Guidebook will help local jurisdictions and transit operators answer questions like:

- Is microtransit the “right” service?
- How does my agency select and design a service area?
- How does microtransit integrate with other modes?
- How can residents learn how to use the service?
- How should an agency structure a clear procurement?

Guidebook Structure

- Six color-coded sections that speak to a concept from planning to implementation to enhancing service.
 - Topics were informed by Steering Committee questions and input.
- Best practices text is supplemented with:
 - Sidebar case studies which highlight best practices and lessons learned
 - Links to other relevant sections
 - Links to outside resources

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- A. Is Microtransit the Right Service?**
- B. How to Plan Effective Microtransit Service?**
- C. How to Implement Effective Microtransit Service?**
- D. How to Enhance Existing Microtransit Service?**
- E. How to Collaboratively Implement Microtransit?**
- F. What Microtransit Resources Exist?**

Example Layout

Introduction to question/concept at hand

Where possible, translated technical concepts into graphics

Microtransit Guidebook for the Baltimore Region

B. How to Plan Effective Microtransit Service?

Service Design and Procurement Guidelines

WHAT SERVICE DELIVERY MODEL MAKES SENSE FOR MY AGENCY?

A microtransit service delivery model refers to the division of responsibility in providing microtransit service between public agencies and vendors, also called mobility technology companies. There are three predominant models: the software-as-a-service (SaaS) or directly operated model, the transportation-as-a-service (TaaS) or contracted service model, and the hybrid model. Although these models describe the predominant practices for the operation of microtransit service, there is opportunity for flexibility between models. Figure 7 below shows these models on a spectrum to indicate the variety of ways responsibilities for operating service can be divided between a public sector agency and a private partner.

Figure 7: Operating Service Models for Microtransit Service

DIRECTLY OPERATED SERVICE:

Under this model, transit agencies use their own vehicles and operators, and contract with a vendor to supply the technology platform. Most commonly, an agency deploys the vendor's technology on their agency-owned and operated vehicles. However, a variation on that most basic arrangement and more common to human services transportation, is private-sector technology, public agency vehicles, and non-profit agency drivers. Another variation is private-sector technology and private-sector drivers with public agency vehicles.

How to Plan Effective Microtransit Service?

CONTRACTED OR "TURNKEY" SERVICE:

Under this model, agencies or localities contract with a vendor to supply the technology, vehicles, and drivers to operate the microtransit service. The agency defines the microtransit service parameters and requirements and oversees both the service and vendor performance. The vendor offers an application (app)-based booking option and provides all the technical and customer support functions for the service. The vendor is responsible for managing driver and vehicle availability to meet performance targets.

SEPARATE SERVICE PROVIDERS:

Under this model, different aspects of service are contracted to a variety of third-party vendors to secure appropriate vehicles, technology, and operators. This allows agencies to have greater control over the service rather than contracting all service aspects to one vendor. Agencies can select vendors that best meet their needs in different areas. In some cases, more than one service provider can be contracted to run the service, providing greater flexibility and more options for riders.

HYBRID SERVICE:

Under a hybrid model, microtransit service can include elements of both directly operated and contracted service models. There are a multitude of configurations under a hybrid model where agencies can decide how much to delegate or take responsibility for. Agencies can also leverage partnerships with transportation network companies (TNCs) to fill gaps in service. There are two prevailing hybrid models:

- **Zone-Specific Directly Operated or Contracted Model:** Agencies will use the directly operated model for some zones and the contracted model for other zones. This type of hybrid model is often used to provide service in more remote areas that may be hard to access or are currently outside of an agency's existing service area.
- **Partnerships with Transportation Network Companies (TNCs):** Agencies develop partnerships with TNCs to fill gaps in existing microtransit service, providing more options for riders.

Section indicator

SEPTA CASE STUDY

The Southeastern Pennsylvania Transportation Authority (SEPTA) in greater Philadelphia, Pennsylvania plans on operating microtransit service, SEPTA On-Demand, through a software-only model, utilizing the same software for its microtransit and paratransit services. SEPTA selected a provider with the objectives of improving ridership and efficiency. SEPTA On-Demand is unique for using the same software for its microtransit and paratransit services, which allows for commingling of trips in the future. This aspect of the service is intended to give riders more flexibility while saving on costs.

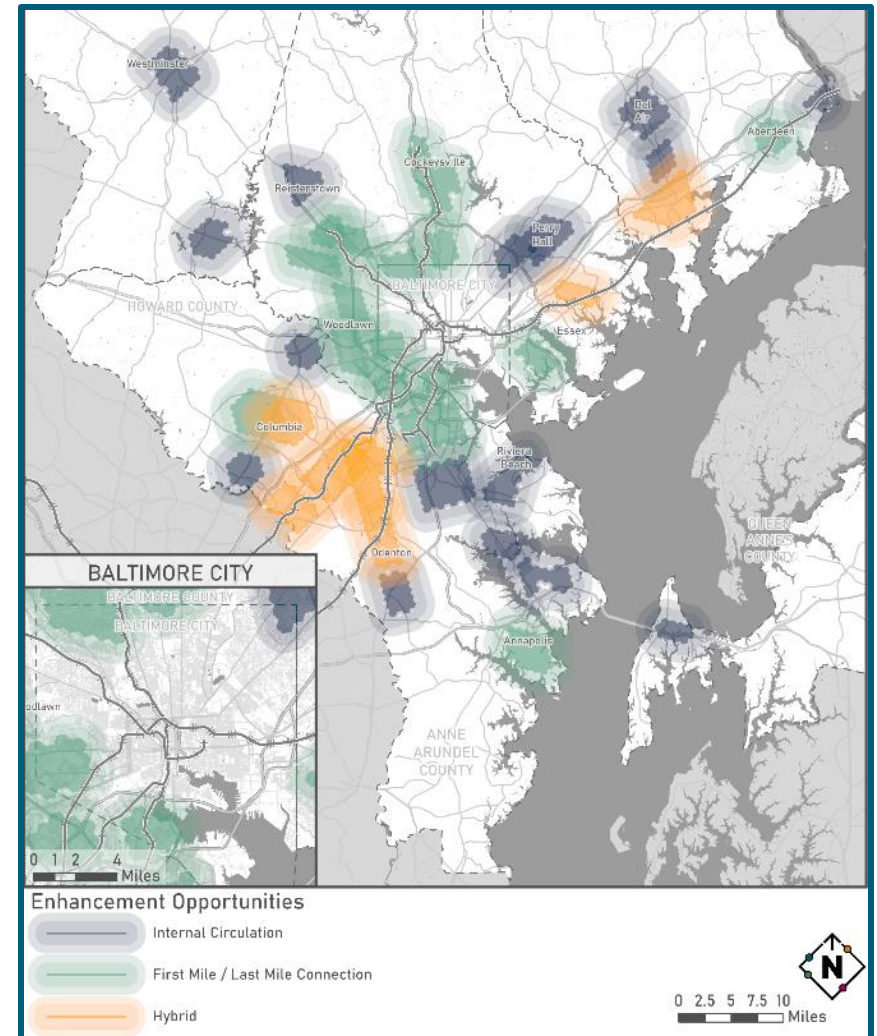
Sidebar case study of best practice or lesson learned

Guidebook Content: Spotlights

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Content Spotlight: Support and Complement Fixed-Route Service

- Building upon peer agencies' lessons learned, outlines metrics agencies should evaluate **when replacing fixed-route service**.
- Shares **where microtransit could strategically serve needs and expand the transit network footprint** (e.g., a first- and last-mile solution, or short cross-boundary trips).



Content Spotlight: Service Delivery Model

- Defines predominant types of service delivery models: directly operated, hybrid, separate providers, and contracted or turnkey.
- Provides **succinct comparison of advantages and disadvantages** between them to **guide agencies in selecting their preferred model.**

Table 2: Comparison of Service Models

SERVICE MODEL	ADVANTAGES	DISADVANTAGES
Directly Operated Service Model	<ul style="list-style-type: none"> ✓ Operational control and flexibility. ✓ As an agency employee, there may be more professional development opportunities available. ✓ In-house staffing and ability to train staff to agency standards. 	<ul style="list-style-type: none"> × In some cases, upfront and overall higher costs. Cost is impacted by procuring vehicles if they are not already readily available. × Need for increased internal capacity. × For some agencies, existing collective bargaining agreements (CBAs) could be a challenge.
Contracted Service Model	<ul style="list-style-type: none"> ✓ Least level of staff effort for ongoing management. ✓ Lower cost option. ✓ Ability to specify and enforce performance standards. ✓ Service can sometimes transition more easily to the SaaS model later if desired. ✓ Service can be implemented within a shorter time frame. 	<ul style="list-style-type: none"> × Additional training will be necessary for independent contractors which could be costly. × Requires extra consideration and effort to interface with the established CBA terms. × Customer service functions may be subpar if outsourced and not closely monitored for quality.
Separate Providers	<ul style="list-style-type: none"> ✓ Can fit specific agency needs. ✓ Can potentially create more choices for riders. ✓ Can lead to lower costs if negotiated adequately with different providers. ✓ Can leverage specific strengths of different providers, offering high quality service. 	<ul style="list-style-type: none"> × Requires greater oversight capabilities for multiple contractors. × Requires additional effort coordinating communication strategies and service changes across providers. × Customer service functions may be subpar if outsourced and not closely monitored for quality.
Hybrid Model	<ul style="list-style-type: none"> ✓ Can be a lower cost alternative. ✓ Can be customized to specific agency needs or circumstances. ✓ Can potentially create more choices for riders. ✓ Can create new or build upon existing partnerships with TNCs. 	<ul style="list-style-type: none"> × Independent contractors may not be as well trained or compensated as bus operators. × If more than one TNC participates, riders must choose between providers. × May not be as operationally efficient if multiple providers participate.

Content Spotlight: Electrification

- Prompts agencies to consider the following when planning to launch or move to an electric fleet:
 - Weather conditions
 - Existing charging infrastructure
 - Fleet size and composition
 - Zone design and avg. trip distance
- Acknowledges that **microtransit electrification is an emerging practice** while building upon initiatives like the Climate Mayors EV Purchasing Collaborative to accelerate electrification.



WEATHER

Locations that experience severe weather like strong thunderstorms and flooding require additional planning to ensure the transit service is weather resilient because electrified infrastructure can be susceptible to damage and decreased efficiency.

Another consideration for weather is battery charge. A colder climate can reduce the battery's charge which would result in more frequent charges. Given Baltimore's relatively temperate climate, this would only be a concern for a few months of the year.



FLEET

The charging times of electric vehicles and limited battery range may lead to the need for additional vehicles, depending on the vehicle and service design. The size of the microtransit fleet and the type of vehicles used can determine the amount of electric vehicle charging infrastructure to install. Fueling infrastructure that requires large upfront capital investment is not cost-effective for small fleets, while alternative fuels that require a set amount of infrastructure per vehicle can be more cost-effective for smaller fleets. With some alternative fuel sources, like battery electric, infrastructure is implemented on a per-vehicle basis. So, agencies should be aware of how costs scale with fleet size when planning electric microtransit services.



FLEET COMPOSITION

Microtransit programs typically utilize light-duty vehicles. Therefore, an agency considering fleet electrification may find it easier to experiment with a smaller electric microtransit fleet rather than planning for the electrification of its entire transit fleet. Agencies may find the number of electric vehicle models available for microtransit to be limited, although this will likely change as the technology and market mature. Agencies should evaluate current vehicle options and whether the required supporting infrastructure can support other vehicle types in their fleet.



FACILITY

The space and utility capacity of a transit agency's facilities can impact the implementation of electric vehicle charging infrastructure. For example, the agency may need additional space to accommodate the utility requirements and the infrastructure itself. It is beneficial for agencies to assess the space, utility, and installation requirements for electric charging infrastructure during the planning stage to evaluate the feasibility of integrating electric charging infrastructure.

Agencies should speak with utility companies in the area to understand their plans for installing charging infrastructure in the area, planning for the additional load on their electrical grid, and how agencies can best make use of public charging infrastructure.

Content Spotlight: Performance Monitoring

- Recognizes that microtransit performance cannot be measured the same way as fixed-route transit modes.
- Trackable metrics depend on data available and can be negotiated as part of a contracting agreement.
- Benchmarks or standards for each metric help identify what is (or isn't) working well.

Performance monitoring requires several key steps, and is a continuous process:



Microtransit typically has several core metrics, including some from the NTD. Below is a list of the performance metrics that can be used to analyze the success of a microtransit program:

- Cancellation and no-show rate
- Origin/destination and common trip purposes
- Non-revenue miles/hours
- Complaints per X trips
- Passenger demographics
- Ridership (unlinked passenger trips)
- Complaint types
- Passenger miles traveled
- Trip distance
- Cost per passenger trip
- Percentage of shared rides
- Trip duration
- Customer satisfaction
- Revenue miles/hours
- Wait time

Content Spotlight: Retention and Recruitment

- Calls for agencies to understand the current state of their hiring practices.
 - Is the application process accessible? Smartphone friendly?
- Lists potential partner entities in the region who may be able to help connect job seekers with an agency's opportunities.

Table 9: Useful Performance Indicators²⁰

INDICATOR QUESTION	USE
How many outreach events do we attend per month by type, such as career fairs or pop-up recruitment at community events?	Tracking the number and type of recruitment activities and their outputs enables an agency to understand the effectiveness of each activity. For example, if career fairs at technical schools tend to yield fewer applications than at neighborhood events, recruiters can either reprioritize their resources or re-examine their approach to technical school recruitment.
On average, how many applicants do we get per outreach event by type?	
How many hiring actions do we have each month?	
On average, how many hiring actions do we get per outreach event by type?	
How many prospective employees begin an application but do not finish or submit it?	Understanding whether application completion is a factor in recruitment can indicate that the application itself may need revision or additional resources to help applicants complete them.

Table 10: Partner Entities in the Baltimore Region

ENTITY	NETWORK	JURISDICTION(S)
Maryland Workforce Expressway	Workforce Development	Statewide
Train Up	Workforce Development	Baltimore City
Howard County Office of Workforce Development	Workforce Development	Howard County
Lincoln Tech in Columbia, MD	Technical College and University	Howard County
Susquehanna Workforce Network	Workforce Development	Cecil County, Harford County
Anne Arundel Works	Workforce Development	Anne Arundel County
Anne Arundel Community College	College and University	Anne Arundel County
Community College of Baltimore County (several locations)	College and University	Baltimore County
Amalgamated Transit Union Local 1300	Labor Organization	Regionwide
Casa de Maryland	Workforce Development, Immigrant Support	Baltimore City

Content Spotlight: Outside Resources

- NCATT: Where and Why Guidebook
 - Key considerations or questions readers should ask themselves while planning and pursuing implementation
- NCATT Microtransit Service Assessment Tool
 - Uses local census data to generate ridership, vehicle needs, productivity, service hours, and annual cost for transportation agencies.

- + What are on-demand transit and microtransit?
- + Who has implemented these services?
- + Why are agencies choosing microtransit?
- + Where does microtransit work best?
- + When to choose microtransit?
- + How to successfully launch a microtransit service?

Welcome to the NCATT Microtransit Service Assessment Tool. You can get started in the Welcome tab.

Welcome | **Data Input and Performance Estimates** | Ridership Guidance | Microtransit Performance | Additional Info

Data Input and Performance Estimates

Getting Started | What-If Analysis

Getting Started:

To get started follow the detailed instructions below which explain how to enter data inputs #1 through #5 using Census Bureau data about your service area characteristics. Inputs #6 through #8 require information about your agency's planned (or current) microtransit service and must be provided by you. Input #6 should be changed to reflect the estimated cost of a microtransit service provider in your area to operate the service or the cost of your agency's in-house microtransit service operation. Input #7 is the current (planned) average passenger fare.

With all these 7 data fields filled in, pressing the Calculate button will generate your first set of ridership and performance estimates, displayed in the Ridership Model Estimates Table and the Microtransit Performance Estimates Table. This initial ridership estimate is automatically generated from the Tool's regression model which you can learn more about in the Ridership Guidance tab.

This Tool also provides you with the opportunity to provide your own ridership estimate using Input #8. The Ridership Guidance tab provides useful information to help you develop your estimate. Please click on the Understanding Results & What-If Analysis tab to learn more about interpreting the ridership and performance tables and entering your estimates in Input #8.

Data Input Instructions:

Input #1 Population and Input #2 Area (Square Miles):

1. If you know the current population and area (in square miles) of the service area for the actual or proposed microtransit service, enter them directly into Input #1 (population) and Input #2 (area). Otherwise follow the steps immediately below.
2. Go to the following website: <https://www.census.gov/muir/facts>

Input #	Value
Input #1 Population	
Input #2 Area (Square Miles)	
Input #3 All Workers	
Input #4 Workers Age 29 or Younger	
Input #5 Households With No Vehicle	
Input #6 Cost Per Vehicle Service Hour (\$)	55
Input #7 Fare (\$)	2
Input #8 Your Weekday Ridership Estimate	

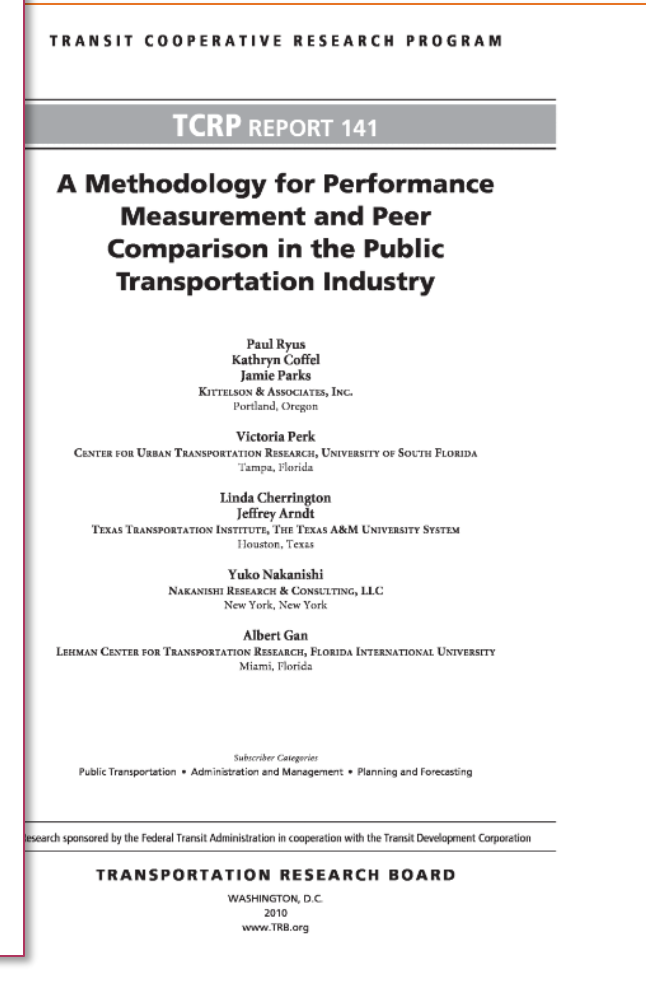
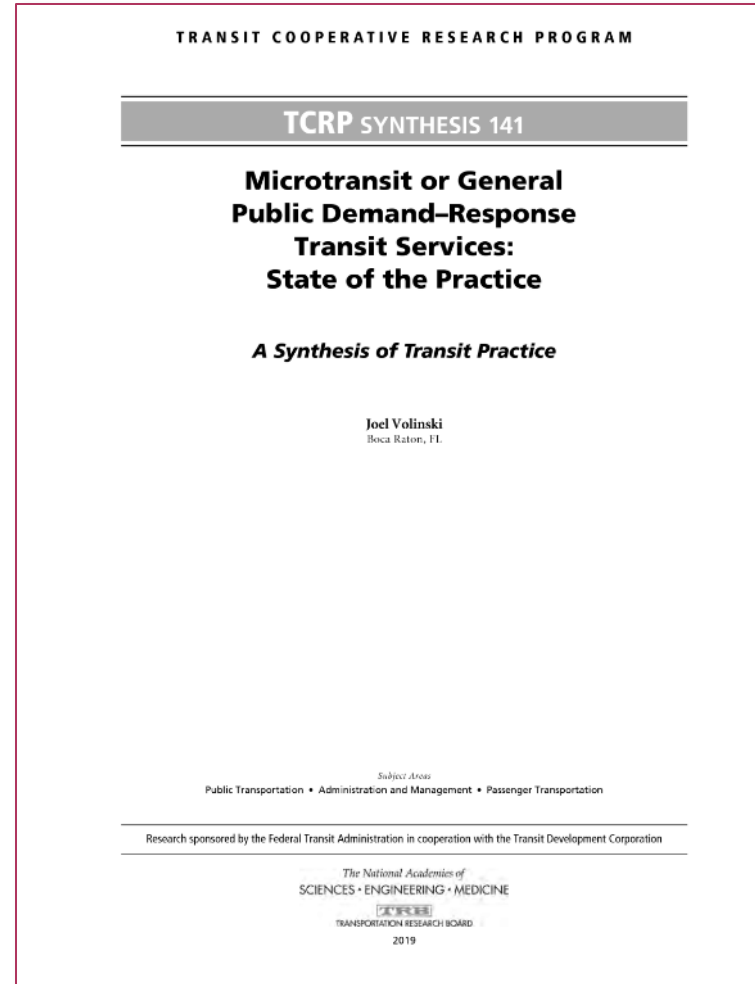
Click to calculate or recalculate all estimates below: **Calculate**

Ridership Model Estimates Table			
	Estimate	Lower Bound	Upper Bound
Model Estimate for Weekday Ridership			
Model Estimate for Yearly Ridership			

Microtransit Performance Estimates Table			
	Estimate	Lower Bound	Upper Bound
Ridership Used for Estimates			
Peak Vehicles Required			
Weekday Vehicle Service Hours			
Passengers per Vehicle Service Hour			
Yearly Cost			

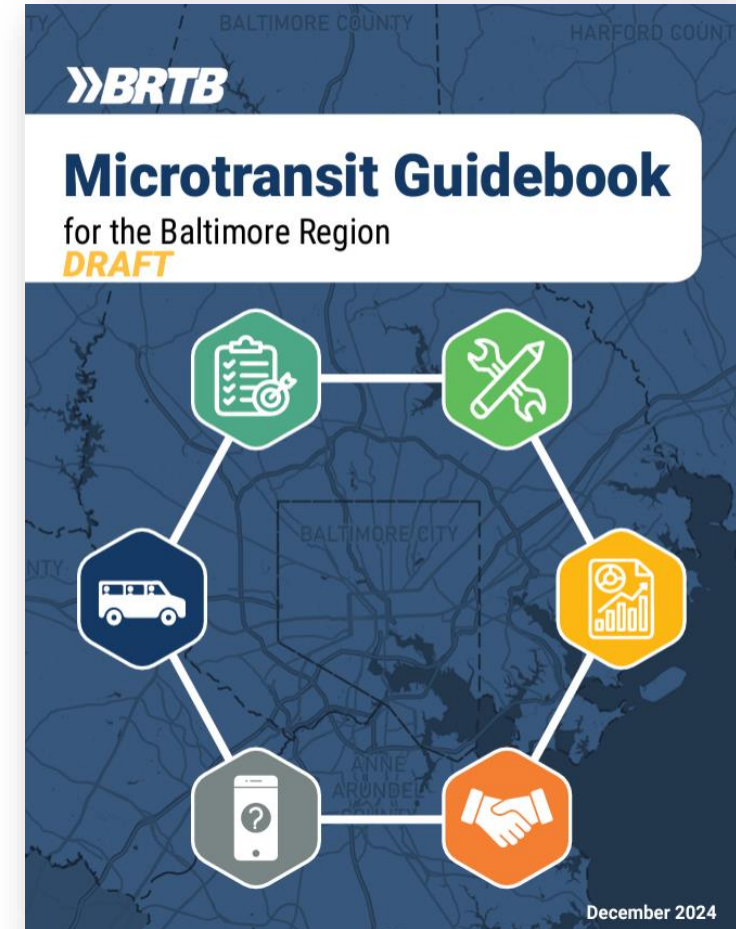
Content Spotlight: Outside Resources

- TCRP reports
 - **Synthesis 141:** Literature review of 22 transit agencies with microtransit experience.
 - **Report 141:** Resources for providing guidance on selecting performance measures and identifies peers to contact for additional research if needed.



The Guidebook, in summary...

- Walks local agencies through the “how-tos” of microtransit planning, implementation, and enhancements **using real world examples and proven methods.**
- Agencies are starting from different places and have various interests. This resource will help them understand **what can work best for them** and the region, creating a tailored and **context-sensitive approach.**





Q & A

Thank you!

Learn more at FoursquareITP.com



Aileen M. Daney

Office Manager & Project Manager

adaney@foursquareitp.com