

# Demand Response Transit / Microtransit:

# A Guide for Implementing Flexible Transportation Services

Prepared by the KFH Group for Arlington County, Virginia
Through the Metropolitan Washington Council of Government's (COG)
Transportation Land-Use Connections (TLC) Program







# Acknowledgement

This guidebook provides information on services provided by six transit systems from across the country that may serve as potential models for a similar program in Arlington County. Information on these services was obtained through phone discussions and follow-up correspondence with appropriate transit agency representatives. The websites for these transit systems were also used to obtain information on current services, and pictures and graphics from these sites are included in this guide.

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# Demand Response Transit / Microtransit: A Guide for Implementing Flexible Transportation Services

#### INTRODUCTION

This guide is the culmination of technical assistance provided to Arlington County through the Metropolitan Washington Council of Government's (COG) Transportation Land-Use Connections (TLC) Program. In 2018, Arlington County was awarded a COG TLC Grant to further determine the feasibility of operating a flexible service in lower density areas and low transit coverage areas of the County. This effort followed the adopted 2016 Arlington County Transit Development Plan (TDP) that recommended four flex zones, in which on-demand service could replace fixed-route bus (FRB) service in lower demand neighborhoods.

Through this effort, E-hailing Demand Response Transit (DRT) / Microtransit was identified as a preferred option to provide this flexible service option. DRT/Microtransit models were discussed with Arlington County staff that served in an advisory capacity, and case studies then conducted on transit agencies that were operating relevant services. From this assessment various considerations and opportunities for replication in Arlington County were identified, and are highlighted in this guide.

While this guide is designed to serve as a useful tool with future implementation of a flexible service in Arlington County, the DRT/Microtransit programs that can serve as models are still in their infancy, and there are no set transit industry criteria. Arlington County will need to monitor and assess these -- and other programs -- when finalizing plans for a flexible transit service. In addition, appropriate community outreach that was not part of the technical assistance will be needed.



#### **USING THIS GUIDE**

This guide is presented through the following sections:



**Background** discusses the current rise in the use of DRT/Microtransit services by transit systems, provides information on previous transit planning efforts in Arlington County, and identifies key terms associated with e-hailing DRT and publicly regulated microtransit.

# SECTIONS

**DRT/Microtransit Models** details six programs from across the country, highlighting their efforts and current status.

Case Study Comparison and Analysis offers a collective review of the six models and their approach to public-private partnerships, service area provision, fare policy, compliance, and other important aspects when considering a similar program.

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**Implementing a DRT/Microtransit Service in Arlington County** provides a potential step-by-step process and overall considerations when developing a program in Arlington County.



# Background

Public transit operators across the nation are adapting service delivery models to include an on-demand, e-hailing component. In what has become known as microtransit, public agencies are using small vehicles, with dynamic routing and scheduling for curb-to-curb transit. Customers are then afforded the opportunity to use a smart phone application (app) to plan, request, pay, and track the vehicle within a geo-fenced zone (GFZ). Transit providers are primarily using microtransit to replace FRB service in low-demand, low-density areas, serving as a first mile-last mile (FM-LM) connection to transit hubs and key community destinations.

The capability to use a smart phone app to plan, request, pay, and track curb-to-curb mobility services is transforming the urban traveler's modal choices. During the past ten years urban cities have been inundated with a menu of on-demand, e-hailing shared-use services. In 2009, Uber became the first private tech-based company to supply private-for-hire e-hailing service, in which the company's business model quickly galvanized an enterprise of peer-to-peer e-hailing firms, which are now known as Transportation Network Companies (TNCs). In 2014, TNCs introduced ride-splitting into the sharing economy, which pairs customers with similar trip origins-destinations in real-time, emulating the public transit demand response service delivery model.

While TNCs were originally used to cannibalize the demand for taxis, during the past four years, the private tech companies have materialized into a FM-LM solution between public transit customer's trip origin-destination. Capitalizing on the novel service delivery model, U.S. transit operators started developing partnerships with TNCs. As part of the partnerships, public entities are contracting app-based DRT/Microtransit service to tech-based companies. This service model is generally used to replace low productive FRB service.

#### **ARLINGTON COUNTY TRANSIT DEVELOPMENT PLAN / COG TLC GRANT**

The adopted Arlington County Transit Development Plan for FY 2017-2026 calls for four Flex zones that were based on an intensive community engagement process. Subsequently, in 2018 Arlington County applied for and was awarded a COG TLC Grant to further determine the feasibility of operating zonebased DRT services. The TLC application noted that Arlington County and the region would benefit by replacing fixed route service with little prospect of meeting minimum productivity standards with Flex services that are less expensive and would provide more personalized services.

#### **DEFINING DRT/MICROTRANSIT**

With the rise of the on-demand, e-hailing shared-used services, numerous new terms have emerged that warrant further definitions. Microtransit has been defined as IT-enabled private multi-passenger transportation services that serve passengers using dynamically generated routes, and may expect passengers to make their way to and from common pick-up/drop-off points. Vehicles can range from large SUVs to vans to shuttle buses.

The following are other key terminology associated with DRT/Microtransit:

#### **Transportation Network Company (TNC)** or Mobility Service Provider (MSP)

A company that provides transportation services using an Online-enabled platform to connect passengers with drivers using their personal vehicles (California Public Utilities Commission, 2013).

#### Ridesourcing/Ridesharing/Ride(e)hailing

Adding passengers to a private trip in which driver and passengers share a destination. The arrangement provides additional transportation options for riders while allowing drivers to fill otherwise empty seats in their vehicles (Conway et. al. 2018).

#### **Ride-splitting**

A type of ridesourcing that allow customers requesting a ride for one or two passengers to be paired in real time with others traveling along a similar route (TCRP Research Report 188).

#### **Mobility on Demand (MOD)**

An innovative, user-focused approach which leverages emerging mobility services, integrated transit networks and operations, real-time data, connected travelers, and cooperative Intelligent Transportation Systems (ITS) to allow for a more traveler-centric, transportation system- of-systems approach, providing improved mobility options to all travelers and users of the system in an efficient and safe manner (U. S. Department of Transportation).

#### **Shared Mobility**

Transportation services and resources that are shared among users, either concurrently or one after another. This includes public transit; taxis and limos; bikesharing; carsharing (round-trip, one-way, and peer-to-peer); ridesharing (i.e. non-commercial services like carpooling and vanpooling); ridesourcing; ride-splitting; scooter sharing (now often grouped with bikesharing under the heading of "Micromobility"); shuttle services and "microtransit"; jitneys and dollar vans; and more (Shared-Use Mobility Center).







# 2

### **DRT/Microtransit Models**

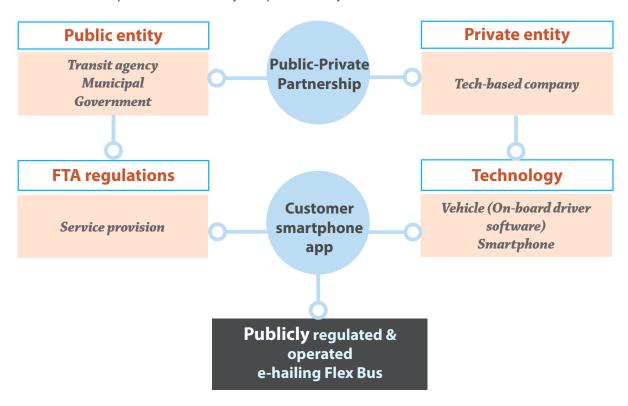
#### **DEMAND RESPONSE TRANSIT (DRT) MODELS**

The DRT/Microtransit models currently in place are generally segmented by traditional dial-a-ride services and by more innovative, app-based services. Four models in practice by public transit agencies were discussed with Arlington County staff, who identified Publicly Regulated and Operated e-Hailing Flex Bus and Publicly Regulated and Privately Operated Microtransit as those for further assessment and analysis. These models are detailed in this section, along with an organizational flowchart and advantages and considerations of each.

#### Model 1

#### **Publicly Regulated and Operated e-Hailing Flex Bus**

- In this model the public entity enters into a partnership with a tech-based company.
- The tech-based company is contracted to develop the vehicle onboard driver software and a customer smartphone app. The app allows public transit customers to plan, request, pay, and track the vehicle for on-demand, curb-to-curb service within a designated GFZ.
- The service is also available to the general public, and to ensure FTA Civil Rights compliance, the service must satisfy the FTA Circular 4702.1B (Title VI) and FTA Circular 4710.1 (Americans with Disabilities Act).
- The service is operated in-house by the public entity.



#### **Considerations Advantages**

- Operated in-house, using fleet of small vehicles
- Fully Civil Right compliant
- Replace FRB at potentially lower cost
- On-demand, no fixed-routes or schedules
- Customers use smartphone app for all transactions (similar to TNCs)
- Procurement of vehicle onboard turn-by-turn software
- Train bus operators on new software
- Staff time will be needed to conduct public outreach before implementing service, and for marketing new service once in place.
- Arrangements will need to be made to ensure unbanked customers and customers without smartphones can access the service.
- Capital costs to procure new vehicles if not available within current fleet



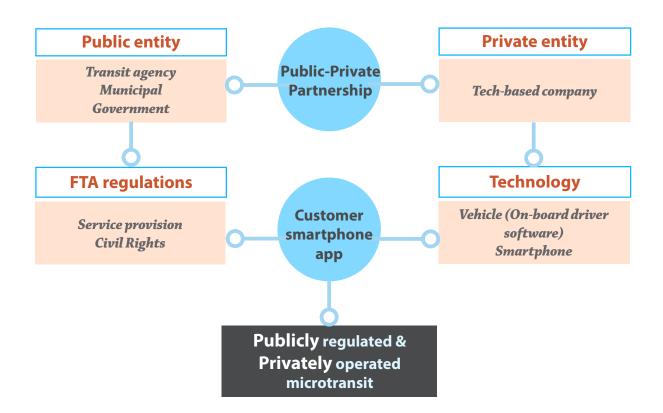




#### Model 2

#### **Publicly Regulated and Privately Operated Microtransit**

- Similar to the previous model the public entity also enters into a partnership with a private tech-based company.
- The tech-based company is then contracted to develop the vehicle onboard driver software and a customer smartphone app. The app allows public transit customers to plan, request, pay, and track the vehicle for on-demand, curb-to-curb service within a designated GFZ.
- The service is also available to the general public, and to ensure FTA Civil Rights compliance, the service must satisfy the FTA Circular 4702.1B (Title VI) and FTA Circular 4710.1 (Americans with Disabilities Act).
- With this model the tech-based company supplies the drivers and operates the service.



#### **Advantages Considerations** Tech-based company supplies drivers and Staff time will be needed to conduct public operates services outreach before implementing service, and for Fully Civil Right compliant marketing new service once in place. Replace FRB and potentially lower cost Limited wheelchair accessible available On-demand, no fixed-routes or schedules Arrangements will need to be made to ensure Customers use smartphone app for all unbanked customers and customers without transactions (similar to TNCs) smartphones can access the service.

#### **CASE STUDIES**

Based on a discussion of the two preferred models, and their relevance and opportunity for replication in Arlington County, six case study agencies were identified that could serve as potential model candidates for a comparison analysis. Figure 1 presents the six case study agencies, their geographic location, and justification for analysis. Model 1 case studies are indicated in blue, and Model 2 locations in red.

Figure 1: Case Study Agencies Location and Justification



#### **Data Collection Methods**

The following sources were used to collect data on the case studies:

- Internet research on the respective public agency to include, Board of Director resolutions, staff reports, and program information.
- Follow-up emails and telephone calls with respective public agency program representative to answer questionable website data and/or unanswered questions.







#### **Data Collected**

Table 1 identifies the six variables that were used for the case studies.

Table 1: Variable and Questions

Variable		Question				
	Tech-based partner	How did the public entity develop a partnership with a tech-based company?				
Public-Private	Technological platform	What technological platforms are used to connect vehicles and passengers?				
Partnership	Service provider	Who operates the service?				
	Population	What is the population density?				
Service Area	Jobs	What is the employment density?				
Characteristics within	Land use	What is the land use pattern?				
Geo-Fenced Zone (GFZ)	Zones	How many GFZs are in operation?				
	Square miles	What is the square mile radius per GFZ?				
	First Mile-Last Mile	What are and how many FM-LM connections are served?				
	Bus stops	Are the bus stops designated or virtual?				
Service Area Provision	Walking distance	What is the minimum and maximum walking distance for customers?				
within Geo-Fenced	Service	Is the service area new or replaces service?				
Zone (GFZ)	Service hours	What are the days and hours of operation?				
	Reservations	What are the requirements to book a trip?				
	Wait times	How long is the wait between vehicle request and vehicle arrive?				
	Fare policy	What is the fare?				
	rate policy	What is the difference in fare from the local bus?				
Fare	Payment	What are the onboard fare payment choices?				
	Transfer Policy	Are passengers required to pay a separate fare from the existing service?				
	Fare integration	How is the fare integrated with the regional transit network?				
	Title VI	Was a Service/Fare Equity Analysis conducted prior to implementing the service?				
	Title VI, Environmental	Is there a reduced fare for low-income persons, persons with disabilities, persons				
Civil Rights compliance	Justice, ADA	65 years & older, or students?				
	Unbanked customers	How is equitable service ensured for persons with no debit/credit card?				
	No smartphone/ Internet	How is equitable service ensured for persons with no access to a smartphone or				
	access	Internet?				
	Performance	What are the performance trends (ridership, boardings per hour/mile, farebox				
	measurements	recovery ratio, on-time performance)?				
Service standards	Measuring success	How the program is determined successful?				
		Was service used to reinstate or replace FRB service?				
	Performance reporting	How is the performance data reported to the National Transit Database (NTD)?				



#### **FLEX**

#### Alameda-Contra Costa Transit District, Oakland, CA

Model 1: Publicly Regulated and Operated e-Hailing Flex Bus

#### **PROGRAM BACKGROUND**

The Alameda-Contra Costa Transit District (AC Transit) is an Oakland, California-based public transit agency, serving the western portions of Alameda and Contra Costa counties in the East Bay area. The bus only agency connects 13 cities and adjacent unincorporated areas in Alameda and Contra Costa communities with the Bay Area Rapid Transit (BART) system, providing service to 1.5 million people over 364 square miles.

In July 2016, AC Transit launched the one-year FLEX pilot, testing dynamically routing and scheduling on-demand bus service in two zones. In one zone the bus temporarily replaced the lowest performing FRB in the network. In the second zone, the bus overlaid existing FRB service. The goals of the program were to:

- Test an innovative service delivery model aimed at improving service in low-density areas of the service area.
- Respond to changing customer's expectations regarding on-demand transport fueled by the popularity of TNCs (Uber and Lyft).

Figure 2 on the next page shows how the flex zones fit in the Oakland and Alameda County areas.

#### **PROGRAM STATUS**

In March 2018, almost two years after the pilot started, the AC Transit Board of Directors voted to continue the Flex service beyond the pilot phase. At the January 2019 Board meeting, AC Transit staff considered using Flex to expand service into areas currently without transit service, however, they indicated that additional funding would be necessary to expand the service parameters. AC Transit staff also evaluated whether there were opportunities for replacing additional low-performing FRB service with Flex service. They indicated that given all of the AC Transit's FRB currently operate at above the capacity of the Flex service, it was recommended not to expand the service beyond the two zones. At the time of this guide the service is still operational in the two initial zones.









Model 1: Publicly Regulated and Operated e-Hailing Flex Bus

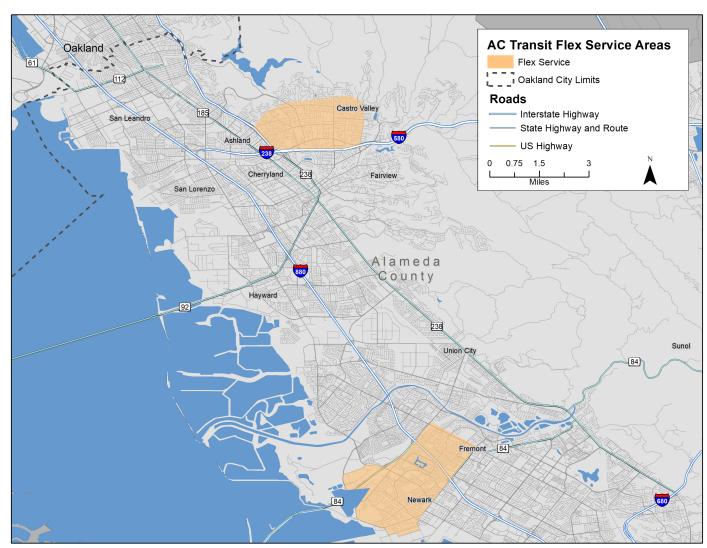


Figure 2: AC Transit FLEX Zones



#### PROGRAM BACKGROUND

Dallas Area Rapid Transit (DART) is the regional transit provider for the Dallas metropolitan region, supplying FRB, DRB, ADA paratransit, light rail, commuter rail, and vanpool service within a 700 square mile area. DART operates three types of DRB services. First, the On-Call service was introduced to replace many low performing bus routes in low-density areas. The service allows people to book an on-demand vehicle via a customer call center in six zones. Building upon the On-Call service delivery model, DART introduced the FLEX service, combining the FRB and demand response curbside service. This service operates in five zones. Both services require passengers to reserve a vehicle in advance via the DART customer call center.

In February 2018, in an effort to advance the Mobility on Demand concept, DART introduced the GoLink pilot. Building upon the On-Call and FLEX models, GoLink allows DART customers to use a smartphone to plan, request, pay, and track an on-demand bus. There are currently six GoLink zones, replacing two On-Call zones and one FLEX zone. Figure 3 shows the GoLink service areas within the Dallas region.

#### **PROGRAM STATUS**

In January, 2019 staff reported that since service launch 108,714 rides had been provided, with 12,094 accounts established. Weekday high ridership was 660 rides in December, 2018; and Saturday high ridership of 429 rides and November, 2018. The Board of Directors directed staff to continue monitoring the service, and if proven performance successful, the GoLink program will replace all of the On-Call service zones. At the time this guide was developed the service is still operational.





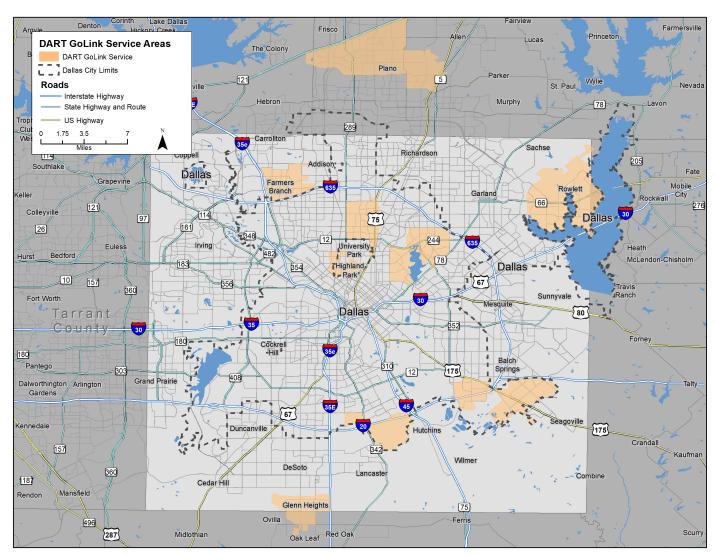


Figure 3: DART GoLink Service Area Zone



#### **Pickup**

#### Capital Metropolitan Transportation Authority, Austin, TX

Model 1: Publicly Regulated and Operated e-Hailing Flex Bus

#### **PROGRAM BACKGROUND**

Capital Metropolitan Transportation Authority (CapMetro) is the public transit provider for the Austin region, supplying FRB, ADA paratransit, and commuter rail services within a 544 square mile area. In June 2017, CapMetro entered into the on-demand, e-hailing bus service by launching Pickup. The one-year pilot allowed the general public to use a smartphone app to request and pay for curb-to-curb bus service. The goal of the pilot was to assess the feasibility of publicly operated app-enabled DRB service in low-demand, low-density neighborhoods. For that reason, a suburban northeast neighborhood was selected to test the service, replacing the MetroFlex Upper Eastside route. Figure 4 displays the Pickup service area zone.

#### **PROGRAM STATUS**

The Pickup service underwent several service modifications. After four months in operation, the service was expanded from three to six days per week, service hours were expanded, service parameters were expanded to a light rail station to address the FM-LM problem, and the number of vehicles increased from two to three. With the changes, the program experienced steady ridership increases. In June 2018, the program was terminated (as a pilot, the agency was only authorized to operate for 12 months). Since the program ended, CapMetro created Innovation Zones, and the service is planned to resume in June 2019 (currently undergoing procurement to purchase software).





#### **Pickup**

#### Capital Metropolitan Transportation Authority, Austin, TX

Model 1: Publicly Regulated and Operated e-Hailing Flex Bus

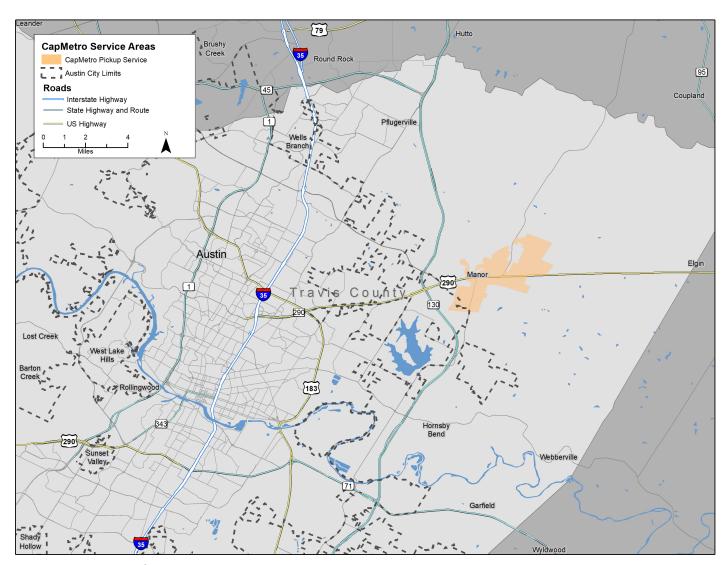


Figure 4: CapMetro Pickup Service Area Zone





#### **HyperLINK**

#### Hillsborough Area Regional Transit, Tampa, FL

Model 2: Publicly Regulated and Privately Operated Microtransit

#### **PROGRAM BACKGROUND**

The Hillsborough Area Regional Transit (HART) is the regional transit provider for the Tampa, FL region. HART supplies FRB, DRB including general public and ADA paratransit, Bus Rapid Transit, and Streetcar services within an area spanning 255 square miles, providing service to more than 875,000 people. HART is known for its well-established flexible bus zones. The service, HART Flex is available in five areas, providing on-demand, curb-to-curb bus service to the general public, in which customers must reserve a vehicle in advance via the HART call center.

Building upon the HART Flex service, in November 2016, HART became the first transit agency in the nation to test publicly regulated and privately operated microtransit service. The purpose of the oneyear pilot HyperLINK program was to introduce a new service and technology that was cost-effective at addressing FM-LM conundrum in areas where FRB service had performance challenges. The program was launched in a phased approach. The first zone was launched at the pilot inception, and the second zone went into operation the following month. Five months into the pilot, in April 2017, Tesla joined the HyperLINK partnership, becoming the first electric vehicle company to partner with a public transit agency. With Tesla's partnership, the program added two more zones. Figure 5 displays HyperLINK zones that were operated by HART.

#### PROGRAM STATUS

During the pilot, the HyperLINK service was expanded to meet customer demands. However, in July 2018, the program was terminated due to lack of achieving ridership goals and high operating cost.







#### **HyperLINK**

#### Hillsborough Area Regional Transit, Tampa, FL

Model 2: Publicly Regulated and Privately Operated Microtransit

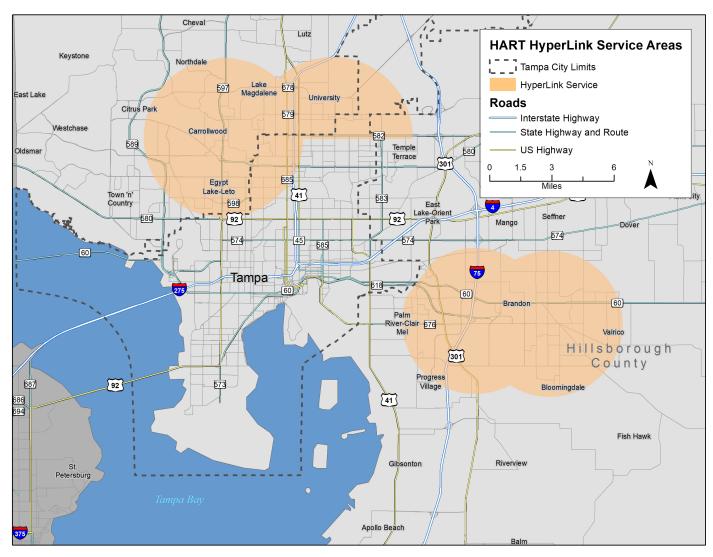


Figure 5: HART HyperLINK Zones



#### **Arlington Via Rideshare**

**City of Arlington, TX** 

Model 2: Publicly Regulated and Privately Operated Microtransit

#### **PROGRAM BACKGROUND**

The City of Arlington, Texas sits between Fort Worth and Dallas at the center of the North Texas region. Public transit options in Arlington are limited. The city has four transit services targeting individual demographic groups: (1) "Handitran" serves senior citizens and the disabled, (2) Arlington hotels pay for a tourist-oriented shuttle-bus system for their guests, (3) the University of Texas at Arlington runs a limited shuttle service for college students, and (4) Mission Arlington, an Arlington-run charity serving the severely indigent, has a bus service that circulates people needing social services or transportation to employment. Between 2013 and 2017, the city operated express bus service to the Trinity Railway Express (TRE) CentrePort Station, with connecting service to other transit services.

In support of the Arlington's "Enhancing Regional Mobility," in November 2017, the City Council approved a public-private partnership with Via Transportation to supply on-demand, e-hailing bus service within the municipality. In December 2017, the City of Arlington became the first municipal agency in the nation to supply publicly regulated and privately operated microtransit service. The one-year pilot program, Arlington Via Rideshare was implemented to provide a personalized transportation service within the city that:

- Transportation connects to transportation hubs,
- Employers increase alternative transportation to public sector offices,
- Campus provide a convenient connection between campus and community, and
- Local business spur economic activity by supporting local business hubs.

Figure 6 shows how the service fits within the Arlington area.

#### **PROGRAM STATUS**

In September 2018, the full service was launched. In December 2018, the City Council renewed the public-private partnership with Via Transportation to continue supplying microtransit service for the second year. At the time this guide was produced the service is still operational.







#### **Arlington Via Rideshare**

#### City of Arlington, TX

Model 2: Publicly Regulated and Privately Operated Microtransit

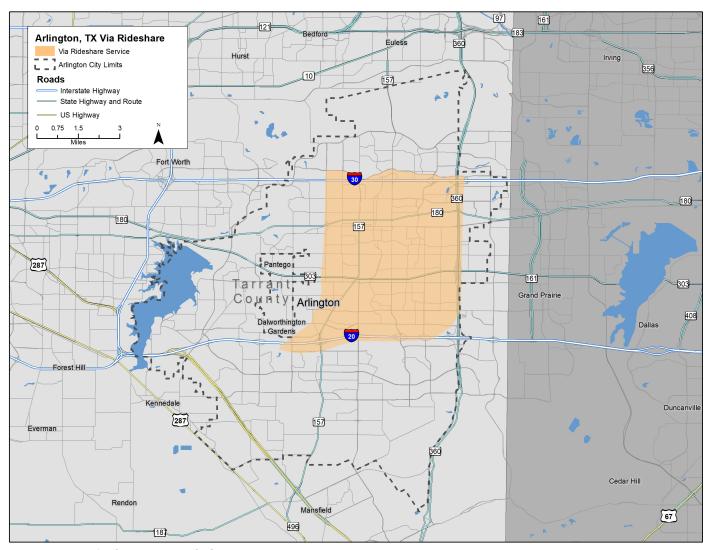


Figure 6: City of Arlington Via Rideshare





## **West Sacramento/ Via On-Demand Rideshare**

City of West Sacramento, CA

Model 2: Publicly Regulated and Privately Operated Microtransit

#### PROGRAM BACKGROUND

The Yolo County Transportation District (YCTD) provides local and regional public transit service in West Sacramento, CA. In response to declining ridership and the industry's shift towards on-demand, e-hailing services, in May 2018, the city of West Sacramento launched the one-year West Sacramento/ Via On-Demand Rideshare pilot program. In partnership with Nomad Transit LLC, a wholly owned subsidiary of Via, the city became the second municipal agency in the nation to supply microtransit services. Table 2 shows the City's 3-phase approach to launching the pilot program, and Figure 7 displays the service area.

Table 2: City of West Sacramento 3-Phase Approach

Phase 1

Phase 2

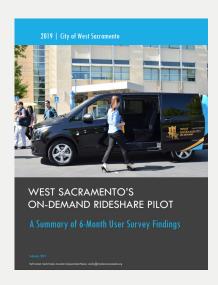
Phase 3

Preliminary Service Design, Planning and Preparation: Acquisition and customization of all labor, equipment, technology, and materials to launch

Initial launch: Service parameters adjusted and scaled up over time alongside initial market analysis and promotions of service

Full Launch: Changes to service parameters would be more limited as the pilot operated through the remaining contract

#### **PROGRAM STATUS**



Halfway through the pilot year (November 2018), a survey was conducted to help the City better understand who was using the service, how they were using it, and what potential impacts it was having on the travel behavior or quality of life of riders. The results of this survey were provided in a February 2019 report that noted that community members of all ages greatly enjoy using the On-Demand Rideshare service and are very satisfied with its addition to the City's transportation network. The report also stated that a multitude of benefits ranging from independence for youth and seniors, a greater sense of safety for women, and potential reduction in VMT from riders shifting from Uber/Lyft or driving alone hint at the success of the pilot. The report concluded that with additional research being conducted more depth will be added to an understanding of the scale and magnitude of travel behavior impacts, and ultimately this information may help guide City Council's decision on whether to continue the program.









# West Sacramento/ Via On-Demand Rideshare

City of West Sacramento, CA

Model 2: Publicly Regulated and Privately Operated Microtransit

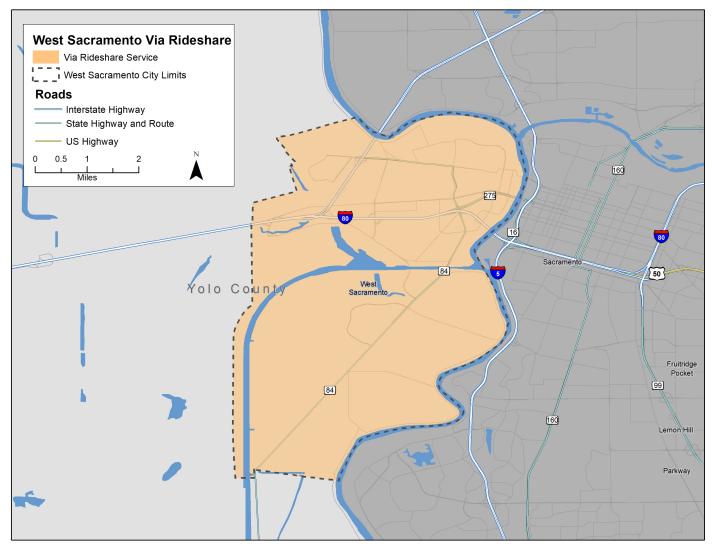


Figure 7: City of West Sacramento Via Rideshare

# Case Study Comparison and Analysis

This section compares and analyzes the approach of each case study to public-private partnerships, service area characteristics within the GFZ, service area provision within the GFZ, fare policy, civil rights compliance, and service standards, both with the publicly regulated and operated e-hailing microtransit model and the publicly regulated and privately operated microtransit program.

#### **PUBLIC-PRIVATE PARTNERSHIPS**

#### **Tech-based Partnerships**

Each public entity depended upon a partnership with private a techbased company ->

- Three agencies CapMetro, and the cities of Arlington and West Sacramento partnered with the New York City tech-based company Via.
- DART partnered with MV Transportation, and HART partnered with Transdev, both well-known transit industry contractors. HART also partnered Tesla, becoming the first public transit agency to enter into a partnership with an electric car company.
- AC Transit partnered with DemandTrans.

#### **Technological Platform**

All six programs used a technological platform to connect vehicles and public transit customers ->

- All of the agencies, minus AC Transit worked with a private contractor to develop a smartphone app (IOS or Android).
- CapMetro, DART, and HART hosted in-house apps.
- Via developed a plug-in on their app for the cities of Arlington and West Sacramento programs.
- There is currently no AC Transit app for the FLEX program, however, customers can use an IT-enabled device to utilize the agency's program.



#### **Service Provider**

There are three types of service providers used by public agencies ->

- AC Transit and CapMetro programs are operated in-house, using existing vehicles.
- DART and HART contracted to private transit industry companies to supply the service. MV Transportation and Transdev operated DART GoLink and HART HyperLINK program, respectively.
- The cities of Arlington and West Sacramento services are operated by Via.



Table 3 provides a summary of the case studies in regard to public-private partnerships.

Table 3: Public-Private Partnerships

	Publicly Re	gulated e-Hailing	g Flex Bus	Publicly Regulated and Privately Operated Microtransit			
Variable	AC Transit FLEX	CapMetro Pickup	DART GoLink	HART HyperLINK	City of Arlington Via Rideshare	City of West Sacramento Via On-Demand Rideshare	
Tech-based partner	DemandTrans	ndTrans Via MV Transporta		<ul><li>Transdev</li><li>Tesla</li></ul>	Via	Nomad Transit LLC, subsidiary of Via	
Technological platform	IT-enabled device (AC Transit website)	Smartphone app (IOS or Android)  Smartphone app (IOS or Android)		Smartphone app (IOS or Android)	Smartphone app (IOS or Android)	Smartphone app (IOS or Android)	
Service provider	In-house (AC Transit)	In-house (Cap Metro)	MV Transportation	Transdev	Via	Via	





#### **GEO-FENCED ZONE: SERVICE AREA CHARACTERISTICS**

## Population and Population Density

At the time of this guide was produced, population data was only available from three programs:

- AC Transit reported a population served of 50,000 (9,300 per mile) in one zone, and 33,000 (7,800 per mile) in the second zone.
- The City of West Sacramento population is 53,398 (2,597 people per mile).
- The City of Arlington's program serves about 121,000 persons (4,800 per mile).

#### **Employment Density**

The employment densities in AC Transit's two zones are 1,814 and 1,900 jobs per square mile. For the West Sacramento program, there are 1,483 jobs per square mile. The City of Arlington's program employment density is higher with 3,345 jobs per square mile.

#### **Land Use Patterns**

Each agency's program targeted operations in a low-density area. As discussed in the agency descriptions, one the common goals for the ondemand, e-hailing programs was to replace low performing FRB in low-demand, low-density service areas.

Table 4 provides a summary of the case studies in regard to service area characteristics.

Table 4: Geo-Fenced Zone: Service Area Characteristics

	Publicly Re	egulated e-Hailin	g Flex Bus	Publicly Regulated and Privately Operated Microtransit			
Variable	AC Transit FLEX	CapMetro Pickup	DART GoLink	HART HyperLINK	City of Arlington Via Rideshare	City of West Sacramento Via On-Demand Rideshare	
Population	Newark: 50,000 Castro Valley: 33,000	Data unavailable at this time	Data unavailable at this time	Data unavailable at this time	121,105	53,398	
Population density (person per square mile)	Newark: 9,300 Castro Valley: 7,800	Data unavailable at this time	Data unavailable at this time	Data unavailable at this time	4,844	2,597	
Employment density (jobs per square mile)	Newark: 1,814 Castro Valley: 1,900	Data unavailable at this time	Data unavailable at this time	Data unavailable at this time	3,345	1,483	
Land use pattern	Suburban, low- density	Suburban, low- density	Suburban, low- density	Data unavailable at this time	Suburban, low- density	Low-density	





#### **GEO-FENCED ZONE: SERVICE AREA PROVISION**

#### **Service Area**

The profiled agencies operated a various number of service zones, and none had the exact same service provisions. CapMetro and the City of Arlington operated one zone. The City of West Sacramento operates one citywide zone. AC Transit operates two zones, and HART operated four zones. DART replaced existing flex services, and operated six microtransit zones, the most of the agencies examined.

#### **Square Miles**

The service area square miles range from four (AC Transit) to 25 (the City of Arlington's citywide program). In between, HART operated four three-square-mile zones, and CapMetro operated one seven-mile square zone.

#### **Bus Stops and Walking Distance**

There are two typologies of bus stops. AC Transit's program had designated bus stops. Customers were required to walk to and from stops within the GFZ. CapMetro, DART, the cities of Arlington and West Sacramento had virtual bus stops. Customers are able to get picked up and dropped off anywhere within the GFZ. The HART HyperLINK program had a combination of designated and virtual bus stops. Depending upon passengers pick up and drop off location within the GFZ, bus stops range from curbside up to a two block walk for the programs.

#### **Service Days and Hours**

Each agency's program service days and hours varied. The AC Transit and DART program were only available on weekdays, during the morning/evening peak periods, and middays. CapMetro, the City of Arlington, and City of West Sacramento operated six days per week, excluding Sundays. HART was the only service to operate daily. In addition, service hours were tailored to ensure this HyperLINK program operated 30 minutes before and after the connecting fixedroute local bus service.

#### Reservations

Each program recommended customers use technology to book and pay for their trip. All the agencies, minus AC Transit have smartphone apps (IOS and Android). While there is no app, customers are required to use the agency's website to use the microtransit program. CapMetro, DART, and HART developed apps for their customers. The cities of Arlington and West Sacramento customers are required to use the Via app. (Information on customers with no internet or smartphone access is provided in the Civil Rights Compliance section on page 28)

#### **Wait Times**

To ensure attractiveness, each agency established wait times – the time the customer is waiting for the vehicle to pick them up after booking the trip through the app. The City of Arlington established a goal to keep wait times at less than 12 minutes, and reports that since service launch average wait time has been 11.5 minutes after booking a trip. AC Transit, CapMetro, and the City of West Sacramento maximum wait times are 15 minutes. No data is currently available for DART and HART.

#### **First Mile-Last Mile Connections**

A vital component of each program was the FM-LM connections. All of the services connected to high frequency FRB, a transit center, park and ride, or light rail/commute rail station. In addition, each program ensured major trip generators within the GFZ were designated stops. If the bus stop model was virtual, the key trip generators were promoted in the program brochure.







Table 5 provides a summary of the case studies in regard to service area provisions.

Table 5: Geo-Fenced Zone: Service Area Provision

	Publicly Regulated e-Hailing Flex Bus			Publicly Regulated Microtransit			
Variable	AC Transit FLEX	CapMetro Pickup	DART GoLink	HART HyperLINK	City of Arlington Via Rideshare	City of West Sacramento Via On-Demand Rideshare	
Service area	2 zones Newark Castro Valley	1 zone 6 zones Bra		4 zones Brandon (2) Temple Terrace University	1 zone TRE Commuter Rail Station	Citywide	
Square miles	Newark: 5.4 Castro Valley: 4.2	7			25	21	
Bus stops	Designated	Virtual	Virtual	Designated Virtual	Virtual	Virtual	
Walking distance	Min: Curb Max: 2 blocks	Min: Curb Min: Curb Max: Curb Max: 2 blocks		Min: Curb Max: 2 blocks	Min: Door Max: 2 blocks	Min: Door Max: 2 blocks	
Service days/ hours	Weekdays 6am-8pm	Weekdays 7am-7pm Saturdays 10am-5pm	Weekdays 5am-8pm	Daily 5:30am-10:30pm	Weekdays 6am-9pm Saturdays 9am-9pm	Weekdays 7am-10pm Saturdays 9am-10pm	
Reservations	AC Transit website	Pickup app GoLink app		HyperLINK app	Via app	Via app	
Wait times (minutes)	15 min max	15 min max	Data unavailable	Data unavailable	12 min max	15 min max	
First Mile-Last Mile Connections	<ul> <li>2 Heavy Rail stations</li> <li>Park &amp; Ride</li> <li>Amtrak</li> <li>9 major trip generators</li> </ul>	<ul><li>1 Light Rail</li><li>Station</li><li>6 major trip</li><li>generators</li></ul>	Each connect to a Light Rail station	<ul> <li>Connect local and express bus</li> <li>2 Transit Centers</li> <li>7 major trip generators</li> </ul>	<ul> <li>1 Commuter         Rail station         </li> <li>10 major trip         generators     </li> </ul>	<ul><li>1 Transit Center</li><li>9 major trip</li><li>generators</li></ul>	





#### **FARE STRUCTURE**

#### **Fare Policy**

The fares ranged from free to the same as the local bus fare to a premium fare. CapMetro's program was free during the duration of the pilot. AC Transit and DART's fare was the same as the local bus fare. The two city-operated programs have premium fares. The City Arlington was 50-cents more than the discontinued bus service and the City of West Sacramento is 75-cent more than the YCTD service. After a service modification, HART created a two-fare structure system. Customers paid \$1 when traveling to/from a designated stop, and \$3 when traveling from any point to any point within the zone. Customers connecting to/from another transit mode have a lower fare than the local bus (\$2), and those traveling anywhere pay a premium fare.

#### **Special Fares**

In an effort to promote and attract public transit customers to the e-hailing service, some programs provided special fares. AC Transit provided free fares in the first month of operations. HyperLINK customer's first five trips were free. The City of Arlington offers a ViaPass for \$15 per week, in which customers can take up to four trips per day. Similarly, the city of West Sacramento offered a ViaPass for \$10 per week, up to four trips per day. In addition, first-time rider's first two trips are free.

# Transfer Policy and Regional Fare Integration

In addition to the single trip fare, the DART GoLink program allowed customers to purchase passes that are integrated with the remaining DART system. The other five programs do not permit transfers to/from other transit modes. None of the programs were integrated with other regional transit providers.

#### **Payment**

As previously discussed, each program is technology based. AC Transit, DART, and HART customers are strongly encouraged to use the agency smartphone app to pay for their trip. Similarly, the cities of Arlington and West Sacramento suggest customers use the Via app to fare for the service. Since there is no app for the AC Transit program, customers can use a smartcard or cash when boarding the vehicle.

Table 6 provides a summary of the case studies in regard to fare structure.



Table 6: Fare Structure

	Publicly Regulated e-Hailing Flex Bus			Publicly Regulated and Privately Operated Microtransit			
Variable	AC Transit FLEX	CapMetro Pickup	DART GoLink	HART HyperLINK	City of Arlington Via Rideshare	City of West Sacramento Via On-Demand Rideshare	
Fare Policy	Same as local fare	Free	Same as local fare	Bus base: \$2.00\$1 to/from designated stops\$3 to/from anywhere in zone	Bus base: \$2.50 \$3.00	Bus base: \$2.75 \$3.50	
Special fares	Free 1st month	None	None	First 5 trips free	ViaPass: \$15/ week (4 trips per day)	ViaPass: \$15 (\$7.50 seniors disabled)/ week (4 trips per day) 1st time riders: 1st two rides free Referral promo: \$10 credit for a friend who rides	
Transfer Policy	None	None	Yes	None	None	None	
Regional fare integration	No	No	GoPass app GoLink app	No	No	No	
Payment	Cash AC Transit pass Clipper card (smartcard)	Pickup app	GoPass app GoLink app	HyperLINK app	Via app	Via app	





#### **CIVIL RIGHTS COMPLIANCE**

#### Title VI

AC Transit conducted a Service Equity Analysis to understand whether the change from FRB service to on-demand service would have a negative impact on Title VI populations. Following the agency's adopted Title VI Plan, the service equity analysis found that in Zone 1, the elimination of the FRB and new e-hailing service, and new e-hailing service in Zone 2 would warrant no disparate impact or disproportionate burden on Title VI populations. All of the other public entities introduced the services as demand response bus; hence, service and/or fare equity analysis were not conducted.

#### **Limited English Proficiency**

Three agencies ensure LEP populations can access the service. AC Transit has an interpretation service at its customer call center, website information is available in Spanish and Chinese, and customers can use Google translate. CapMetro also has agents to assist LEP populations at the call center. The City of West Sacramento Via program information is available in Spanish.

#### **Reduced Fares**

To ensure socio-economic disadvantaged populations can access the service, three programs offer reduced fares. AC Transit's FLEX service is 54% less than the regular bus fare for youth, seniors, and disabled. DART's GoLink program adheres to the same reduced fares, per the agency fare policy. The City of West Sacramento has a reduced fare of \$1.75 for seniors and disabled persons.

#### **Customers with no Internet or Smartphone Access**

Each agency supplies a customer call center for customers with no Internet or smartphone access. The call center allows customers to call in for booking a vehicle at the same standards. AC Transit allows customers to board at BART stations without reservations, and HART allowed customers to get picked up designated transit stops without reservations.

#### **Unbanked Customers**

The agencies provide alternative payment options for unbanked customers:

- AC Transit, CapMetro, DART, and HyperLINK have fareboxes on vehicles and allow passengers to pay while boarding.
- The cities of Arlington and West Sacramento programs are primarily cashless. The two municipalities have alternatives to ensure unbanked customers can access the service. Using cash, unbanked customers can purchase a pre-paid reloadable credit card a community drug store or grocery store. Customers with smartphone access can link the card to their Via account. For customers with no smartphone customers are encouraged to call Via and they will make an appointment to meet the customer in person to assist them.





#### **Vehicles and ADA**

The profiled agencies operate various vehicles for their DRT/Microtransit programs:

AC Transit, CapMetro, and DART use standard cutaway buses that are ADA wheelchair accessible.





The cities of Arlington and West Sacramento use six seat donated Mercedes-Benz Metris. Both of the cities had two dedicated wheelchair vehicles as part of the program. The City of Arlington also reported that personal vehicles are added to the fleet at times of high demand to keep wait times within their twelve minute goal.





HART's program used a combination of MV-1 vans and Tesla electric vehicles. The MV-1 vans are fully ADA accessible. Of note, the existing complementary ADA paratransit is still available for qualified customers. There is no qualification to take microtransit service.



Table 7 provides a summary of the case studies in regard to compliance.



Table 7: Civil Rights Compliance

	Publicly Regulated	Publicly Regulated Microtransit				
Variable	AC Transit FLEX	CapMetro Pickup	DART GoLink	HART HyperLINK	City of Arlington Via Rideshare	City of West Sacramento Via On- Demand Rideshare
Title VI analysis	Service Equity Analysis	NA	NA	NA	NA	NA
Reduced fares	Youth: <54% Senior: <54% Disabled: <54%	NA (free)	Same populations as fare policy	None	1.75 senior/ disabled	Senior: <50% Disabled: <50%
Customers with no smartphone or internet access	AC Transit Customer Call Center Customers board at BART stations without	CapMetro call center	DART call center	Transdev Call center	Via Customer Call Center	Via Customer Call Center
Unbanked customers	Pay cash onboard vehicle AC Transit pass Clipper card (smartcard)	Pay cash onboard vehicle	Pay cash when board	Pay cash when board	Cashless	Cashless
Limited English Proficiency	AC Transit Customer Call Center interpretation serviceWebsite reservation & notification software in Spanish & ChineseGoogle translate	CapMetro call center	Data unavailable	Data unavailable	Data unavailable	Google translate Staff available at City Hall
Vehicles	Cutaway 26' (14 passenger)	Cutaway 26' (12 passenger)	Cutaway 26' (14 passenger)	Vans (5 passenger) MV-1 (4 passenger)	Mercedes- Benz Metris (6 passenger)	Mercedes- Benz Metris (6 passenger)
ADA	Wheelchair accessible (all vehicles)	Wheelchair accessible (all vehicles)	Wheelchair accessible (all vehicles)	Vans only	2	Wheelchair accessible -1
Blind/Deaf	Data unavailable	Data unavailable	Data unavailable	Data unavailable	Data unavailable	None





### **MARKETING AND OUTREACH**

The transit systems profiled also used a variety of marketing and outreach efforts to publicize the new flexible services. These efforts include:

- Press releases/Newspaper articles: An example for AC Transit Flex is included in Appendix A, along with newspaper articles that featured the services.
- Website pages specific to the DRT/Microtransit service: An example from the DART GoLink service that includes specifics on booking a trip, a map of the service area, hours of operation, and fares, is also provided in Appendix A.
- Promotional videos: Arlington Via Rideshare is promoted through several on-line videos, including one that features the Arlington mayor, available at <a href="https://www.arlingtontx.gov/city\_hall/departments/office">https://www.arlingtontx.gov/city\_hall/departments/office</a> of strategic initiatives/transportation planning/via rideshare

#### **CASE STUDY SUMMARY**

As indicated in the case studies all of the profiled programs are in their infancy. However, based on their experiences the following provides a summary of the lessons learned and the best applications of DRT/ Microtransit to this point in time. This summary includes information from recent staff reports to their respective Board of Directors and elected officials.

#### **Overall Lessons Learned**

- Services have been well received by the community. Arlington Via Rideshare noted that their service continues to receive positive community feedback and request for service area expansion. The City of West Sacramento reported that community members of all ages greatly enjoy using their Via Rideshare service and are very satisfied with its addition to the City's transportation network.
- **Services are appealing to a variety of population groups.** Through the City of Sacramento survey high school students reported using the service to commute to school and other activities; people in their twenties are using for commuting and to run errands; and seniors that tended to be retired were using the service for shopping, medical appointments, and social or recreational activities.
- Depending on the arrangement, operating costs versus other services may be cost neutral. AC Transit reported that the gross cost to provide their Flex service compared to FRB service was roughly the same per hour of service.
- But by other measures, services may not have performed as well. For instance, AC Transit reported that their Flex service was only averaging three passenger trips per hour, less than half



of what the route the Flex service replaced. As a result, average subsidy per passenger trip was much greater -- \$71.52 and \$63.57 for the two Flex services as opposed to \$24.71 for a FRB trip. In addition, as noted in the case studies the HART HyperLink service was eliminated due to not meeting ridership projections.

- There are quality of life impacts beyond transportation. The City of West Sacramento's survey results indicated that their on-demand rideshare services make users feel safer getting around town and provide a greater sense of independence, especially for youth and older adults.
- There are economic benefits from the services. The City of West Sacramento also noted that Via Rideshare users were frequenting local businesses and participating in social activities more often as a result of having this service available.
- **Technology can lead to greater efficiency and on-time performance.** AC Transit reported this as one of their lessons learned through the Flex service.
- The best application for DRT/Microtransit is in low-density, low-demand areas. AC Transit noted the importance of these services when trying to ensure coverage in low density areas. However, they also noted that without additional funding expanding coverage may result in the need to reduce services elsewhere.





# 4

# Implementing DRT/Microtransit Service in Arlington County

While the review of existing DRT/Microtransit services provides important information when considering a similar program in Arlington County, none of the six case study agencies operate the same model. Both the publicly regulated and operated e-hailing flex bus model and publicly regulated and privately operated microtransit model are novice service delivery models, hence there are no set transit industry criteria or standards.

However, taking into account the findings from the case studies and an assessment of current trends with flexible transit services across the country, this section presents a potential process for implementing a DRT/Microtransit service in Arlington County. The proposed implementation process walks through the following steps, though many of the various considerations are interrelated:

Step	1	Conduct Ongoing Assessment of ART System Performance
Step	2	Identify Key Stakeholders and Conduct Renewed Community Outreach
Step	3	Identify Service Delivery Model and Determine
Step	4	Develop Geo-Fenced Zone Characteristics
Step	5	Determine Budget and Identify Funding Sources
Step	6	Develop Fare Structure
Step	7	Ensure Compliance with Federal Civil Rights
Step	8	Develop Program Evaluation

# STEP 1: CONDUCT ONGOING ASSESSMENT OF ART SYSTEM PERFORMANCE

While the 2016 Arlington County TDP recommended specific neighborhoods for implementation of on-demand service options that would allow for additional system efficiencies, the routes serving these communities will need to be reassessed when more detailed planning for a DRT/Microtransit service begins. In addition, other routes may be identified that would be possible candidates for more flexible services in the future.

It is anticipated that as a component of ART's ongoing performance assessment of FRB services at the route level, DRT/Microtransit options will be more in the forefront as these services across the country evolve. In particular, routes that are providing less than 10 passenger boardings per revenue hour would qualify as a candidate for a microtransit pilot service based on the review of other current programs nationally. If not already being evaluated by Arlington County, for each route the performance assessment should be divided into the following categories:

- Weekday, all day
- Weekday, peak hour periods (morning and evening)
- Weekday, off-peak periods (early morning, midday, and night)
- Weekends

### STEP 2: IDENTIFY KEY STAKEHOLDERS AND CONDUCT RE-NEWED COMMUNITY OUTREACH

When finalizing the plans to develop, implement, and operate a DRT/Microtransit service it will be critical to further identify and engage key internal and external stakeholders. The initial technical assistance for Arlington County through the COG TLC program called for community outreach, but based on discussions with County staff there was consensus that implementation of any DRT/Microtransit services was still a few years out. Therefore, future planning will need to incorporate outreach efforts that include -- but are not limited to – the following:

- Identifying stakeholders across and outside the agency to include individuals with an interest in the approach to or success of a partnership.
- Engaging transit service planning and operations, marketing and outreach, union leaders, and legal teams.
- Engaging relevant elected officials.
- Identifying project champions who can support the planning, implementation, and evaluation efforts, and a project manager to centralize the effort.
- Establishing a communications protocol to maintain involvement of multiple transit agency groups throughout partnership development, including procurement and legal teams.
- Establishing a succession plan: who will lead the effort in case of staff departures.





While community outreach was conducted as part of the TDP process that resulted in the recommendation for more flexible options, a renewed effort will be needed when finalizing plans for a DRT/Microtransit service. At a minimum outreach activities should include two public meetings. These meetings will provide the opportunity to discuss possible flexible service options with the community, and to obtain consensus on preferred options moving forward.

#### **STEP 3: IDENTIFY SERVICE DELIVERY MODEL**

Both DRT/Microtransit models under consideration by Arlington County will require a public-private partnership to develop, implement or operate the service. Consideration will involve:

- **Tech-based partnerships.** Public entities depended upon a partnership with a private tech company to develop, implement, and/or operate the program. Agencies are either using established transit industry contractors or private tech-based companies.
- **Technological platform.** The public transit providers worked with tech-based companies to develop smartphone apps (IOS or Android) for customers. Two types of apps were developed. First, the tech-based company built a customized program app for the public entity. Second, the tech-based company created a plug-in on their app.
- **Service provider.** There are three types of service providers used by the agencies. One, public entities operated the service in-house using existing vehicles. With the second type, agencies outsourced the service to well-known industry contractors to operate the service. Third, public agencies contracted the service to tech-based companies to operate.

Through the finalized planning Arlington County will then need to determine which service delivery model to operate:

- **Service Delivery Model 1:** Publicly Regulated and Operated Microtransit, in which ART operates the service in-house, utilizing their own vehicles. Since ART does not have existing vehicles for this service new vehicles would need to be procured to operate this service delivery model.
- Service Delivery Model 2: Publicly Regulated and Privately Operated Microtransit, in which ART contracts the service delivery to a private mobility company (for example, Transdev or MV Transportation) or Transportation Network Company (for example, Uber, Lyft or Via Transportation).

Table 8 identifies the two service delivery models for Arlington County to choose from, and identifies the considerations and actions needed to implement.





Table 8: Service Delivery Model Considerations and Actions

Service Delivery Model	Consideration	Actions Needed to Implement
1.	Utilize vehicles in ART fleet	<ul> <li>Procurement: <ul> <li>Onboard vehicle software</li> <li>New vehicles to operate service (since no available vehicles in existing fleet)</li> <li>Technological platform: Internet or Smartphone application</li> </ul> </li> <li>Training: <ul> <li>Drivers</li> <li>Call center staff</li> </ul> </li> </ul>
2.	Outsource to private mobility company	<ul> <li>Procurement:</li> <li>Private company (i.e Transdev, MV, Via, Uber, Lyft) who would be responsible for ensuring vehicles have on-board software, drivers, and smartphone application development.</li> </ul>

#### **STEP 4: DEVELOP GEO-FENCED ZONE CHARACTERISTICS**

When completing plans for a DRT/Microtransit service Arlington County will need to finalize the service areas for initial implementation. The TDP recommended these neighborhoods for on-demand services: Rock Spring, Dominion Hills, Chain Bridge Forest, Rivercrest, Bellevue Forest, Gulf Branch, Stafford-Albermarle- Glebe, Old Glebe, Douglas Park, Nauck, and Arlington Village. However, these areas will need to be reassessed to determine if they continue to be the preferred candidates.

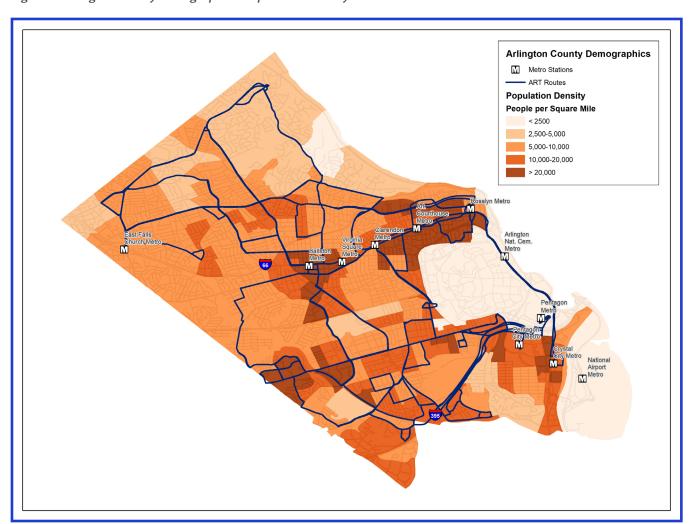
When making this assessment the following consideration from the case studies can be taken into account:





- Population and population density. While data was not available for all case studies, the ones that were able to provide reported that population in service areas ranged from 33,000 to 121,000. The population densities ranged from 4,800 to 9,300 persons per square mile. Figure 8 depicts population density for Arlington County based on the most recent U.S. Census and American Community Survey data, and Figure 9 shows areas with a greater transit dependence.
- **Employment density.** While complete data was not available, the case studies that did provide reported that the employment densities ranged from 1,800 to 3,300 jobs per square mile.
- **Land use pattern.** The programs were all operated in low-density areas, where traditional FRB service performance was low productive.
- **Service area and square miles.** There is no set standard number of GFZs operated or a number of square miles. The number of zones operated range from one to six to citywide. Similarly, the square miles ranged from four to 25.

Figure 8: Arlington County Demographics-Population Density



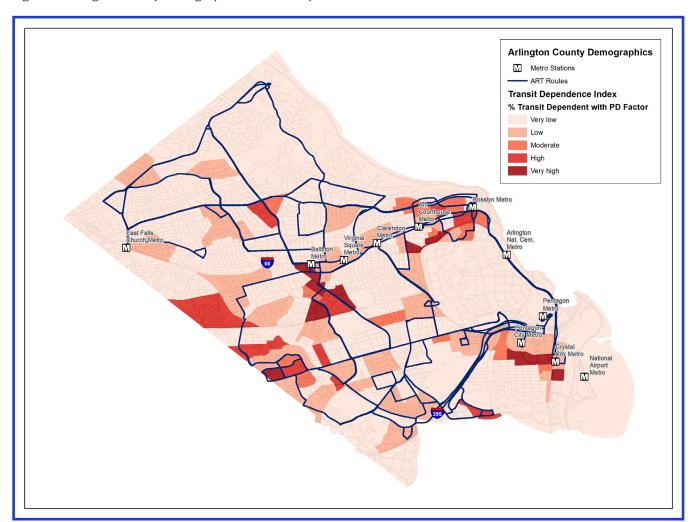


Figure 9: Arlington County Demographics-Transit Dependence Index

- Bus stops and walking distance. There are two typologies of bus stops, designated and virtual. Depending upon passengers pick up and drop off location within the GFZ, the bus stop ranges from curbside up to a two block walk.
- Service days and hours. Service mirrors local FRB service. In addition, the microtransit service starts before and ends after regular FRB service hours.
- **Reservations.** Smartphone apps (IOS and Android) are the preferred method to plan, book, and pay for the trip.
- **Wait times.** The wait times range between 12 and 15 minutes.
- First Mile-Last Mile connections. The e-hailing bus provides a FM-LM connection to high frequency FRB, transit centers, park and rides, rail stations, and key community trip generators.

Overall considerations are summarized in Table 9.





Table 9: Service Area Considerations

Variable	Option	Consideration	Program Development
Bus Stops & Walking	1	Designated Bus Stops	Service operated by ART or private company Need to identify stops within the GFZ, in which customers will be required to board and alight the vehicle. The stops should be no more than a two-block radius. Require some people to walk & others not, depending on where located in area
Distance	2	Virtual Bus Stops	Service operated by ART or private company – Software algorithm similar to Uber/Lyft will allow for persons to board/alight anywhere within the zone.
	3	Designated & Virtual Bus Stops	Service operated by ART or private company- Combine Option 1 and 2
	1	Midday	Would mainly would appeal to older adults for doctor appointments and social trips.
Service Days and Hours	2	Peak Hour Service	Important for work and school trips.
	3	All Day Service	Needs to be considered if replacing service with similar hours.
Reservations	1	Smartphone app	Service operated by ART: need to work with to develop smartphone app that would allow ART customers to use an IOS or Android phone to plan, request, pay, and track the vehicle
Wait times  1  Need to develop policy in which there is maximum wait for customers between vehicle request and vehicle arrive		which there is maximum wait for customers between vehicle request and vehicle	DART Via Rideshare reports that average wait time is 11.5 minutes after booking a ride.
First Mile-Last Mile	1	Ensure the service connects to: ART stations with peak frequency of 20 min or less, WMATA rail stations, key destinations within the County	

# STEP 5: DETERMINE BUDGET AND IDENTIFY FUNDING SOURCES

There are currently a number of unknown factors that will likely affect the expenses and funding for implementation of a DRT/Microtransit service in Arlington County. As a result, a budget cannot be determined until a preferred model is chosen and the initial service area finalized. For instance, if the service is operated in-house there will be capital costs with the need to procure vehicles.

With their programs still in their infancy, or in some cases not successful, budgetary information from the profiled agencies was limited or they were reluctant to provide specific financial data on these services. It is anticipated that by the time that Arlington County completes more detailed planning for a DRT/Microtransit service additional details on the costs of these and other programs may be available.

However, the following information is available to assist Arlington County with initial budgetary considerations:

- In 2016 DART was a recipient of funding through the FTA Mobility on Demand (MOD) Sandbox Demonstration program. Their project focused on the FMLM challenge, and involved the smart-app switch of the following that incorporated various transportation modes – including their GoLink Microtransit and on-demand services.
  - Total funding for this project was is \$1,204,000 in U.S. Department of Transportation (USDOT) funds and \$301,000 in local matching funds, for a total budget of \$1,505,000. In their report to FTA DART noted that they needed to evaluate full app integration, as the cost will exceed the federal funding source provided.
- In a January, 2019, report to their Board of Directors AC Transit noted that the Flex service was targeted as a cost neutral replacement of fixed-route bus service in low-density areas. As depicted in Figure 10 they noted that there was no change in the number of operators or vehicles, and the cost for a small bus to operate the Flex service along with the technology cost was equal to the cost for a new bus.



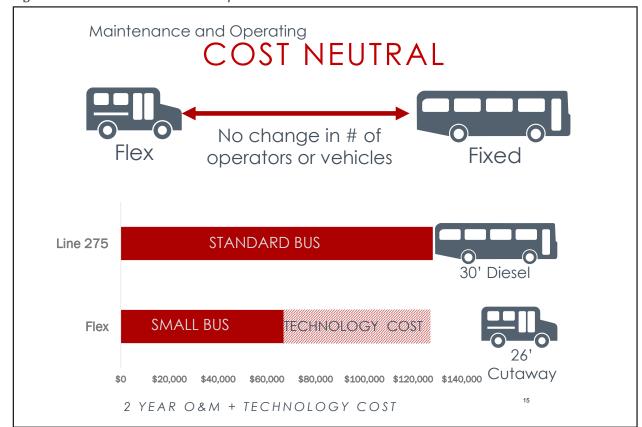


Figure 10: AC Transit Flex Service Comparison to FRB

Source: AC Transit "Flex - Mobility on Demand for All" Report/Presentation to Board of Directors, January 2019

To support a pilot program Arlington County could consider FTA and other sources of funding that are emerging to support innovative practices and technologies that improve and expand mobility options. For instance, in May, 2019, FTA announced the availability of funds through the new Integrated Mobility Innovation (IMI) Demonstration program. This program is designed to support innovations in public transportation service models, payment systems, and automation applications, and are designed to help public transit providers throughout the country develop and deploy emerging technologies to better serve their customers. More information on this funding opportunity is available at <a href="https://www.transit.dot.gov/IMI">https://www.transit.dot.gov/IMI</a>.

Eligible expenses through this funding program are relevant to any new service in Arlington County, and include:

- Obtaining equipment
- Acquiring or developing software and hardware interfaces to implement the project
- Operating the demonstration project



#### **STEP 6: DEVELOP FARE STRUCTURE**

An important decision for Arlington County when completing plans for a DRT/Microtransit service will be the fare structure. Considerations from the case studies include:

- Fare Policy. The fare policies range from free to the same as the local bus fare to a premium fare. HART had a two-fare structure.
- Special Fares. In an effort to promote the program and attract riders, special fares are provided. The special fares include free fares at the start of the program, free trips for first-time users, and/or a discounted pass via the app.
- Transfer Policy and Regional Fare integration. The common theme is to not provide free transfers to other modes, or integrate the fare with other regional transit providers.
- Payment. Customers are highly encouraged to utilize the smartphone app to pay the fare.

Overall considerations are summarized in Table 10.

Table 10: Fare Policy Considerations

Variable	Option	Consideration	Program Development
	1	Same as the ART Bus Adult Fare (\$2.00)	The smartphone app will need to ensure that it is equipped to charge customers \$2.00 per trip.
Fare Policy	2	Premium Fare	Since the service is open to the general public and on-demand, a higher price fare can be charged. Based on the case studies, it is recommended that the price is no more than 50% the current base fare (\$3.00)
Transfer Policy		Adhere to the current Transfer Policy	1) Smartphone technology will need to be programmed to allow for transfers, 2) will need to work WMATA Smartrip software
Regional Fare Integration			Will need to work with WMATA, VRE
Reduced Fares		No set standard	Could adhere to current reduced fare policy.
Payment			Will need method for unbanked customers





#### STEP 7: ENSURE COMPLIANCE WITH FEDERAL CIVIL RIGHTS

When implementing a DRT/Microtransit service Arlington County will need to ensure federal compliance, taking into account the following:

- Title VI. The FTA only requires Title VI analysis for fixed-route bus service. If agencies are replacing or reducing FRB service, a service equity analysis is warranted.
- Reduced fares. To ensure socio-economic disadvantaged populations can access the service, three programs offer reduced fares. There is no set standard. In practice, the reduced fares adhere to the respective agency's reduced fare policy.
- Customers with no smartphone or Internet access. Agencies either allow customers to use their existing call center to reserve a trip or as part of their partnership the tech-based company hosts a call center for customers to book and reserve a seat.
- Unbanked customers. The vehicles are equipped with fareboxes, in which passengers are permitted to use cash while boarding the vehicle. Where the program is cashless, customers are permitted to use cash to purchase pre-paid and re-loadable credit cards that can then be used to pay for a trip.
- Limited English Proficiency. To ensure LEP populations access the service, an interpretation service at the customer call center can be made available, website information available in non-English languages, and Google translate is available on the website.
- Vehicles and ADA. To ensure ADA compliance, the vehicles operated in-house are fully ADA wheelchair accessible. For the services contracted to a tech-company, as part of the partnership agreement, there are a dedicated number of wheelchair vehicles available for the program.

Overall considerations are summarized in Table 11.



 $Table\,11: Compliance\,Consider at ions$ 

Variable	Consideration
	In accordance with FTA Circular 4702.1B, ART is only required to conduct a service Equity Analysis when the following occur:
Title VI (Service	If the program triggers a Major Service Change, as defined by the Arlington County.
Equity Analysis)	If a Major Service Change is triggered, ART is exempt from conducting a Service Equity Analysis if the microtransit pilot program is less than 12 months. If a temporary service addition or change lasts longer than twelve months, then FTA considers the service addition or change permanent and the transit provider must conduct a service equity analysis if the service otherwise qualifies as a major service change.
Title VI (Fare Equity Analysis)	In accordance with FTA Circular 4702.1B, ART is required to conduct a Fare Equity Analysis if there is a fare associated with the microtransit program.
	If existing ART vehicles are used, the vehicles will be ADA accessible.
Americans with Disabilities Act	If contracted to a private mobility company or TNC, as part of the partnership agreement, there are a dedicated number of wheelchair vehicles available for the program
Unbanked Customers	<ul> <li>Maintain farebox machines on vehicles</li> <li>To ensure individuals with no debit or credit card are able to access the service, ART shall partner with local retailers. Persons with no debit or credit card could be allowed to use cash to purchase a pre-paid credit card in the dollar amount of their choosing. The customer can then use the card to purchase a trip.</li> </ul>
Customers with no Smartphone or Internet Access	For customers with no smartphone or internet access, ART shall ensure the existing call center allows for persons with smartphone or internet to book a trip
Limited English Proficiency	Ensure the program is available in a minimum of Spanish on the website, and the call center is able to accept calls in Spanish



#### **STEP 8: DEVELOP PROGRAM EVALUATION**

After the implementation of a DRT/Microtransit service, similar to traditional transit services, the program will need to be evaluated. However, as noted earlier since DRT/Microtransit services are in their infancy currently there are no industry standards. While it is anticipated that by the time Arlington County implements their flex service more performance measures and standards for these services will be available, tried and true measures for assessing productivity should be used and are provided in Table 12.

Table 12: Program Evaluation Considerations

Ridership	Daily Total By Revenue Hour
Operating Cost	Daily Operating Cost Operating Cost per Revenue Hour Operating Cost per Passenger Trip

Another consideration is a survey process similar to the one conducted by the City of West Sacramento. This survey could be used as a guide in the assessment of a DRT/Microtransit service after implementation.



# **Appendix-Marketing Examples**





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## AC TRANSIT FLEX SERVICE BEGINS MONDAY, MARCH 27TH

#### Press Releases 03/24/2017

The one year on-demand pilot service will temporarily replace Bus Line 275

The Alameda-Contra Costa Transit District (AC Transit) is excited to announce, that after eight months of beta-testing, AC Transit Flex will begin its one-year pilot operation on Monday, March 27, 2017. Flex is a dynamic reservation based transit service that eliminates the wait and wonder of when your bus will arrive. Now, with the click of a mouse or telephone call, Flex riders enjoy an array of choices for day, time, and location of travel.

Flex is a pilot program that was developed as a transit alternative in service areas with lower demand ridership. The pilot's design employs smaller 12 seats buses (each fully ADA compliant with Clipper Card readers and fare boxes) and offer riders the choice of which existing Line 275 bus stop they would like to begin and end their travel. To test the success of this transit model, AC Transit will temporarily suspend operation of Line 275 starting March 27, 2017 and continuing through March 2018. We leave open the option to return Line 275 to full operation. Existing bus service in the Castro Valley Flex Service operating region will not experience any changes.

"As Board President, I am keenly interested in ensuring that any alteration of service occur with our riders as the central focus and functions seamlessly," says AC Transit Board President, Elsa Orliz. "Our rigorous beta-testing revealed that Flex is off to a strong start. In fact, Flex's trip success is currently at 92 percent and two-thirds Flex riders are now return customers."

Flex Service operates in Castro Valley, Newark, Union City and Fremont using 12 seat passenger buses. Each Flex is outfitted with navigation software called MobilityDR –developed by DemandTrans Solutions. MobilityDR gives Flex Operators turn-by-turn directions to reach a reserved rider faster.

"In fact, during beta-testing we collected eight months of data that revealed that nearly 30 percent of Flex riders completed their travels in as few as 10 minutes," says Michael Hursh, General Manager. "Equally impressive, is that eliminating the multiple stops of a traditional bus route now means 20 percent of Flex riders are completing their daily trips in less than five miles."

#### AC Transit Flex Hours of Operation:

Flex operates Monday thru Friday 6:00 a.m. to 8:00 p.m. and excludes holidays. Flex service is designed with a reservation requirement of at least 30 minutes prior to departure. Flex riders may reserve an itinerary every weekday – for up to three months – and reserve trips for family or traveling companions in a single transaction.

#### Creating Flex Accounts & Reservations:

Flex riders are asked to create an online account that links to either an email or mobile phone number. Flex riders, reserving via the website, will receive an email or text notice ten minutes prior to the buses arrival. Riders may opt out of email or mobile phone registration by telephoning a customer service representative at (510) 891-5470.

#### Flex Open Boarding

Riders commencing travel at Castro Valley BART may board Flex without reservations every 60 minutes. Similarly, reservations are not required when commencing travel at Union City BART which operates every 30 minutes. Riders should look for Flex's 16-passenger buses each adorned with the AC Transit Flex logo on the passenger windows.

#### AC Transit Flex Fares:

Flex's state-of-the-art transit service is offered without an increase in fare. AC Transit's existing one-way fare of \$2.10 for adults applies on Flex. Fares are \$1.05 for youth ages 5 – 18, passengers with disabilities, and seniors at least 65 years in age. For added convenience, each Flex bus is outfitted with both a fare box and Clipper Card one-touch readers. Discounted fares are available for Clipper and 31-day pass holders.

For more information on AC Transit Flex or to book your personal Flex travel reservation, please visit <u>actransit.org/flex</u> or dial (510) 891-5470.

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© 2001-2019 AC Transit All Rights Reserved. Terms and conditions. **BREAKING NEWS** Heavy police presence at San Ramon high school after threats

News

## Tired of waiting for the bus? AC Transit's Flex service allows customers to order rides outside regular schedules.

By ERIN BALDASSARI | ebaldassari@bayareanewsgroup.com | Bay Area News Group PUBLISHED: August 17, 2016 at 3:54 pm | UPDATED: August 24, 2016 at 7:54 am

OAKLAND — Providing efficient bus service to sprawling suburban communities, characterized by their wide, four-lane roadways and lack of pedestrian-friendly infrastructure, has long been a challenge.

But last month, AC Transit became the latest in a string of Bay Area transportation agencies to experiment with a new way to serve these hard-toreach suburbs: buses on demand.

Riders liken it to Uber.

The one-year pilot program, called Flex, started mid-July for residents in Newark, Union City, Castro Valley and Fremont. Passengers can book rides in advance online, on a smartphone or by telephone, selecting from a number of pickup spots along pre-existing routes. Instead of a full-size bus, AC Transit is operating a shuttle that holds roughly a dozen passengers, allowing drivers to veer from a fixed course, bypass stops and take the quickest path to reach reserved passengers' destinations. "It's customized for me," said Newark resident Luis Napoles. He relies on a bus to get to work every day and often found himself arriving 15 minutes late. "Now. I'm 10 minutes early."

"You can call (Flex) high-tech because it's on a tablet," Coffee said, "but, basically, it's the same principle."

The dial-a-ride service was one of the first that the Western Contra Costa Transit Authority (WestCAT) offered when it launched, said Executive Director Charles Anderson. Ultimately, as ridership along the routes grew, increased demand necessitated a fixed route, he said.

In some ways, AC Transit's Flex service is a return to this early approach. AC Transit board President Christian Peeples said the pilot locations were chosen because they have historically seen low ridership and were especially impacted by service cuts following the Great Recession.

"We're trying to provide service to spread-out areas as efficiently and effectively as we can," he said. "We need to see if we have enough riders to get the van out there, but not so much that the van can't handle it. ... It's a delicate balance."

AC Transit is following two South Bay transit agencies that implemented similar services, albeit with mixed results. The Santa Clara Valley Transportation Authority (VTA) launched an app-based bus service, also called FLEX, in a 6square-mile region in North San Jose surrounding its Tasman light-rail station. VTA spokeswoman Stacey Hendler Ross said the six-month pilot, which ended in July, was an attempt to encourage light-rail use.

Unlike AC Transit's program, VTA's FLEX allowed riders to schedule pickup or drop-off locations anywhere in the service area. Ultimately, though, the agency decided to scrap the program.

"We really didn't have the type of ridership we had hoped for," Hendler Ross said.

She said the agency learned some valuable lessons and still has access to the technology, produced by RideCell, that it hopes to incorporate into its other services. She cited paratransit as one possible application.

The San Mateo County Transit District (SamTrans) launched a flexible route service roughly two years ago in Pacifica and San Carlos, said spokeswoman Jayme Ackemann. In San Carlos, the buses operated on fixed routes during peak commute times but were allowed to deviate from the route during the day if passengers scheduled a pickup a day in advance. In Pacifica, the bus operates on a fixed route but can take half-mile detours, she said.

SamTrans discontinued its San Carlos pilot, but the Pacifica service is still going

"The ridership (in Pacifica) tends to be retirement age and beyond," she said. "They have more time during the day when they're out traveling around, and the route serves a popular senior center."

In its first month of operation, AC Transit's Flex service is off to a slow start, Coffee said. He averages about 10 riders in the morning each day on his Newark route, and another Flex shuttle operator, Robin York Thornton, said she averages around 15 passengers during the afternoon shift. Two Flex buses operate during each shift. A spokesman for AC Transit did not respond to a request for ridership data, so its unclear how other areas, including the agency's Castro Valley service, which serves a popular senior center, are faring.

At the Union City BART station, where the Flex shuttle is able to pick up passengers without pre-existing reservations, many people waiting for the bus said they had never heard of the service. "It'd be nice if they could get information out to people who rely on public transit the most," said Fremont resident Diane Brokaw, who suggested the agency provide pamphlets to social service agencies. "We're the ones who have to rely on it."

Others had marketing advice: "New to Newark" was the slogan suggested by Hayward resident Jay Cobbs. And from bus driver Thornton: "Flex your AC Transit power."

For more information about the service and how to book a ride, visit ACTransit.org/Flex.

Contact staff writer Erin Baldassari at 510-208-6428. Follow her at Twitter.com/e baldi.

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Tags: Commuting, Transit

**Erin Baldassari** Erin Baldassari covers transportation, the Bay Area's housing shortage and breaking news. She served on the East Bay Times' 2017 Pulitzer Prize winning team for its coverage News > Transportation

# The newest battleground between public transit and Uber, Lyft is an unlikely one





AC Transit FLEX driver Stephen Babaouye, right, waits for passengers at the Castro Valley BART station on Thursday, March 23, 2017, in Castro Valley, Calif. The FLEX program lets customers book rides on demand, schedule them in advance, or hop on board without a reservation at a BART station. (Aric Crabb/Bay Area News Group)

By **ERIN BALDASSARI** | ebaldassari@bayareanewsgroup.com | Bay Area News Group

PUBLISHED: March 24, 2017 at 12:30 pm | UPDATED: March 25, 2017 at 3:12 am

UNION CITY — The sleepy East Bay suburbs of Newark, Union City, Castro

But it's here that AC Transit, which operates buses in Alameda and Contra Costa counties, is going bumper-to-bumper with the tech darlings, offering a competing service that blends on-demand rides with traditional bus routes. And, the agency says, it may just be working.

Ridership on AC Transit's <u>FLEX service</u>, a pilot program the agency launched in July, has grown steadily since its inception and increased 33 percent since the start of the year, when AC Transit launched a more robust marketing campaign. The service allows passengers to book rides in advance to catch at the nearest bus stop, but won't stop for riders waiting curbside. Instead, the FLEX buses, which are smaller than the traditional 40-footers and seat 12 passengers, take a more direct route based on who is on board. Riders can hop on the buses at BART stations without a reservation.

That speeds up travel times and allows the agency to run the shuttle-like buses every 30 minutes, rather than every 45 minutes or every hour, as the case had been prior to the launch of the pilot program.

**ADVERTISING** 

"We're providing a hybrid," said John Urgo, a transportation planner for AC Transit. "It's not Uber or Lyft ... but it allows us to provide a more productive service."

Beginning Monday, AC Transit will temporarily replace its Line 275 in Newark and Union City with the FLEX service, suspending the traditional fixed route for

FLEX passengers in Castro Valley welcomed the change. Several said they liked the predictability of the service, and the ability to schedule a bus for the time that works for their schedule, rather than have to rely on a fixed route, which may not get them to work on time. Fremont resident Greg Shilling used to walk roughly a mile from the Castro Valley BART station to his work each day. There is a bus that goes past his office, he said, but it only comes once every hour.

"So, it's hard to catch," he said. "This is a lot faster."

The sprawling nature of suburbs has long been the ire of bus operators, where cars tend to reign supreme and where buses have fewer passengers and run less often. AC Transit was looking for ways to improve service and attract riders in the more sparsely-populated southern Alameda County, while also recognizing that Uber and Lyft have changed what people have come to expect from the companies that drive them around.

And, they're not the only ones looking for ways to compete with the ride-booking behemoths. The Santa Clara Valley Transportation Authority (VTA) piloted a similar app-based pilot program, also called FLEX, in a 6-square-mile region in north San Jose near its Tasman light-rail station, but low ridership ultimately prompted the agency to scrap the service. Unlike AC Transit's program, VTA's defunct FLEX service allowed riders to schedule pickup or drop-off locations anywhere in the service area.

In San Mateo County, SamTrans launched a flexible-route service roughly twoand-a-half years ago in Pacifica and San Carlos. It eventually ended the San Carlos service, which operated on a fixed route during peak commute times but allowed bus operators to deviate from the route during the day for pre-booked rides. The Pacifica service, the more popular of the two and one the agency kept, operates on a fixed route but can take half-mile detours.

In the Tri-Valley area, however, the Livermore Amador Valley Transit Authority (Wheels) has taken a different tack. Rather than compete with Uber and Lyft, it's partnering with them to offer riders discounts to the nearest bus stop. The pilot program, called Go Dublin, offers 50 percent discounts on shared rides through Uber Pool and Lyft Line for trips within Dublin city limits.

It's been up and running for only two months, said Wheels Executive Director Michael Tree. And while the official numbers haven't come in yet, Tree said demand appears to be exceeding expectations so far.

"Generally speaking, we are receiving lots of positive comments on the

While it may seem counter-intuitive for a public agency to subsidize a private company, Tree said the dollars make sense. It costs Wheels \$100 per hour to operate a traditional bus service, but the agency only averages five passengers per hour in Dublin. That costs the transit agency \$15 to \$20 per ride. But with Go Dublin, the maximum any rider can receive is \$5.

"In the end, I think the Go Dublin demonstration project will see twice as many trips ... at one-third the cost," Tree said. "It's likely that many of those rides are to and from quality public transportation, such as (Wheels') rapid bus route and BART."

AC Transit doesn't think it will save too much money on its FLEX service, but Urgo said it hopes to offer better service and attract new riders in what is traditionally a very tough market. Tree said his agency would also be following AC Transit's program closely, as it monitors its own customers' responses to its subsidized ride-booking program.

Either way, it's clear that these new programs are harbingers for the future, said Susan Shaheen, the co-director of Transportation Sustainability Research Center at UC Berkeley. The increasing availability, affordability and reliance on technology is changing the ways both public agencies deliver transportation services and the way consumers use these these services, she said. That's going to continue to pressure public transit agencies to change the way they do business.

"Technology is changing fast, and service options and consumer behavior are still quickly adapting," Shaheen said. "The future of public transit will likely include more flexible routing and more on-demand options as these technologies become more prevalent, widely deployed and lower cost."

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**Erin Baldassari** Erin Baldassari covers transportation, the Bay Area's housing shortage and breaking news. She served on the East Bay Times' 2017 Pulitzer Prize winning team for its coverage of the Ghost Ship fire. But most of all, she cares deeply about local news and hopes you do, too. If you'd like to support local journalism, please subscribe today.

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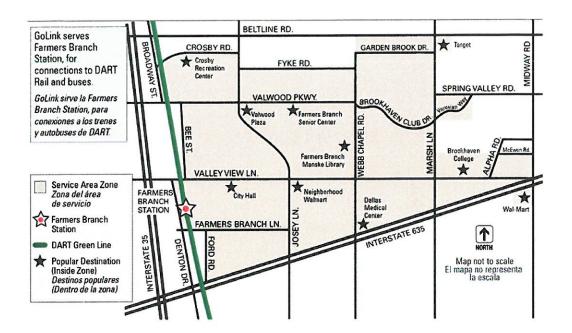


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