2018 Mobility Optimized through Vision and Excellence (MOVE) Plan

"The better we MOVE, the greater we become"

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1. Introduction

With the advent of Global Positioning System (GPS)-enabled smartphones and wireless communication networks, transportation has been undergoing a digital revolution that requires *vision* and *excellence*—the key concepts of MOVE (Mobility Optimized through Vision and Excellence). To Jacksonville Transportation Authority (JTA), excellence come in many forms, including:

- customer service
- performance
- technology and innovation
- fiscal management
- partnerships

Vision and the many facets of excellence will lead JTA to better connect different and technologically complex modes of transit to improve the experience of JTA's customers. For instance, JTA's MOVE transit system will be designed to enable a Northeast Florida customer to customize multimodal trips (e.g., ride-hail, bike share, bus, Skyway) from a hand-held device, minutes before stepping onto a curb.

This 2018 MOVE Plan describes the dual challenge of responding to disruptive technologies and a growing region. JTA's current and future efforts are discussed in the context of services provided and integrated throughout the Northeast Florida region and in the Jacksonville area. The MOVE Plan culminates in the practical key considerations for JTA's future integrated and seamless MOVE transportation system.

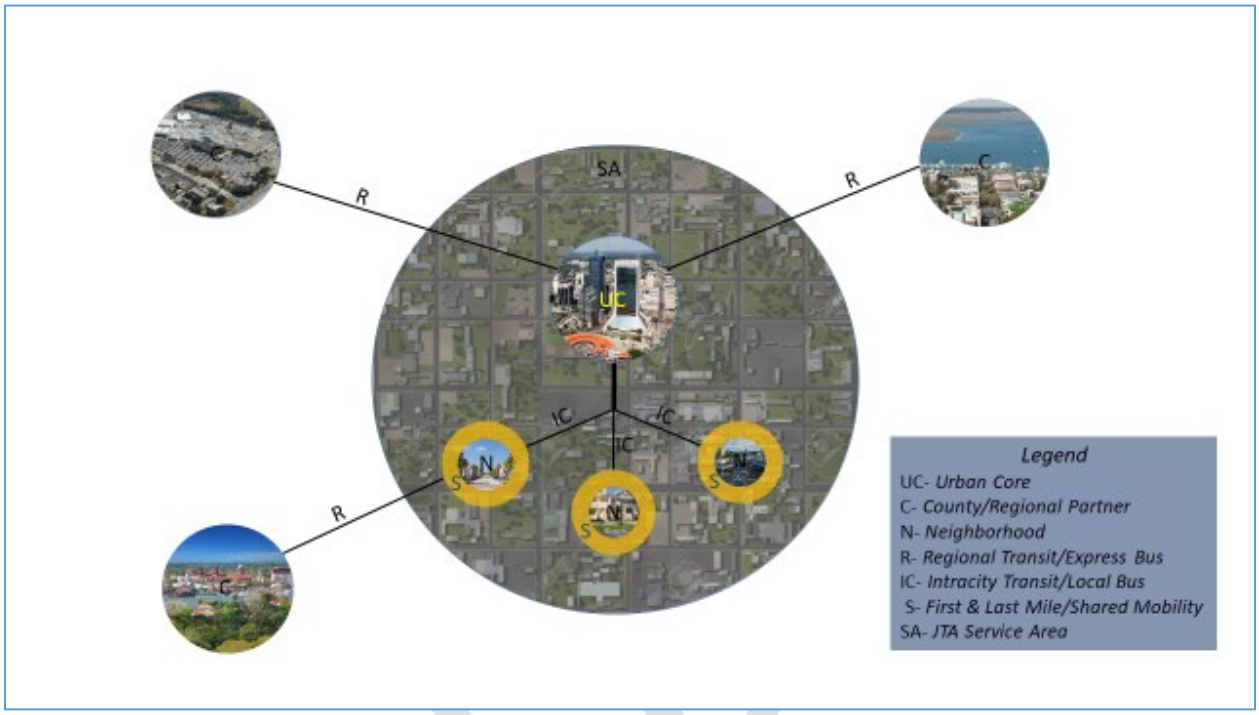
2. What Does "Mobility Optimized through Vision and Excellence (MOVE)" Mean?

JTA defines "MOVE transportation systems" as ones that combine trip scheduling and planning, mobile ticket purchasing, real-time arrival, and detour/update information services.

Today, JTA provides these services using multiple, independent apps that can all be accessed in the MyJTA app "envelope." In MyJTA, the current trip scheduling and planning apps only address single mode trips and are configured predominantly for specific customer types.

In the next two years, these independent app-based services will be integrated into one app that allows JTA customers to accommodate their transportation needs with fewer clicks. In the next five years, trip scheduling and planning will be enhanced to increase customers' ability to

make sense of and combine a variety of trip options, from origin to destination. JTA customers would be able to arrange trips based on preferences (e.g., cost, time, privacy) and availability.



The MOVE transportation system will be designed to connect Northeast Florida regional and interagency services, Jacksonville area services, and alternative service delivery (ASD) offerings including shared mobility first- and last-mile trips. Intelligent transportation systems (ITS) and smart city infrastructure will be added to JTA's MOVE transportation system. "Smart corridors" located throughout the Jacksonville area will be used to pilot ITS and smart city infrastructure for future MOVE services.

3. MOVE Plan Purpose

This plan's purpose is to develop an integrated transportation network of mobility options that strengthens and does not marginalize the role of public transportation. Like the Federal Transit Administration (FTA), JTA envisions a "multimodal, integrated, automated, accessible, and connected transportation system" that prioritizes personalized mobility. The frameworks and concepts explored here are to help guide the development of JTA's 2019 major update of the Transit Development Plan—a document that outlines JTA's goals, objectives, timetables, and measures of success.

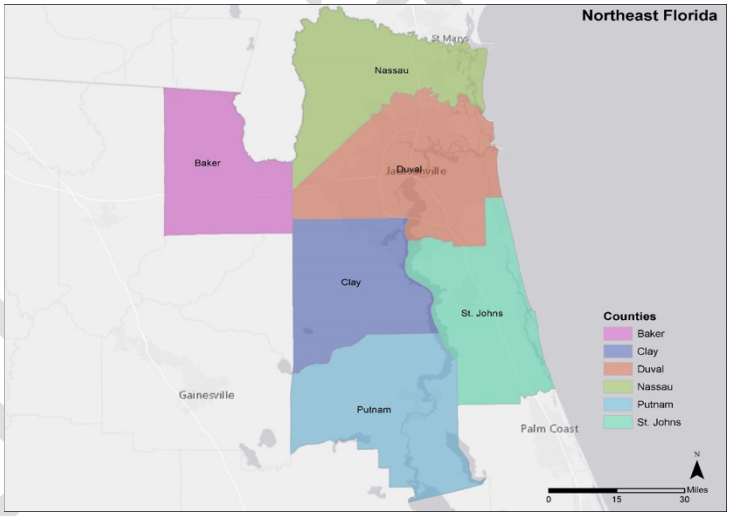
4. How the MOVE Plan Relates to JTA's Blueprint for Transportation Excellence (BTE)

JTA's BTE is the Authority-wide strategic plan. The BTE guides the annual work and provides a virtuous cycle of improvement by tying the annual work plan to a robust performance management program. Under BTE framework, annual milestones and performance measures track success towards delivering projects and services that support the Authority Goals.

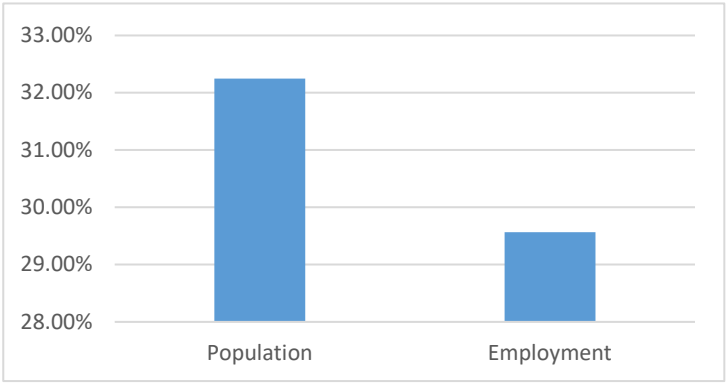
In the 2017 update of the BTE, the development of a vision responding to the changing mobility marketplace was established as a goal. The MOVE Plan is the culmination of this goal.

5. Growth of the Region

According to the Northeast Florida Regional Transportation Commission service area, Northeast Florida is comprised of Baker, Clay, Duval, Nassau, Putnam, and St. Johns Counties. The Florida Department of Transportation (FDOT) estimates that by 2040 the population in Northeast Florida will increase 32% and employment will increase 29%.



Population and workforce growth in Northeast Florida will likely lead to increased traffic and greater demand on the transportation infrastructure. Based on FDOT's estimates, adding lanes and new roads alone will not be enough to solve the region's congestion problems. Dealing with congestion must include creating a more connected regional transportation system by combining traditional solutions with new technologies and partnerships.



A MOVE transportation system will allow greater use of existing infrastructure, reducing the need to construct more road lane miles and parking facilities. For instance, a MOVE transportation system can make shared trips a more desirable option to customers (e.g.,

dedicated car pool lanes, ease of coordination with single app) and can prevent accidents and improve traffic flow (e.g., connected traffic signals and vehicles).

Opportunities through regional partnerships and collaboration have presented themselves. These partnerships have the potential to improve regional connectivity through JTA's MOVE transportation system-expanded transit services and ASD options. As JTA helps the region with transportation system integration, JTA will ensure that its vision is incorporated into the below regional plans.

- **Regional Transit Action Plan 2016**: The Regional Transit Action Plan, initiated by the Northeast Florida Regional Transportation Commission, identifies best practices, strategies, and projects for developing a coordinated regional transit network to enhance mobility in the region.

- **Northeast Florida Coordinated Mobility Plan 2014**: Recognizing the need for increased transportation coordination in Northeast Florida to specifically address these issues, an alliance of public transportation providers, health and human services organizations, state and county officials, and members of the public—collectively known as the Northeast Florida Mobility Coalition—jointly developed this plan. This plan, which is consistent with FTA requirements, addresses the need for better coordination, education, and collaboration of delivering transportation services, specifically to serve the mobility needs of our region's transportation disadvantaged citizens. This plan is to be updated by the end of this year.

- **Transit Development Plan (2017 Annual Update) 2014-2024:** The Transit Development Plan (TDP) outlines strategic initiatives and services for a 10-year period. Both federal and state statutes mandate an up-to-date TDP with annual and five-year updates. The TDP 2017 Annual Update reflects JTA's role in enhancing public transportation options in Northeast Florida by working to increase ridership, improve connectivity, implement new services, and encourage integrated transportation and land use decisions, including bicycle and pedestrian safety enhancements, and public and private partnerships. The 2018 Annual Update will be submitted in August 2018. A major update is under development for 2019.

Also, please note that projects outlined in this plan have been and will be included in the 2040 and 2045 North Florida Transportation Planning Organization (TPO) Long Range Transportation Plan (LRTP). These projects will continue to advance in the Transportation Improvement Program (TIP) as needed and as funding is obtained. Additionally, as the TPO considers its update to the LRTP, specific consideration is being given to the impact of autonomous and connected vehicles and shared mobility options. As such, JTA will offer this MOVE Plan for consideration in the update of the LRTP.

6. Why is MOVE a JTA priority?

JTA is prioritizing MOVE for the following reasons:

- MOVE embodies movement and progress, reflecting the transportation industry's mission.
- MOVE helps customers in the region more easily travel to their destinations across all transportation modes.
- And, perhaps most importantly, "The better we MOVE, the greater we become."

> The FTA uses the term "**shared-use mobility**" to categorize transportation services that are "shared among users, including public transit; taxis and limos; bikesharing; carsharing (round-trip, one-way, and personal vehicle sharing); ridesharing (car-pooling, van-pooling); ridesourcing; scooter sharing; shuttle services; neighborhood jitneys; and commercial delivery vehicles providing flexible goods movement."

MOVE enhances a customer's experience and ability to use transit and shared-use mobility.

MOVE is discussed below in the following contexts that are key principles for JTA:

1. Meeting customer expectations
2. Leveraging emerging and disruptive technologies for improved public transportation
3. Improving mobility for customers with disabilities through universal design

A. Meeting Customer Expectations

Expectations of customers are changing. Today's customers have more options than ever before, and customers are becoming accustomed to free-service business models and connectivity. In other industries (thanks to the influence of telecommunications technologies) customers are able to:

- Track packages
- Access free media (e.g., news, movies)
- Purchase digital tickets
- Instantly share information with groups of friends on social media

JTA has made efforts to keep pace with these changing customer expectations through several technology initiatives:

- Free Wi-Fi on all JTA buses (during a hands-free commute)
- Mobile fare payment app
- Real-time arrival app
- Increased social media presence

Because of JTA's commitment to customer satisfaction, JTA maintains a strong social media presence. JTA's Communications and Marketing Department is dedicated to updating and monitoring JTA social media accounts 24 hours a day, 7 days a week. JTA goes beyond social media by having skilled staff to develop content for JTA's media needs including digital, written, and presentation for a variety of audiences. JTA also has a YouTube channel where original TV shows are released.

To continue responding to changing customer needs as JTA creates its MOVE transportation system, JTA will address the following determinants of customer experience:

- Rider-usability of ride-hailing/scheduling technologies
- Customer waiting
- Pricing
- Trip time

Being responsive to customers' needs and expectations requires that JTA works to integrate ITS into all MOVE transportation system projects. Ultimately, JTA plans to develop the Integrated Mobility App to meet the needs of general and paratransit customers. This app is discussed below.

i. Integrated Mobility App

The Integrated Mobility App will cost effectively tie together several currently disparate aspects of transportation use into one app to enhance the customer experience.

JTA is planning to introduce regional mobility management software that enables commuters to find the best transportation options for customers' distinctive trip needs using a browser or mobile app. This will provide customers with a single point of access for multi-modal planning and ticketing for regional and local travel which could include transit and paratransit services, ride sharing services, taxi services, and various other transportation alternatives. This app will cover every aspect of trip planning including booking, payment, cancellation, or verification of local or regional trip across various municipalities with different transportation agencies and providers. Additionally, users will be able to find local activities and points of interest, weather information, as well as bi-directional reporting of safety and security incidents. The system will feature expanded transportation options which include emerging transportation alternatives for Jacksonville and the Northeast Florida region such as bike and car sharing services, microtransit, commuter rail, regional express and paratransit services, and autonomous vehicles (AVs).

In the future, the app will incorporate a regional fare structure which will be produced from a Regional Fare Study to allow users to book a single trip that may incorporate different

transportation options. Implementing a common fare payment system for use on all transportation systems in the region provides enhanced customer experience, enhanced planning data on travel patterns, stimulated intermodal travel, and expanded opportunities to partner with non-transportation organizations. The app is expected to leverage JTA's TransPortal functions.

ii. TransPortal

TransPortal is a regional mobility management software that enables commuters to find the best transportation options for their distinctive trip needs. Northeast Florida's transportation providers share scheduling and dispatch software which is connected to a website and app with interface that prioritizes customers' ease of use. It currently provides a single point of access to plan and book regional and local multi-modal travel including paratransit services, taxi services, and non-profit transportation alternatives.

B. Leveraging Emerging and Disruptive Technologies in Public Transportation

Three technologies are disrupting the public transportation industry:

1. Ride-hailing services
2. AVs
3. Connected vehicle systems and smart corridors

However, these disruptors may be used to improve public transportation services and coordination, as long as they are appropriately applied in the public transportation landscape. In that context, these technologies are discussed below.

i. Ride-hailing Services

Ride-hailing services rely heavily on IT platforms that connect customers with independent drivers using a smartphone app. Ride-hailing services are used by traditional transit network companies (TNCs) such as Uber and Lyft, as well as microtransit services such as Chariot and Via (private multi-passenger transportation services that serve passengers using dynamically generated routes).

With ride-hailing's introduction and rapid expansion, many transportation agencies speculated that this new transportation mode would compete with traditional transit services. In May 2016, the Transportation Research Board (TRB) report, entitled "Shared Mobility and the Transformation of Public Transit," disseminated findings that ***ride-hailing services are actually a synergistic complement to transit***. These findings have prompted transportation agencies

and municipalities to experiment with ride-hailing pilot projects to address gaps in service areas and service spans.

Ride-hailing as a first- and last-mile solution could present several opportunities to increase productivity of the overall JTA system and enhance customer experience. These services can:

- Reduce need of bus routes in lower density areas
- Replace late night and early morning service
- Serve as a backup plan in case a bus is missed
- Extend JTA's current transit system

Select TNC companies, including Uber and Lyft, are now positioning bike-sharing alongside ride-hailing. Lyft has partnered with Baltimore Bike Share to create mobility hubs for bike and car share. Uber has also recently partnered with the bike share company Jump to offer bike share services in San Francisco. Uber's user interface allows customers to reserve a vehicle or bike, one of the functions that JTA anticipates for its MOVE transportation system.

ii. Autonomous Vehicles (AVs)

The U.S. Department of Transportation's National Highway Traffic Safety Administration (NHTSA) defines autonomous or "self-driving" vehicles as "those in which operation of the vehicle occurs without direct driver input to control the steering, acceleration, and braking and are designed so that the driver is not expected to constantly monitor the roadway while operating in self-driving mode." Although AVs used to be science fiction, they are now predicted to be implemented in the private vehicle industry by 2021.

AV technology benefits include reduced roadway accidents and better use of existing roadway capacity. Concerns that are being addressed by NHTSA and others include cybersecurity vulnerabilities and a lack of protection of personal geographic data. JTA recognizes the potential of AV technologies to disrupt the transportation industry and is choosing to be proactive and diligent in planning for AVs' inevitable appearance.

AVs are of particular interest for JTA's MOVE transportation system as AVs and ride-hailing can be combined.

The disruptive impacts of ride-hailing technology are already impacting the transportation industry, and disruptions caused by AV technology are fast approaching. Several companies including Uber, Lyft, and Waymo (formerly the Google self-driving car project) have announced plans to incorporate AVs with ride-hailing.

Combining AVs and ride-hailing has the potential to offer a service that provides cost savings and customer enhancements:

- Lower operating costs (drivers can be cross-trained)
- Higher capital utilization (breaks are not needed)
- Increased availability (24-hour a day service is possible)
- On demand booking (ride-hailing app)
- Mobile fare payment (smartphone app)

JTA does not expect to "compete" with private companies providing AV ride-hailing services to the public. It expects that it must find a way to coordinate these combined technologies for its customers through key partnerships or identifying niche markets.

iii. Connected Vehicle Systems & Smart Corridors

Connected Vehicle Systems

Connected vehicle (CV) systems are the ITS technologies that enable cars, buses, trucks, trains, roads and other infrastructure, and our smartphones and other devices to "connect" or "talk" to one another. According to a NHTSA study of connected vehicle technologies, these technologies have the potential to reduce up to 80% of crashes where drivers are not impaired, which would save a significant number of lives and prevent millions of crash-related injuries every year. For instance, a connected vehicle would allow a driver to receive alerts of hazardous situations much earlier, providing more time to react and prevent an accident.

The United States Department of Transportation (USDOT) is prioritizing the exploration and use of CV systems—vehicle-to-vehicle (V2V) and vehicle-to-infrastructure (V2I) applications—for purposes that include driver and passenger safety, congestion reduction, and improved goods movement. USDOT is currently supporting CV pilots in three U.S. sites (one of which is in Florida):

1. **Tampa-Hillsborough Expressway Authority Pilot:** Tampa-Hillsborough Expressway Authority (THEA) owns and operates the Selmon Reversible Express Lanes (REL), which is a first-of-its-kind facility to address urban congestion. The THEA pilot will deploy a variety of V2V and V2I applications to relieve congestion, reduce collisions, and prevent wrong way entry at the REL exit. THEA also plans to use CV technology to enhance pedestrian safety, speed bus operations and reduce conflicts between street cars, pedestrians and passenger cars at locations with high volumes of mixed traffic. To support this initiative, THEA will be working with their primary partners, The City of Tampa (COT), FDOT, and Hillsborough Area Regional Transit (HART) to create a region-wide Connected Vehicle Task Force.

2. **New York City (NYC) DOT Pilot:** The NYCDOT CV Pilot Deployment project area encompasses three distinct areas in the boroughs of Manhattan and Brooklyn. NYCDOT's planned deployment provides an ideal opportunity to evaluate connected vehicle technology and applications in tightly-spaced intersections typical in a dense urban transportation system. It aims to improve the safety of travelers and pedestrians in the city through the deployment of V2V and V2I connected vehicle technologies. As a city bustling with pedestrians, the pilot will also focus on reducing vehicle-pedestrian conflicts through in-vehicle pedestrian warnings and an additional V2I/I2V project component that will equip approximately 100 pedestrians with personal devices that assist them in safely crossing the street.

3. **Wyoming DOT Pilot:** Interstate 80 (I-80) in southern Wyoming is a major corridor for east/west freight movement and moves more than 32 million tons of freight per year. During winter seasons when wind speeds and wind gusts exceed 30 mph and 65 mph respectively, crash rates on I-80 have been found to be 3 to 5 times as high as summer crash rates. This resulted in 200 truck blowovers within 4 years and often led to road closures. WYDOT CV Pilot site focuses on the needs of the commercial vehicle operator in the State of Wyoming and will develop applications that use V2I and V2V connectivity to support a flexible range of services from advisories including roadside alerts, parking notifications and dynamic travel guidance.

JTA will follow the progress of these pilots and learn from their outcomes as it works on testing CV systems. CV system testing will occur in select "Smart Corridors" prior to the full-scale implementation of CV systems in the Jacksonville area and Northeast Florida. JTA's Smart Corridors are discussed below.

Smart Corridors

In conjunction with partners such as JEA, North Florida TPO, the City of Jacksonville, and Jacksonville Chamber Business Alliance, JTA is working to identify locations that can be developed into Smart Corridors.

In these corridors, JTA and its partners will evaluate how transportation is integrated with other public assets including urban infrastructure and services such as buildings, transportation, electrical and water distribution, and public safety. Smart Corridors will serve as testing grounds for many different smart transportation technologies (such as CV systems, AVs, and other intelligent transportation systems) and smart cities technologies for lighting, safety, pedestrian mobility such as smart streetlights, solar sidewalks.

The Smart Corridor concept aligns with the TPO's North Florida Smart Region Master Plan, which explores a regional vision for information technologies and communications, and JTA is actively engaged in the Smart Region Coalition, which has more than 30 stakeholders working together to transform Northeast Florida into a data-driven smart region.

A potential candidate for a JTA Smart Corridor is Bay Street. A Bay Street Smart Corridor would allow JTA to use the newest technologies to maximize the throughput of people, minimize the need for surface and structured parking thereby supporting development of the Shipyards and the proposed Sport Complex entertainment district.

The Florida Legislature is considering creating a new Smart Cities program and funding would be available to advance this type of project.

C. Improving Mobility for Customers with Disabilities through Universal Design

JTA's overarching vision is simply: **"Universal access to dynamic transportation solutions."** To ensure this concept is incorporated into JTA's MOVE transportation system, JTA must take a universal *design* approach. As defined by Easterseals Project Action Consulting, Universal Design (UD) extends the benefits of Americans with Disabilities Act (ADA) accessible design to all customers. The goal of UD is to make environments, products, and systems safer, healthier, and more usable—for everyone. UD addresses accessibility across the built environment, as well as on and in vehicles. JTA will use Easterseals Project Action Consulting recommendations as guidelines and will ensure vehicles are compliant with ADA when implementing MOVE.

Easterseals Project Action Consulting recommends the following when purchasing transit vehicles or adding new equipment:

- Install lifts and/or ramps on every vehicle. Avoid ramp slopes steeper than 1:12 wherever possible. Maximum ramp slopes should be 1:8 to make it easier for people to use them and improve safety.
- Investigate the use of smaller vehicles that can be operated effectively in suburban and urban areas and get closer to people's homes.
- Install automated bridge plates to eliminate the gaps between trains and boarding surfaces.
- Install onboard annunciators and variable message signs to announce upcoming stops and to reduce the burden on transit drivers.
- If installing automatic vehicle location equipment/software, also provide audible and visual real-time arrival time information to customers. Accessible web sites, mobile Internet, and automated phone systems are good choices.

With the implementation of emerging technologies, greater mobility opportunities can be offered to a wider range of JTA customers. For instance, the ADA community in particular will be able to enjoy greater mobility independence through flexible routes served by AV shuttles.

With these opportunities comes a greater need to ensure that new JTA services are universally accessible. In order to make this possible, JTA will need to explore new technologies that allow all individuals to:

- Request rides
- Safely secure mobility devices
- Track their trip through visual & audio media

In some cases, achieving universal access will require using new technologies and strategies will require new approaches. To reach JTA's vision of "universal access to dynamic transportation solutions," JTA will engage the ADA community to collaboratively and powerfully work toward universal accessibility.

7. Smartly-Integrated Initiatives: Region and Jacksonville Area

To ensure that customers throughout Northeast Florida have coordinated multi-modal transportation services, JTA's MOVE transportation system must work with partners to pragmatically coordinate intraagency and interagency services. It is JTA's perspective that the dynamic landscapes of transportation and technology have always required that JTA serves as a leader and community steward. JTA will work to make transfers smoother and feed the JTA system using three organizing principles:

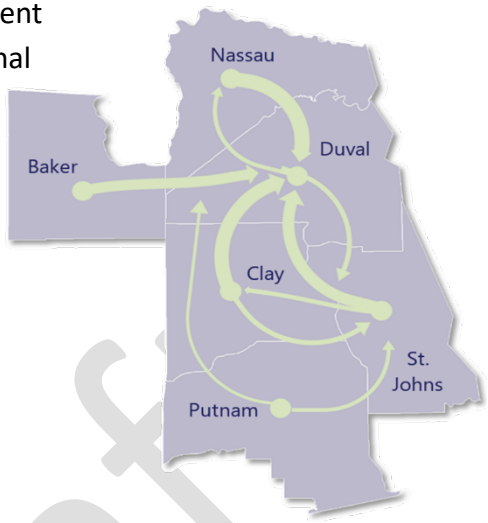
1. Seamless transition to and from other modes
2. Enhancement of JTA's high frequency network
3. Serving as a leader in regional mobility management

The below sub-sections review key initiatives and programs in Northeast Florida and the Jacksonville area that can contribute to JTA's MOVE transportation system.

A. Regional Initiatives

JTA is actively working to mitigate barriers to effective regional transit connectivity. JTA recognizes that many resources important to the region, such as healthcare, government, and legal services, are located in the Jacksonville area. For this reason, it is important to have a reliable regional (interagency) transit network that is well integrated with JTA transit and shared mobility transportation services.

Customers making interagency transit trips need timely, efficient connections between their service providers. However, regional customers who must make interagency trips (or are considering a trip outside their local service area) are faced with significant barriers that make their journeys long or inconvenient. Important steps already are being taken to improve the ways customers can use multiple transportation options.



Select regional initiatives and programs are discussed below.

i. Jacksonville Regional Transportation Center (JRTC) Project

Once fully constructed, the JRTC will be a regional multi-modal hub that connects the Automated Skyway Express (Skyway), First Coast Flyer, local bus, regional, and intercity bus, intercity rail, and future commuter rail. It will also serve as JTA's future administrative headquarters. JRTC will be the central physical place for connecting regional trips to Jacksonville area transit and shared mobility transportation services.

The JRTC will be equipped with advanced traveler information signs, Wi-Fi, ticket vending machines, as well as a strong customer service staff to ensure that customers are able to easily transfer between modes.

JRTC construction is currently in Phase II. Phase I, the Intercity Bus Terminal (IBT), is open and operational. Phase II construction will culminate in a bus transfer facility and administration building. The estimated completion date for Phase II is early 2020.

ii. Express Bus Initiatives

JTA is working with regional partners to develop interconnected express bus routes that expand regional transit service and nurture interagency cooperation, as most express trips will not begin or end at an express stop. Ensuring that transfers to other modes are as seamless as possible helps to attract and retain customers. JTA express services that are under development are discussed below.

> **Baker County:** Moving forward in supplying regional transit services, JTA will rebrand existing services to connect them to the culture of the First Coast Flyer, JTA's premium bus rapid transit (BRT) service, and its regional connectivity goals. One such service that will be rebranded is the Wildcat shuttle service that currently is funded by the JTA using 5307 funds and operated by the Baker County Council on Aging. The shuttle currently

transports commuters from Macclenny and Baldwin to destinations in the Jacksonville area.

Clay County: JTA has an interlocal agreement with Clay County in place through which the JTA manages 5307 and 5310 funds which fund the Clay Transit urban and rural routes and the urban Clay Commuter service.

Nassau County: JTA and the Nassau County Council on Aging have partnered to develop a premium express service that connects Yulee to Downtown Jacksonville during peak hours. JTA has developed an interlocal agreement similar in nature to its current interlocal agreement with Clay County. JTA has identified a portion of the population who routinely commute between Duval and Nassau County. JTA anticipates that it will take on the duties of transporting these commuters to and from the destinations across county lines. NassauTransit will maintain their internal service for commuters simply traveling within the county. JTA plans to contract these services out to a private transit provider with adequate experience and resources. JTA also plans to lease a smaller executive vehicle with various amenities including Wi-Fi access, electric connections, and spacious seating. A request for proposal (RFP) was developed outlining the requirements and responsibilities of the contracted party and we are currently working through the procurement process. JTA anticipates a service launch in December 2018. FDOT is providing all of the funding for the first three years. This service could possibly be expanded in the future to other locations and times and is contingent upon funding availability.

iii. Amtrak Relocation/Commuter Rail Initiatives

Rail is recognized for offering greater reliability and capacity than road-based bus transit. As Northeast Florida and its transportation system develop, passenger rail will likely play a larger role. As passenger rail services are developed it will be integrated into the MOVE transportation system.

An envisioned future Phase III of the JRTC could include a terminal for commuter rail service and moving the Amtrak terminal from North Jacksonville to the convention center, formerly Union Terminal. The relocation of the Amtrak station and development of a commuter rail service are a key theme to JTA's regional connectivity goals. The potential commuter rail lines run north to Yulee in Nassau County and southwest to Green Cove Springs in Clay County. The proposed initial line, southeast Commuter rail, would connect Downtown Jacksonville to St. Augustine along CSX and Florida East Coast (FEC) rail lines. Proposed station locations include the JRTC, the Avenues, Palencia, and St. Augustine. The station leading into Duval County from St. Johns County will include gateway features welcoming commuters into Jacksonville.

iv. Paratransit & Transportation Disadvantaged Services

JTA's paratransit and Transportation Disadvantaged (TD) services provided by Connexion are an important part of the JTA family of services. Connexion provides destination-to-destination public transportation for those with disabilities who are unable to use fixed-route bus services for some or all of their transportation needs and for those who are eligible to receive TD services. Paratransit services also include travel training to those who are paratransit eligible but want to use JTA bus services.

Paratransit services are offered for all those locations within ¾ mile of JTA fixed routes. The TD service is offered to areas outside the ¾ mile boundary for qualifying individuals. These services meet ADA requirements.

JTA is currently developing a pilot paratransit program with the Regional Transit Coordinating Committee (RTCC) which consists of representatives from Duval, Nassau, St. Johns, Putnam, Baker, and Clay Counties. The pilot goal is to more effectively use driver time during commuter medical trips from outside Duval County to University of Florida (UF) Health/Shands. Some counties have recorded windows of time over five hours between drop off and pickup from some of paratransit drivers. In order to make these services more cost efficient, JTA is coordinating with the RTCC to develop a paratransit pilot where if one agency has significant down time, they could use that idle time to pick up trips for other agencies involved in this partnership to optimize service. The pilot is still in the data collection mode, and feedback from the partnering agencies is being collected and processed.

B. Jacksonville Area Initiatives

Today, JTA has an effectively operating Jacksonville area transit network. Much of this system, especially the higher-frequency bus service, will be carried forward and integrated into the MOVE transportation system. Routes used by customers less frequently may be replaced with new technology enabled modes (e.g. ride-hailing, microtransit).

JTA staff continues to participate in the update of the City Mobility Plan. The update of the plan will result in revisions to the allocation of funding resulting from Mobility Fee payments. JTA is working to ensure transportation projects, as well as complete street-projects are properly reflected in the plan. The Committee, established by the City of Jacksonville (COJ) to update the

plan, has indicated a desire for bike and pedestrian projects. JTA staff presented its overall project priorities in June 2017 and continues to work with COJ staff to support the plan update. JTA staff also met with the COJ Planning Department staff on the Comprehensive Plan update. JTA staff is exploring policy language to encourage TOD, autonomous transportation, ASD methods and smart city/smart corridor technologies.

The following four Jacksonville area initiatives are discussed in the subsections below:

- High-Frequency Network
- First Coast Flyer Bus Rapid Transit Projects
- Ultimate Urban Circulator (U^2C) Program
- St. Johns River Ferry

i. High-Frequency Network

JTA's high-capacity buses are able to offer transportation at a low-cost. A high-capacity, low-cost bus network paired with flexible mobility solutions to bridge the first- and last-mile is ideal for longer intercity trips when compared to private for-hire services. Thus, JTA's high frequency bus network shapes the backbone of its MOVE transportation system.

Higher frequency trips with limited bus stops will be become even more valuable as JTA's mobility ecosystem becomes more integrated. JTA will leverage AV and shared-use mobility that strengthen and interconnect with its transit network. It does not go unnoticed by JTA that an effective transit network will always have less productive elements; yet, finding ways to integrate them with one another can improve the overall transit network.

When JTA implemented the Route Optimization Initiative in 2014, it created a network of service operating at least every 20 minutes, 6 A.M. to 6 P.M., morning and evening peaks and all times in between. Frequent network corridors were established by determining the most popular areas and focusing service on these corridors. Many of the routes eventually were introduced as BRT service, but the full buildout of the high frequency network meant an additional 55 miles through Jacksonville. The service runs during all normal JTA operating hours (4:30 A.M. to 1 A.M.). The locations of the additional corridors are:

- Main Street (via Route 1)
- Dunn Avenue (through overlapping Route 1 and 3 service)
- Moncrief Road (Route 3)
- Commonwealth (added to the network in 2016, service via Routes 13 and 53)
- Normandy Boulevard (Routes 14 and 15)
- Cassat Avenue (Routes 51 and 53)
- 103rd Street (Routes 5 and 53)

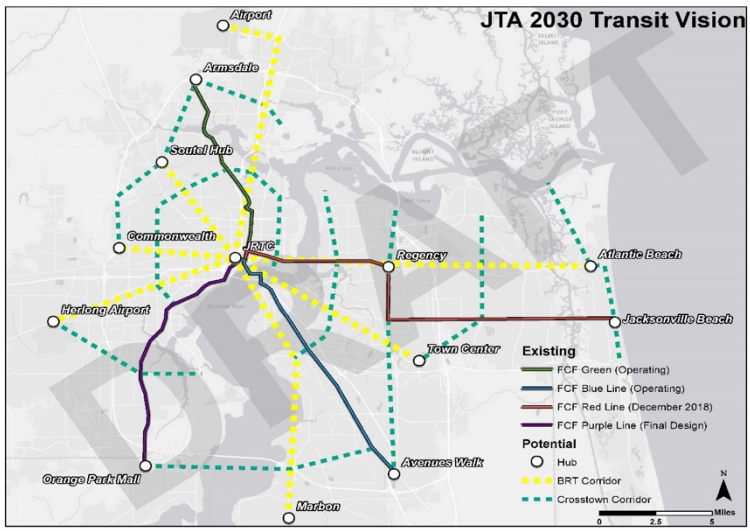
- University Boulevard (Route 50 throughout and Route 19 in Arlington only)
- Additional portions of Beach Boulevard (Route 8)

Together with the BRT, the above routes create a substantial network of service throughout Jacksonville where customers can be confident of reduced wait times.

ii. First Coast Flyer Bus Rapid Transit (BRT) Projects

JTA's core bus service is its BRT service called the First Coast Flyer. The First Coast Flyer helps commuters easily get around town with a reliable, frequent service with limited stops along routes. The First Coast Flyer is a network of 57 miles of BRT service, making it the largest system in the Southeast, once complete. In JTA's MOVE transportation system, customers will be able to easily coordinate first- and last-mile services to reach the nearest BRT station. BRT is valuable to customers because it covers relatively long distances and a low-cost by leveraging high capacity vehicles.

First Coast Flyer service runs every 10 to 15 minutes during weekday peak and midday hours, with less frequent service on late nights and weekends, making this JTA's most frequent bus service. First Coast Flyer service makes limited stops, up to two miles apart.



Two lines (Green Line and Blue Line) of the First Coast Flyer are in service. The Green Line provides services along Boulevard and Lem Turner and the Blue Line along Philips Highway. The Downtown Transit Enhancements will radiate in different directions from the JTA's main hub at the JRTC and connects the four corridors. The Downtown Transit Enhancements are substantially complete with the exception of Riverplace and Kings Avenue Station area, which are pending completion of the COJ and FDOT Projects. The current main hub is the Rosa Parks Transit Station.

Two more First Coast Flyer lines are set to launch between 2018 and 2020. JTA recently secured a $16.9 million Capital Investment Grant from the FTA for the development of the JTA First Coast Flyer BRT East Corridor line (Red Line)—the longest line of the entire BRT program. In

December 2018, JTA will begin operation of the Red Line. This 18.5-mile route will mean that high-frequency service will extend from the Rosa Parks Transit Station to Beach Boulevard east of Kernan Road to Jacksonville Beach. The project scope includes traffic signal priority at 32 intersections, real-time bus arrival information at stations, and procurement of 40-foot Compressed Natural Gas (CNG) buses.

In 2020, the JTA plans to complete its First Coast Flyer program with service to southwest Jacksonville. Initial project design includes traffic signal priority at 24 intersections, real-time bus arrival information at stations, three bus-bypass lanes, and the procurement of additional 40-foot CNG buses. The project should receive federal funding in Federal Fiscal Year 2020.

iii. Ultimate Urban Circulator (U^2C) Program

The U^2C Program is replacing the Skyway as the vehicles on the Skyway are no longer supported by the original manufacturer and require increased maintenance costs.

Serving as a circulator in the urban core, the U^2C will leverage several emerging technologies that will be tested in the Smart Corridors. This service will connect to the Jacksonville area transit network and the regional network through the JRTC. It will offer downtown visitors and residents an increased level of mobility. It will also connect with the ASD initiatives (see "Alternative Service Delivery Initiatives" section).

At a foundational level, the U^2C Program couples Skyway modernization with a large shared-use mobility AV deployment. To prepare for the U^2C Program's full-scale roll-out of AVs, JTA has been deploying and testing AVs at its "Test and Learn" AV Test Track. At the Test and Learn, JTA is testing eight categories of AV deployment that would be needed to make the U^2C Program a reality and learning from AV deployment in a small scale on select roads, as allowed by Florida law. AV testing and risk assessments for the U^2C Project provides JTA with "quick wins" and tangible knowledge that can be built upon and shared internationally.

For the U^{2}C Program, JTA's eight AV testing domains are:

1. Human Interaction
2. Universal Access
3. Acceleration/Deceleration
4. Obstacle Navigation
5. Safety
6. Connected Vehicle Communications
7. Reliability
8. Cybersecurity

The U^{2}C Program will produce vast amounts of data from a variety of sources such as JTA's enterprise resource planning systems, JTA customers, Operations and Maintenance staff, AV systems and sensors, as well numerous Internet of Things (IoT) devices integrated into COJ infrastructure. In order to efficiently manage data at what is currently an unknown scale, it will be necessary to develop sophisticated software systems utilizing cloud computing and storage capabilities in a completely isolated data environment. Because JTA is becoming more technologically-focused and expanding its private sector partnerships, JTA will need appropriate staff and skill sets to produce data integration solutions that will allow for the safe and efficient exchange of data between the U^{2}C environment and the JTA corporate network. The influx of new data will provide data analytics opportunities to help JTA understand ridership patterns and improve service. This will require the addition of business intelligence staff to create and maintain data lakes, data warehouses, and the accompanying desired analytic solutions.

Because the U^{2}C Program also requires construction, JTA has undertaken several studies to determine the appropriate technology replacement for the existing Skyway elevated guideway system. A structural assessment has been conducted to determine key issues and costs associated with converting the existing elevated structure to accommodate AVs. This includes the removal of the guidebeam, creation of a smooth-running surface, and the addition of smart infrastructure components. The existing walls are being evaluated for crashworthiness and a plan will be developed to allow level boarding at the station platforms. JTA is exploring different project delivery strategies including the potential for public private partnerships. JTA and FDOT are conducting the Transit Concepts and Alternatives Review (TCAR) study that will advance system and operational planning, positioning the U^{2}C Program for state and federal funding. With support from FDOT, JTA plans to engage in a TCAR study for system expansion. With

support from FDOT, JTA plans to engage in a TCAR study for system expansion. It is anticipated that expansion of the U^2C Program (not including the river crossing) will require an Environmental Assessment.

Upgrading the Skyway to accommodate AVs that will operate in a public setting will be a multi-year process and extensions to the current elevated structure will be added at street-level for AV transportation service, including AV-dependent ASD services. JTA will pursue a timeline that properly addresses safety while keeping up with emerging technologies.

iv. St. Johns River Ferry

In March 2016, the JTA became the operator of the St. Johns River Ferry. The ferry has operated continuously since 1874, first as a private service and then managed and operated by the COJ and the FDOT since 1948.

Located approximately 2.5 miles inland of the mouth of the St. Johns River, this car and passenger vessel operates daily to provide a connection between the north and south ends of Florida State Road A1A in Duval County via a 0.9-mile voyage across the St. Johns River linking historic Mayport Village and Fort George Island. The ferry offers the quickest and shortest route from the Jacksonville Beaches communities to the various islands north of the river. The ferry also functions as a destination in itself for residents wishing to enjoy the natural beauty of the area. It is a designated and vital link of the East Coast Greenway which runs from Maine to Key West, Florida.

Currently, JTA has a single vessel: the Jean Ribault. JTA will explore the cost feasibility of adding an additional vessel. The advantage of such an operation is that a backup vessel is available during periods of maintenance on the primary vessel or as an overflow for times when the ferry operates near capacity (on many weekends during spring and summer months).

JTA continues its efforts to improve the St. Johns River Ferry. Through funding received from the FTA's Passenger Ferry Grant Program, JTA has developed a three-phase approach in completing capital improvements at both ferry terminals. Phases 1 and 2, which included complete replacement of the existing slip wall system with turning dolphins, have been completed. JTA will soon commence with Phase 3 activities that include terminal bridge replacements, bulkhead rehabilitation, stopping dolphin installation, and high security fence replacements.

Through recent coordination and partnership efforts, JTA was recently awarded a five-year grant through the Federal Highway Administration's (FHWA's) Ferry Boat funding program. These funds will be used to continue capital, security, and facilities improvements at both terminals.

8. Alternative Service Delivery (ASD) Initiatives

The below initiatives are part of the innovative and ASD options that JTA is examining as part of the MOVE transportation system vision for Jacksonville area's transportation network. These initiatives are to provide customers necessary niche services and improved services options that can be used separately or in conjunction with other transportation services that are also part of JTA's MOVE transportation system.

Most of the ASD initiatives described below are microtransit services, as they may provide the greatest benefit to transportation as these services provide transit-like service but on a smaller, more flexible scale. Microtransit services are generally private multi-passenger transportation services that serve passengers using dynamically generated routes.

Key ASD initiatives are:

- Low-speed Microtransit Projects
- Taxi Pilots
- Beachside Buggies Sponsorship
- Transportation Network Company Partnerships
- Car Share
- Bike Share
- Health Access Initiatives

The current and near-future projects and plans for these initiatives are described in the subsections below.

A. Low-speed Electric Microtransit Projects

For environmental and energy conservation purposes, JTA is exploring the use of two types of low-speed electric vehicles for its microtransit initiatives: microshuttles and buses.

i. Low-speed AV Microshuttles

JTA currently has an RFP advertised to explore the use of AV microshuttle services to bridge the first- and last-mile by connecting riders to the First Coast Flyer BRT, the U^2C Program, Mobility Hubs, and other MOVE services.

In part, JTA anticipates that it will assess the use of electric low-speed AV microshuttles that seat 12-15 passengers, as microshuttles show promise in serving trips that are two miles or less in high-density neighborhoods. Additional electric low-speed microshuttle benefits include:

- **Battery power operation.** Electric low-speed microshuttles do not emit greenhouse gases while in operation (though there are emissions related to their power source, manufacture, and disposal).
- **Reduction in parking needs.** By providing first- and last-mile connectivity, microshuttles can reduce single occupancy vehicle travel and decrease reliance on parking.
- **Increased connected vehicle applications.** Microshuttles can provide signal phase and timing information, signal priority, and eco-adaptive networks of traffic signals.

Federal regulations specify that low-speed microshuttles must do the following:

- Operate only on roads that are posted 35 miles per hour or less
- Travel at speeds no faster than 25 miles per hour
- Weigh 3,000 pounds or less with passengers
- Follow low-speed vehicles safety requirements

All vehicles operating in a public setting—including microshuttles—must also follow federal ADA requirements. Ensuring public safety for microshuttle operations is a critical focus of JTA. Once JTA completes testing, it will develop microtransit services for focused geographic areas. These services use algorithms to reroute trips in real-time to maximize service efficiency. Customers will be able to use smartphones and other digital communications channels to book rides minutes before being picked up.

Testing of the electric low-speed AV microshuttles may take up to one year.

ii. Electric buses

JTA sees electric buses as the next step in its transition to a sustainable, clean fuel fleet. JTA was awarded a $1 million grant from the FTA which is part of the FTA's Low or No (Low-No) Emission Bus Discretionary Grant to further JTA's commitment to establish a green fleet. JTA is using this grant is to fund the implementation of electric buses and solar powered charging stations in Northeast Florida by initiating an electric bus program including associated infrastructure.

JTA will utilize the JEA's Solar Smart Program to power the charging stations for the electric buses. This service includes a shuttle to the new Amazon Distribution Facility that employs

over 1,500 residents of Northeast Florida. In addition, JTA will install the charging stations at its campus in Downtown Jacksonville, including vehicle maintenance and service.

B. Taxi Pilots

JTA is experimenting with taxi-based alternative service models. Specifically, taxis have been deployed in the Mandarin area in place of its under-utilized community shuttle service. Significant savings have been experienced in large part due to the fact that the taxis are not extensively utilized. Under the program, JTA provides up to an $8 subsidy, and the customer pays a $2 fare.

JTA expanded the taxi pilot to provide mobility service to seniors in the Hogan Road/Beach Boulevard area who have limited ability to utilize the high-frequency fixed-route service on the corridor due to accessibility issues and recently lost a major grocery store that they use routinely. JTA is introducing this service as a more affordable option in lieu of having seniors who are paratransit-eligible use a higher-cost mode of paratransit. The taxi pilot helps the seniors and JTA saves money. Under this scenario, the taxi pilot is adding access as opposed to mitigating the impact of lost service.

C. Beachside Buggies: A Service Sponsored by JTA

Another innovative approach involves sponsorship of a microtransit service in the Beaches Communities. Beachside Buggies is an app-based, on-demand service that uses golf carts. It is funded through business sponsorships and advertisements. The service better addresses the demand in the area and has the flexibility to operate on streets that are not easily accessible or practical for a larger trolley bus to provide reliable service.

JTA's sponsorship allows Beachside Buggies to provide a wheelchair accessible cart. Additionally, service is provided year-round, instead of seasonally. The ridership averages approximately 5,000 trips per month. However, trips are not currently counted in NTD ridership data, although informal guidance from the FTA indicates these rides may be counted.

This service is an effective service in a niche market. JTA's costs are fixed, and the per trip cost to JTA is extremely low compared to trolley service which was ineffective in the area. The service is extremely popular, and JTA's support of the service is well recognized in the community.

D. Transportation Network Company (TNC) Partnerships

TNCs such as Uber and Lyft were the first to introduce ride-hailing on a national scale. Ride-hailing services rely heavily on IT platforms that connect customers with independent drivers using a smartphone app. Drivers provide the trip using their personal vehicle, and drivers are paid for time and distance covered during the trip as metered within the app.

With ride-hailing's introduction and rapid expansion, many transportation agencies speculated that this new transportation mode would compete with traditional transit services. In May 2016, the TRB's report, entitled "Shared Mobility and the Transformation of Public Transit," disseminated findings that ride-hailing services are actually a synergistic complement to transit. JTA will be incorporating ride-hailing services, including those provided by select TNCs, into its MOVE transportation system, as an extender of JTA's current transit system.

Ride hailing as a first- and last-mile solution could present several opportunities to increase productivity of the overall JTA system and enhance customer experience. These services can:

- Reduce need of bus routes in lower density areas
- Replace late night and early morning service
- Serve as a backup plan in case a bus is missed

In addition to ride-hailing, some TNC companies, including Uber and Lyft, have entered into the bike share market. Lyft has partnered with Baltimore Bike Share to create mobility hubs for bike and car share. Uber has also recently partnered with the bike share company Jump to offer bike share services in San Francisco. Uber's user interface allows customers to reserve a vehicle or bike, one of the functions that JTA anticipates its MOVE transportation system.

E. Bike Share

JTA is currently developing an RFP in conjunction with the COJ for a bike share program for the Jacksonville area. The market opportunity for bicycle sharing in the Jacksonville area is significant with the progression of multimodal transportation alternatives. With this in mind, JTA considers a bicycle sharing system as an environmentally-friendly and congestion-reducing alternative transportation option for commuters, citizens, and visitors who live in or travel to the Jacksonville area.

Adding a bike sharing program in the community will support JTA's effort to enhance connectivity to various public and private sector transportation options. Skyway stations and the future site of the JRTC are prime locations for docking stations or bike racks for the bike share system. Also, a bike sharing program would offer increased mobility and connectivity in several key communities. JTA plans to establish a mobility network where bike sharing, car sharing, ride hailing services like Uber and Lyft, and public transportation are all viable options and easily accessible for residents.

F. Car Share

Car sharing is a shared mobility option that is similar to traditional car rental services but is geared towards shorter commute times/distances because most car share programs bill users based on distance traveled and length of use. Car sharing is another option to improve the first and last connection to transit.

Car share programs typically have liability insurance coverage included in their rates. Another convenience for users with car sharing programs is the 24-hour accessibility of vehicles which traditional car rentals are limited to their business hours. Lastly, car share vehicles are traditionally parked in dedicated parking spaces in areas that could be located using a user's computer or cellphone. JTA is exploring car share as a future mobility option.

G. Health Access Initiatives

JTA's health access initiatives are creating public private partnerships within the Jacksonville area's healthcare community for the purposes of improving health outcomes, community health, and access to care through transportation. Currently, JTA is developing two health access initiatives that complement one another.

The two health access initiatives are:

1. **Rides-to-Wellness Initiative:** A partnership with University of Florida Health (UF Health) Health System to link JTA paratransit trip scheduling software with the UF Health medical scheduling software to better provide transportation for medical trips.

2. **Care Coordination Neighborhood Transportation Program:** A partnership with CommunityHealth IT (Northeast Florida's community-based Health Information Exchange) and the Florida Community Health Worker (CHW) Coalition to improve community health with greater access to care through transportation by trained CHWs.

These initiatives are described below.

i. Rides-to-Wellness

Rides-to-Wellness is an initiative with FTA funding to JTA in partnership with UF Health and Cambridge Systematics. It will address the increased need for access to care with the goal of improving health outcomes and reducing healthcare costs. This program will sync UF Health's medical scheduling software, powered by Epic, with JTA's Transportal software. The software will be available to medical professionals who will now be able to schedule appointments and transportation for their patients simultaneously. During the project, this software will only be available to Duval County residents. However, the initiative, if successful, can be applied to the region and to other public transportation systems though out the country.

The project will be implemented at up to eight UF Health clinics located in or near Health Zone 1, where clinics with some of the highest no-show rates are located. UF Health and Cambridge Systematics are working out an agreement so that contracting with JTA can be simplified and the project implementation streamlined. An opportunity for cost savings was identified with JTA's outreach team assisting with the patient surveys at the targeted clinics throughout the project. JTA researched and was able to fund, through the grant, free ride passes to patients at UF Health using the services during the test period up to $30,000.

ii. Care Coordination Neighborhood Transportation Program

JTA is partnering with two key non-profit organizations: CommunityHealth IT at Kennedy Space Center and the Florida Community Health Worker (CHW) Coalition to develop and implement the Care Coordination Neighborhood Transportation Program. This program addresses healthcare equity issues, while developing a new type of hybrid healthcare and transportation workforce for the improvement of community health and access to care.

CommunityHealth IT, which houses a community-based Health Information Exchange (MyHealthStory) available throughout Florida, already works closely with the Florida CHW Coalition to establish what it calls "Care Coordination Neighborhoods" in Florida communities. The Care Coordination Neighborhood provides a MOVE health network for vulnerable and hard-to-reach populations by mobilizing safety net healthcare facilities, behavioral health and substance abuse centers, faith-based organizations, and social service organizations to improve community health—meeting one resident's needs at a time. For instance, the Mental Health Resource Center, which provides inpatient medical and administrative services for UF Health Jacksonville Adult Psychiatric Inpatient Program and outpatient behavioral health services for the Jacksonville area, is a key partner of CommunityHealth IT and the Jacksonville community.

A common issue in the Care Coordination Neighborhood is transportation. Residents often need or want the CHW to transport them to healthcare visits, pharmacies, or health education services since the CHW attends the healthcare/pharmacy visit and health education service WITH the resident**.**

CHWs will become 1490-compliant (transportation safety protocols) and will either provide or coordinate trips to residents who meet TD eligibility requirements as specified by JTA's Community Transportation Coordinator (CTC) Connexion. This will improve access to health resources and opportunities for TD populations: particularly those who are non-motorists and have complex chronic medical conditions (e.g., diabetes), behavioral health issues, or limited access to healthcare.

CHWs will be able to help patients with preparing for medical visits during the trip to the providers office, if the patient chooses. After an office visit, patients can better retain their treatment information and can improve medication compliance by discussing their office visit with a CHW in the vehicle. This reduces the burden on providers by supporting patients in actively managing their health conditions where patients live, play, work, and worship.

What is a CHW?

A CHW (sometimes called a *Promotora de salud*) is a frontline health worker, recognized by the US Department of Labor, who is a trusted member of or has an unusually close understanding of the community served. This trusted relationship enables the CHW to facilitate access to healthcare and social services and to improve the quality and cultural competence of service delivery.

The MyHealthStory Health Information Exchange, powered by eTransX, helps patients and CHWs capture information about social determinants of health, special transportation needs, insurance specifics that affect transportation usage, and trip information. MyHealthStory's secure messaging and texting functions also help patients, CHWs, and health organizations coordinate trips in real-time. This Health Information Exchange was recently awarded an RFP by Florida's Agency for Health Care Administration (AHCA) to advance Florida Health Information Exchange and will be expanding throughout the State of Florida. CommunityHealth IT is endorsed by Enterprise Florida, the State of Florida's principal economic development organization that is a public-private partnership between Florida's business and government leaders. CommunityHealth IT's leadership are trusted advisors for several federal agencies, including the U.S. Department of

Health and Human Services and the Office of the National Coordinator for Health Information Technology, as well as the White House's Office of American Innovation.

An added benefit of this program is that it will help JTA learn lessons needed to develop additional shared-use mobility rideshare programs.

9. Infrastructure Investments

Beyond the information technology systems, emerging technologies, and new transportation service models, MOVE transportation systems will require investments in infrastructure. This section discusses critical near-term investments that JTA will make to prepare for a connected future.

A. Dedicated and Shared/Smart Lanes

Shared/Smart lanes will enable the MOVE transportation system to better utilize existing infrastructure by moving more people in a given lane by incentivizing the use of transportation modes other than personal automobiles. JTA exploring shared/smart lanes as a concept in the Bay Street Innovation Corridor which would combine key elements of the U^2C and the TPO's Smart Region Plan. Similar to carpool lanes, smart lanes would be located in high traffic areas and allow priority use by specific vehicle types such as transit and ride-hail vehicles. Additionally, JTA is exploring the use of dedicated lanes for AVs. The concepts are not exclusive, and a smart lane could also be an AV shared lane.

JTA has already invested in dedicated bus lanes for segments of the First Coast Flyer BRT routes. These infrastructure investments provide seamless and frequent travel for the BRT bus fleet and regular bus service and has signal priority for BRT buses. Personal automobiles turning right during peak hours may use the curbside bus lane, as well as bicyclists.

B. Complete Streets

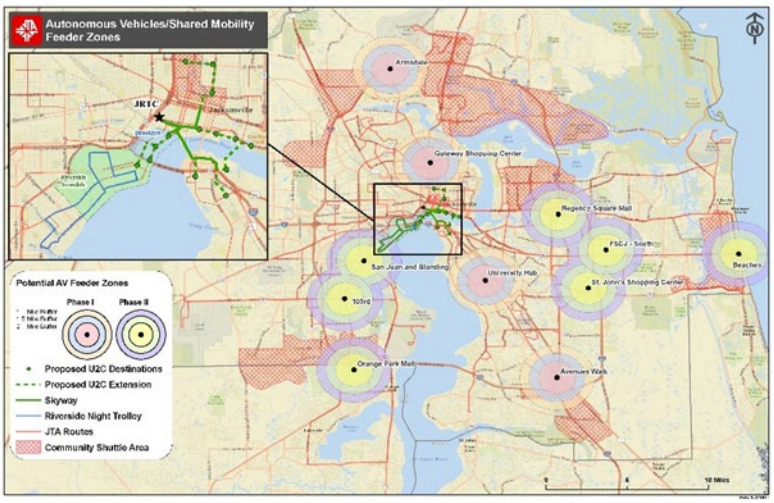
JTA is at the forefront of being inclusive to pedestrian, bicyclist, and transit in design framework by being one of the few transportation agencies in North America with a Complete Streets Program. JTA developed a complete streets infrastructure enhancement initiative to address first- and last-mile issues and complement the 2014 Route Optimization Initiative. The Route Optimization Initiative was a complete transit system redesign that focused on higher frequency and direct service to key corridors. The Complete Streets initiative made pedestrian, bicycle, and transit infrastructure the central focus of transportation design, instead of the traditional focus—the personal automobile. By acknowledging transportation access as a central program, this initiative seeks to incorporate a range of transformative design

enhancements and safety countermeasures that seek to vastly improve the quality of the walking experience for JTA's customers.

C. Mobility Hubs

As JTA develops U²C and explores the potential for various first- and last-mile, neighborhood circulator, and feeder services, it is important to consider how these services might be integrated into the overall system. As part of JTA's MOVE transportation system, the "Mobility Hubs" concept is an intriguing opportunity.

The Mobility Hub concept seeks to integrate shared-use mobility options including ride-share, car share, bike share, and microtransit feeder networks with JTA's foundational transit services. To be effective, these transportation options need to be strategically located to interconnect with JTA's current fixed-route transit system, especially in high-frequency corridors. This includes areas with greater population density and a concentration of shorter transit trips, bike- and pedestrian-friendly infrastructure, and a street network that can support smaller low-speed vehicles. The low-speed vehicle environment supports the introduction of AVs operations in mixed traffic.



Areas that JTA is exploring for shared mobility microtransit pilots include the Town Center and University of North Florida, Downtown/Brooklyn, Edward Waters College, Riverside-Avondale, San Marco (tied to the Kings Avenue Station Mobility Hub), and business parks. Opportunities for public-private partnerships and sponsorships to support service will be explored in these areas.

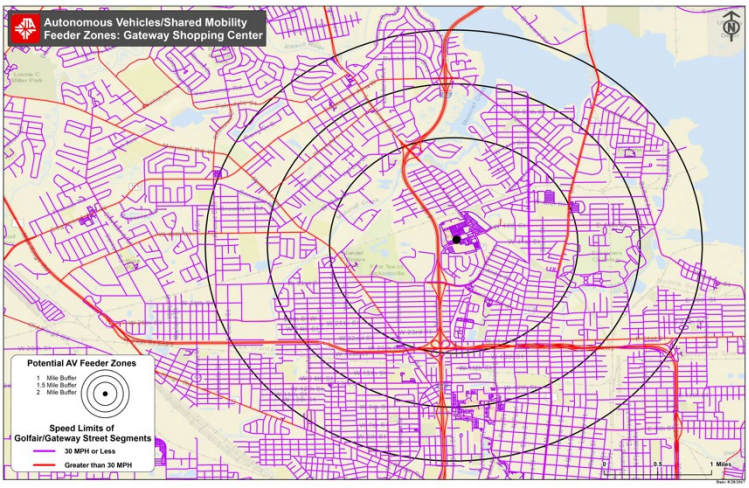
First Coast Flyer routes are being examined for the potential of establishing mobility hubs and developing future AV feeder zones. Of note is the fact that the U²C represents the core circulator and last-mile connector for the First Coast Flyer network in the Downtown area. Additionally, there are four strategically located facilities (existing, in development, or planned) along the Green Line and Blue Line.

- The **Armsdale Park-n-Ride** is on the Northern terminus of the Green Line. In addition to the parking area, the site includes a building with restrooms and waiting are, development area, storage, and maintenance space.

- The **Golfair Property** is just south of the existing Gateway Shopping Center and is envisioned as a joint use development opportunity and future BRT Hub.
- The **University Boulevard Transit Hub** is in the process of being acquired and will serve as a hub for several routes running on University Boulevard and Philips Highway. The site includes land for potential joint use development.
- The **Avenues Walk Park-n-Ride** is on the Southern end of the Blue Line and located within a mixed-use development and site of a future commuter rail stop.

In addition to these sites, the current Skyway Stations and future U²C represent unique opportunities to deploy mobility hubs in the near-term. The JRTC and Rosa Parks Skyway Station should be explored. The Rosa Parks Station will be repurposed after the JRTC opens, and this site could become a redevelopment opportunity that can integrate the mobility hub concept. Also, the Kings Avenue Station area may be a desirable location for a mobility hub with the Downtown Transit Enhancements that are estimated to be made following completion of the FDOT Overland Bridge project. The Skyway/bus station currently utilizes a walkway to connect to an established detached parking garage.

In evaluating the sites, JTA looked at the concentration of trips under two miles and speed limits in the areas to determine the feasibility of low speed shuttles as feeders. This analysis showed concentrations of shorter trips in the Jacksonville "urban core" around the Skyway/U²C as well as the Gateway/Golfair area. These areas also have a good network of low-speed streets that are well connected and can accommodate low speed transit shuttles. With this in mind, the Golfair/Gateway area appears to be a good location to explore the potential for a microtransit pilot. However, in advance of the development of the First Coast Flyer Hub at Golfair, the potential for a mobility hub may be limited. The Kings Avenue Station area is well suited for both microtransit as well as a shared mobility hub given the connection with the U²C Program, low-speed street network, existing higher density and mixed-use development, and concentration of shorter trips.



D. Transit-oriented Development (TOD)

TOD is traditionally known as the creation of compact, walkable, pedestrian-oriented, mixed-use community development centered around or connected to rail. JTA has modified the TOD concept to create transportation-centric development around other forms of public transportation (e.g., BRT, U^2C Program services). JTA plans to drive and support growth in the Jacksonville area using TOD by aligning its TOD strategy and implementation guidance with the FTA's mission to improve public transportation by integrating land use and transportation planning with a transit capital investment.

JTA's TOD overarching goals are to:

- Strengthen Local Economy
- Create Sustainable Communities
- Improve Public Health

Potential TOD benefits include:

- Reduce traffic congestion, travel time, and vehicle dependency
- Create jobs and attract skilled talent
- Improve customer satisfaction
- Increase fare box returns
- Reduce air pollutions and emissions
- Foster walkable neighborhood for live, work and play communities to accommodate active lifestyles
- Increase availability and connectivity to public service and health facilities
- Promote mixed-income communities, reducing concentrated low-income neighborhoods

JTA aims to maximize TOD potential around the First Coast Flyer Southwest Line transit corridor. JTA is reviewing the potential of TOD in the following locations:

- Urban Land Institute (ULI) Technical Assistance Panel (TAP) – Review of SW BRT corridor
- ULI National Panel – Evaluation of U^2C and Downtown Core for TOD
- JRTC and LaVilla Redevelopment Area
- Rosa Parks Station Repurposing
- Joint Use of University Hub station on SE BRT
- Golfair Redevelopment

JTA is currently working with public and private partners to evaluate national and local best practices for successful TODs, including economic and regulatory components of TODs. A TAP with the ULI for the Southwest First Coast Flyer was held on January 30 and 31, 2018. The panel consisted of seven subject matter experts from across the United States and Canada. The panel

visited two sites, San Juan Avenue and Collins Road, gathered additional information, developed recommendations, and then, presented their findings to the Executive Leadership Team. A report of the findings was completed April 2018. The key findings are outlined below.

- Collins Road Station
  - Implement baseline improvements for now
  - Some sites may be candidates for redevelopment in the future
  - Address multimodal challenges
  - Add an AV shuttle pilot program

- San Juan Avenue Station
  - Create a destination oriented transformative commercial hub at Roosevelt Boulevard
  - Relocate the San Juan Avenue BRT station from Blanding to Roosevelt
  - Focus on commercial redevelopment first
  - Create a public multimodal activity center that maximizes first- and last-mile connectivity
  - Amend the Future Land Use Map to accommodate higher densities

- Best Practices
  - Develop a working group to engage stakeholders
  - Create a TOD overlay district
  - Develop a loan program for building facade enhancements
  - Implement a streetscape project
  - Initiate a parking capacity study
  - Review TOD practices around the country
  - Create a strong communications plan to educate constituents

- Financing
  - Prepare a comprehensive package for developers
  - Engage the current owner of Roosevelt Mall
  - Consider a Tax Increment Financing (TIF) district for San Juan
  - Evaluate Community Redevelopment Area qualification potential or other taxing credit programs
  - Coordinate with other agencies for potential economic study and grant funding
  - Explore environmental sustainability grants
  - Seed early projects
  - Conduct an economic analysis of market requirements
  - Explore joint development agreements

- Complete Streets/Complete Mobility
  - Incorporate Complete Streets design at the Collins Road and San Juan Avenue (Blanding and Roosevelt intersections) stations
  - Consider a road diet for San Juan Avenue
  - Engage the private sector
  - Use a context-sensitive approach to each site, corridor and all modes
  - Go beyond Complete Streets to Complete Mobility

- Integration of Workforce and Market Rate Housing in TOD
  - Market rate multifamily potential is long-term
  - Workforce housing will require subsidies
  - Consider acquiring properties for future development
  - Evaluate TOD case experience in other cities

10. Fleet Investment

Currently, JTA operates a fleet of 190 active vehicles for fixed-route and community shuttle services and 97 vehicles for paratransit services. Since 2015, JTA has reduced 5,000,000kg in CO_2 emissions. In that same baseline year, JTA began to integrate vehicles with CNG—an alternative fuel source—because the use of CNG vehicles supports regional clean air mandates and reduces JTA's dependence on imported oil.

JTA will procure an estimate of 15 CNG buses per year over a five-year period. JTA will have 88 CNG buses by the end of 2018.

JTA has developed CNG facilities as part of its alternative fuel initiative. JTA has included a fueling station, maintenance facilities modifications, and full public access to the CNG fueling station. JTA formed a public-private partnership between the JTA and Clean Energy Fuel Corp to design, build, operate, and maintain a fueling facility to serve the JTA fleet and a separate public fueling facility that has been open since 2015.

11. Additional Key Considerations

Though the prospect of introducing new technologies to a transportation agency is exciting, there are real-world considerations inherent to the transportation agency environment. Three more key considerations JTA will work to address in the process of implementing its MOVE transportation system are:

- Workforce Development
- Training: JTA University
- Cybersecurity/Cyber Resilience

These considerations are briefly discussed below. Please note that this section is not an exhaustive discussion about all key considerations that JTA must take for its integrated MOVE system to become a reality.

A. Workforce Development

The introduction of AVs and new technology-driven mobility will likely affect workforce roles and responsibilities. JTA management must be particularly sensitive to current employees' feelings and thoughts about the changes and work with current employees to develop the workforce of tomorrow. For instance, regarding AVs, operators will need to be repurposed and cross-trained. Support staff will still be needed to maintain and monitor the AVs and new positions will be created to fill these roles. JTA will help its workforce transition to new roles supporting JTA's ridership.

Today, JTA has an aging operator workforce and has struggled to fill operator positions. As JTA transitions to a new system that is autonomous and electric, the demands for operators and maintenance employees will change, creating new opportunities. For example, JTA can expect additional demands for the dispatching and supervision of AVs; new jobs in customer service; fare enforcement; information technology oversight; customer care; decentralized facility management; and ADA passenger assistance.

The transition to this new system requires a workforce plan that proactively mitigates adverse impacts and turns fear into opportunity.

B. Training: JTA University

It has been said that transportation will change more in the next 10 years than it has in the last 100. JTA intends to strengthen its leading role in this evolution through JTA University.

The design of JTA University encapsulates the assessment of the organizational adaptability and addresses how JTA can adjust its structure and business processes to successfully achieve its goals in response to the transformation of the transportation industry and customer needs and expectations. JTA University supports the future needs of the organization through identification of core training needs for each of JTA's divisions, future career paths, and new hires.

This is accomplished through three key areas of concentration:

- Identification of high potential employees across the organization to engage in a six-month intensive development program focused on enhancing their knowledge of key areas and components of the transportation organization and their interdependencies for purposes of developing our future leaders.
- Certification tracks and skills assessments tailored to supporting the career paths of our employee population.
- Assembly and delivery of an intensified customer-focused training program for Transit Operations.

This model strengthens JTA's ability to develop the workforce of tomorrow as it shifts towards automation and emerging technologies, while addressing and preparing for the least amount of disruption to its current operations.

Many transportation agencies will need to undertake this transition. JTA's model can be used as a best practice for other agencies to learn how to engage the process of preparing for the future of transportation.

C. Cybersecurity & Cyber Resilience

JTA is committed to securing the data of its customers, employees, and business. With an intense focus on JTA's Digital Security Program, the JTA Information Security team constantly strives to improve the security of the environment. Numerous security measures are already in place, including:

- Next Generation Firewalls
- Web Content Filtering
- Email Spam Filtering
- Mobile Device Management
- Internal & External Vulnerability Scanning
- Penetration Testing

JTA has implemented the latest advancements in Artificial Intelligence to ensure the security of its networks from malware and any other threats that may have made it past JTA's perimeter defenses. JTA now has the ability to identify anomalous user or device activity that deviates from what is determined to be a normal pattern of behavior.

Using highly advanced mathematical algorithms, JTA is able to meet several important objectives:

- Real-time threat detection
- Unattended threat mitigation
- Reliable defense from zero-day malware
- Defense of IT, IoT, ITS, Cloud and SaaS
- Detection of Internal, External, and Colluding Threat Actors

An enhanced information sharing cybersecurity effort will be critical as JTA and its customers become more dependent on technology and, therefore, more vulnerable to malicious acts against IT systems. For this reason, JTA joined the Community & Transportation Information Sharing and Analysis Organization (C&T-ISAO) and is participating in the C&T-ISAO's flagship program (Secure Together) with the City of Las Vegas to discover and identify IoT devices on its network and automatically remedy vulnerabilities and threats and to form a "national neighborhood watch cyber program."

The C&T-ISAO is an international cyber intelligence community of transportation agencies, smart cities, community governments, and their vendors and partners. These groups work together to meet regulatory requirements, reduce cyber risk, and identify cyber threats in the transportation environment. The C&T-ISAO falls under Presidential Executive Order 13691. Under that order, the C&T-ISAO:

- Voluntarily disseminates critical cyber and related information.
- Communicates critical cyber and related information to help prevent, detect, mitigate or recover from the effects of a cyber systems' interference, compromise, or incapacitation.
- Analyzes cyber-related information to ensure critical digital systems' availability, integrity, and reliability.
- Protect its participants (individuals and organizations) against being penalized as they share information regarding cyber-related breaches, interference, compromise, or incapacitation.

As JTA advances new technologies through MOVE integration—especially AVs, system performance tools, and customer interfaces—it will work closely other C&T-ISAO member agencies and cities worldwide to safeguard transportation-related critical infrastructure.

12. Conclusion

JTA developed the MOVE Plan to help guide JTA toward an integrated transportation network of mobility options that strengthens and does not marginalize the role of public transportation for the benefit of its current and future riders.

Changing demographics and perspectives, as well as new technologies and potential partners, present important opportunities for JTA to provide excellent, flexible, diverse services that are interconnected, cost-effective, and efficient.

JTA will capitalize on its strength, public transportation, as it uses a collaborative approach to achieve its vision: Universal access to dynamic transportation solutions.