# Mobility on Demand Study

**Prepared for**

**Space Coast Area Transit &**
**Space Coast Transportation Planning Organization**

**Prepared by**

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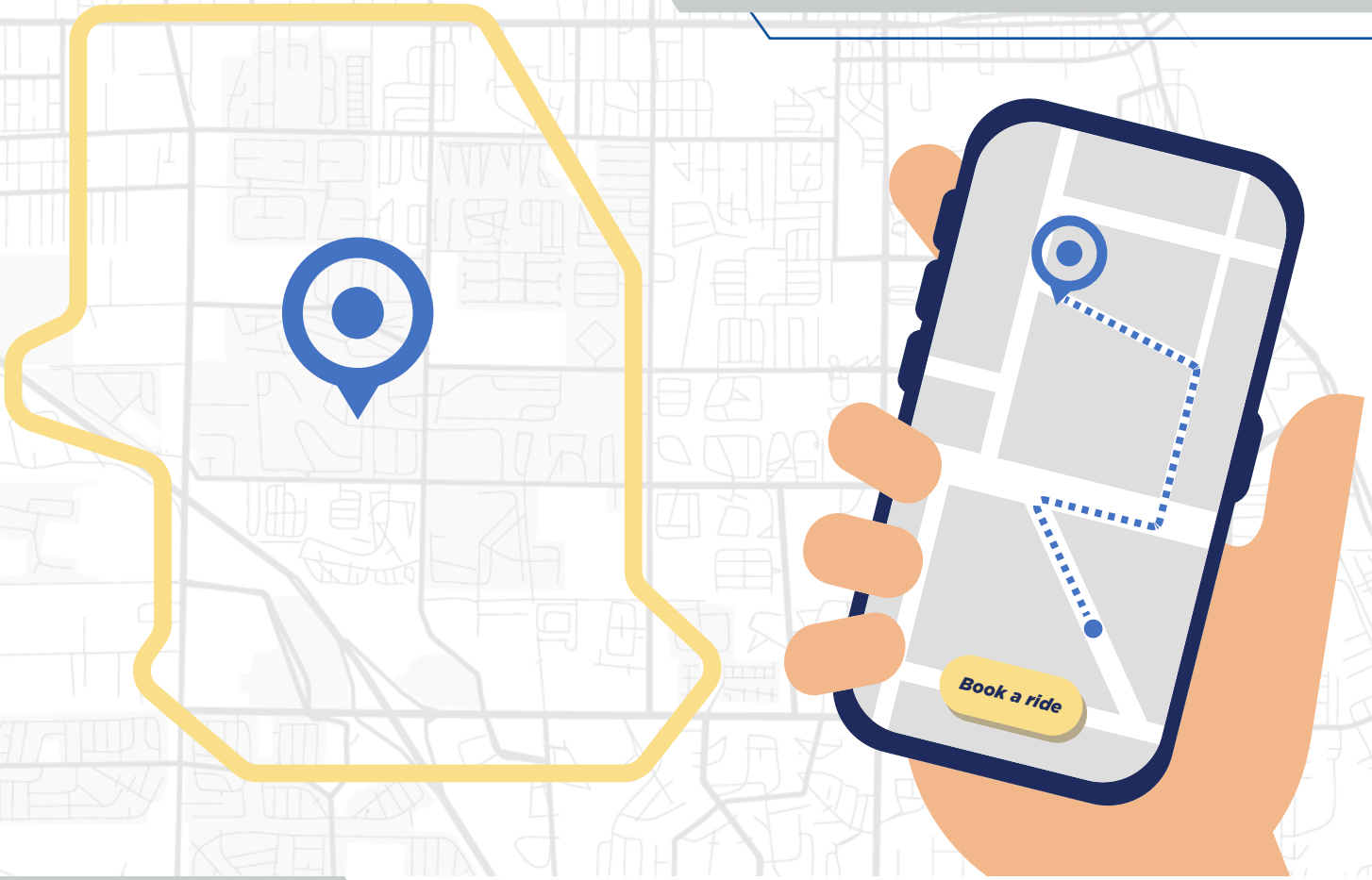
## FINAL REPORT

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KITTELSON & ASSOCIATES

Space Coast AREA TRANSIT

SPACE COAST TPO

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# Introduction

Space Coast Area Transit, the transit service agency for Brevard County, currently operates 23 fixed-routes serving just over 1,100 stops across the County. Space Coast Area Transit also provides special services, including the Vanpool Program with Enterprise, Volunteers In Motion (VIM), Transportation Disadvantaged (TD) Paratransit Services, and Americans with Disability Act (ADA) Paratransit.

Space Coast Area Transit's vision is to provide all persons living, working, or visiting Brevard County the opportunity to use transit as a safe, affordable, convenient, and sustainable way of traveling. Strategies to achieve this vision include being at the forefront of technology and having an integrated multi-modal system. The agency is looking to expand from traditional fixed-route service and is considering Mobility on Demand (MOD) services, which allow customers to request a ride when needed, rather than hours or days in advance or on a set, fixed-route schedule.

## MOD Study

Space Coast Area Transit initiated a MOD Study in coordination with the Space Coast Transportation Planning Organization (Space Coast TPO) to explore potential MOD alternatives in different "zones" of Brevard County. Key stakeholders included Brevard County, City of Cape Canaveral, City of Cocoa, City of Cocoa Beach, City of Melbourne, City of Palm Bay, and City of West Melbourne.

The MOD Study consisted of several key steps for identifying potential MOD service zones and the selection of one MOD service zone to move forward for a pilot project, as shown on the following page.

## Completed Analysis

- Define MOD Service Goals and Objectives
- Summarize MOD Deployment Applications and Best Practices
- Interview Peer Agencies
- Analyze Travel Patterns to Identify Key Connections

## Next Steps

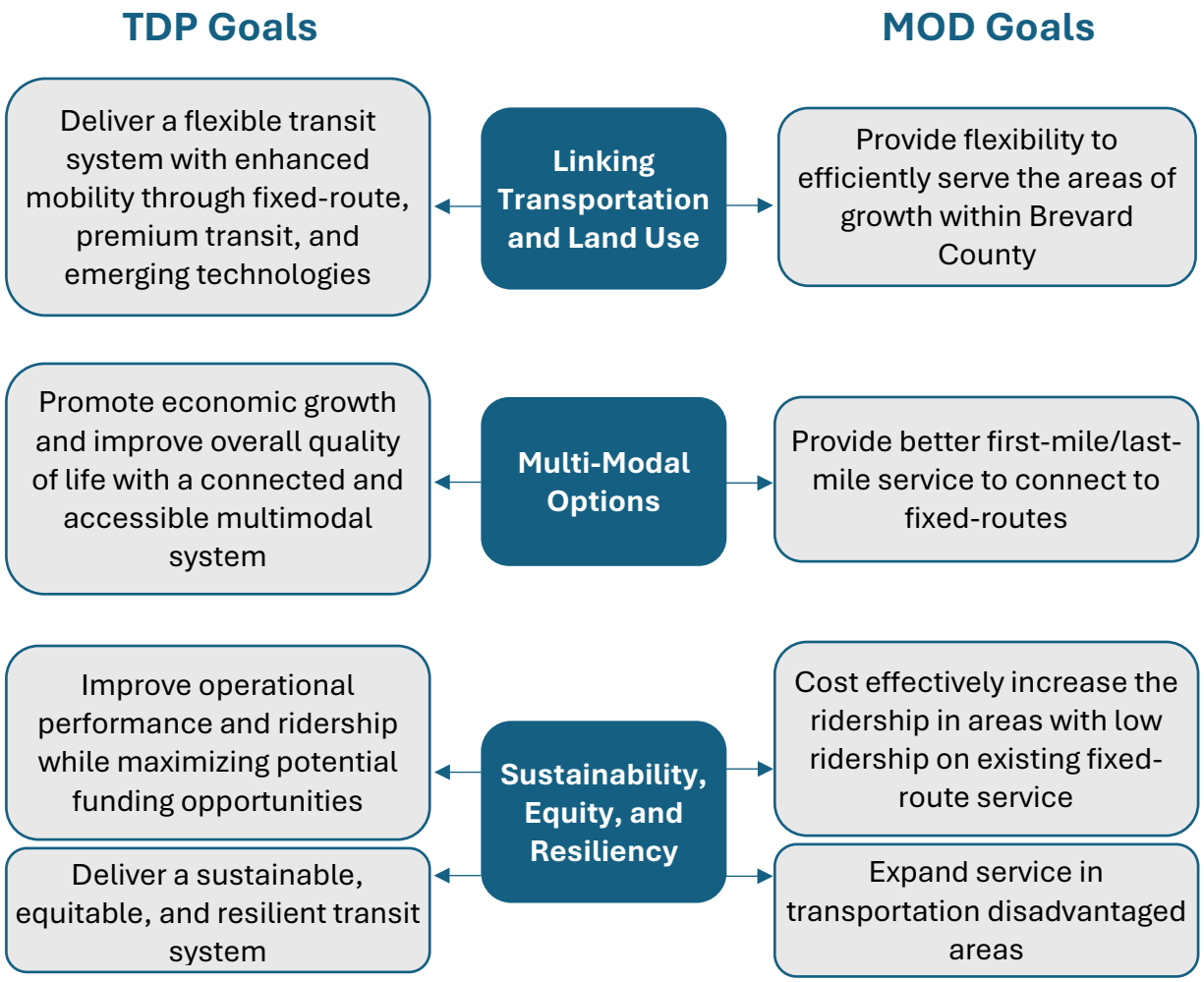
- Develop Potential Service Designs
- Interview Local Stakeholders to Refine Potential Service Zones and Identify Potential Funding Sources
- Identify Potential MOD Service Zones
- Prioritize Potential Service Zones

This final report summarizes the development of goals, summary of best practices, lessons learned from peer agencies, and analysis of travel patterns for the MOD Study. As part of the next steps for MOD in Brevard County, the Study Team will assist in developing potential service designs, following up with stakeholders, identifying a pilot location for MOD, and identifying grant options to fund a MOD pilot project.

# MOD Service Goals

To provide a framework for Space Coast Area Transit's potential MOD service, the Study Team conducted an existing conditions analysis with a literature review of best practices, interviews with peer agencies, and coordinated efforts with other ongoing studies. Ongoing studies included the 2035 Transit Development Plan (TDP) as part of the 2050 Long Range Transportation (LRTP) update and the Intermodal Station Feasibility Study. For more information about ongoing studies, see **Appendix A**.

The TDP goals broadly include the emphasis areas of safety, multi-modal options, linking transportation and land use, marketing and public engagement, sustainability, equity, and resiliency. MOD service goals were developed in consideration with the TDP goals and include:




MOD service zones were selected based on Space Coast Area Transit's goals to provide flexibility to efficiently serve the areas of growth within Brevard County, provide better first-mile/last-mile service to connect to fixed-routes, cost effectively increase the ridership in areas with low ridership on existing fixed-route service, and expand service in transportation disadvantaged areas.

# What is MOD?

MOD is an on-demand service, similar to that of Uber or Lyft, that allows customers to request a ride when needed, rather than hours or days in advance. MOD service provides a shared ride by picking up multiple customers and optimizing the route based on pick-up or drop-off locations. Unlike fixed-route services, MOD utilizes smaller vehicles such as vans or sedans to maneuver around areas that larger buses may not be able to access, such as narrow neighborhood roadways or downtown areas with limited accessibility for larger vehicles. These smaller vehicles can also be equipped with wheelchair accessible features. Customers can use an app or call a phone number to book a shared ride within a defined

zone. The MOD ride can also be used to connect to a fixed-route service should customers need to travel outside of a defined zone. In contrast to paratransit, which provides rides within a transit agency's fixed-route service area during the same hours that fixed-route service is provided, MOD tends to serve smaller areas to use the vehicles and drivers more efficiently. Longer trips can be served by transferring to or from fixed-routes that serve larger numbers of riders traveling in the same general direction at the same general time.

Transit agencies have the option to host MOD operations internally or contract a turnkey service through vendors that provide drivers, vehicles, and the application platform. **Figure 1** shows the steps customers take to use MOD.


**Figure 1. Mobility on Demand Steps**

## Benefits of MOD

There are several benefits from integrating a MOD service to complement existing fixed-route and paratransit systems. MOD can be cost-effective with operational costs being approximately half of the operational costs associated with a fixed-route, assuming the same number of riders for each type of service. MOD is also customer focused and provides a direct service for users to access their destination without requiring a ride to be scheduled hours or days in advance. Customers can wait comfortably indoors instead of waiting at a bus stop. The service can broaden the reach of transit by providing first-mile/last-mile to and from fixed-route services. MOD also provides an additional option for paratransit users.

Similar to fixed-route services, MOD can address congestion management by reducing the number of single occupancy trips through providing a shared ride within a service zone or a connection to fixed-route. MOD is also dynamic and adjustable with the ability to tailor zones to include key destinations without installing major physical infrastructure such as a bus shelter.

## MOD Applications and Use Cases

MOD and other microtransit services leverage partnerships between different mobility providers to provide a range of mobility options to serve a variety of users and individual travel needs for a given trip. These options can include a variety of shared-use transportation services, including but not limited to:

- Traditional fixed-route and demand-responsive (paratransit) public transit;
- Taxis and limousines;
- Ridesourcing or Transportation Network Companies (TNC) (e.g., Uber, Lyft);
- Carsharing programs;
- Technology-enabled microtransit services such as autonomous vehicles (AV);
- Bike- and scooter-sharing (i.e., micromobility);
- Shuttle services; and
- Neighborhood shuttles.

MOD and other microtransit services can be used to transport riders for non-emergency medical purposes, to serve geographic regions with limited or no public transit service, and to substitute for fixed-route public transit in smaller urban areas. Non-emergency medical transportation can be used by eligible riders to book medical trips for a specific time and allows on-demand return trips. Furthermore, MOD can provide service in areas with limited or no fixed-route service at certain times of the day or week, allowing transit agencies to maintain service to lower-demand locations and times, and to provide service when there may be staffing or driver concerns related to the extension of fixed-route service. Finally, if a

transit agency serves an area, such as a small town, using fixed-routes at long headways, switching to MOD can provide an opportunity for the agency to expand the coverage area and reduce wait times for riders.

The option for turnkey operations allows transit agencies to utilize contractors that provide all aspects of the microtransit service, including vehicles, information technology services, operations management, drivers, etc.

## MOD Service Design Best Practices

The United States Department of Transportation (USDOT), Federal Transit Administration (FTA), American Public Transportation Association (APTA), and Transportation Research Board (TRB) all provide guidance on assessing and implementing microtransit and MOD programs. Best practices for MOD service design include:

- Begin the service as a pilot –
  - Agencies often found pilot projects allowed for greater procurement flexibility and allowed them to change service zones as needed without committing to longer-term service.
- Oversight from the transit agency is critical if using a private contractor –
  - Agencies emphasized the need to maintain control over any application data and to request a dashboard to monitor service and performance metrics for any privately contracted service. Ensuring data reciprocity from private vendors allows agencies to monitor origins and destinations for future service modifications.
  - Agencies recommended monitoring performance metrics such as response times and identifying who is responsible for handling different issues within the contract to reduce confusion and clearly define responsibilities.
  - Key performance metrics varied, but included on-time performance, safety standards, complaints per passenger, and quality assurance checks.
- Marketing the new service requires considerable effort –
  - Agencies suggested using the same fare structure or payment method as the current fixed-route service. Doing so reduces the need for customers to learn how to use a new system and helps address potential equity and Title VI concerns.
  - Agencies noted the importance of marketing new technology and including extensive community outreach, especially in areas without current fixed-route service. Ensuring that internal and customer expectations are realistic is important, especially when comparing customer service expectations to those of a typical ridesourcing company such as Uber or Lyft.

FTA funded a MOD Sandbox Program to assist and prepare the transit industry for MOD including evaluation of eleven projects and the creation of Mobility Standards and Guidelines Resource (MSGR) Tool with available open-source data. Agencies that participated in the program found benefits in terms of customer satisfaction, increased transit coverage areas, and reduced wait times. See **Appendix A** for additional information about the MOD Sandbox Program.

## MOD Services in Florida

Agencies across Florida have implemented MOD programs, primarily using microtransit services, to address the specific needs of their communities. The Study Team reviewed MOD programs from eight transit agencies in Florida with land use and development patterns similar to Brevard County, and summarized the key characteristics of each transit agency's service zone and MOD service. **Table 2** of **Appendix A** summarizes the county population, service name, operator, cost per ride, hours of operation, service zones, service zone employment, service zone population density, and primary land uses served for each transit agency's MOD service.

Three of the eight case study agencies—Lee County Transit (LeeTran), Volusia County Transit (VoTran), and Sarasota County Breeze Transit (Breeze Transit)—were interviewed in April 2024. Peer agency interviews help identify challenges, opportunities, administrative costs, operating budgets, funding sources, fleet size, and lessons learned from existing MOD deployments.

### LeeTran ULTRA on Demand Transit

LeeTran implemented a MOD service after noticing successes of other agencies in providing more trips per hour through a MOD service over fixed-route service. The goal of their MOD program is to replace underperforming fixed-route services. Due to local interest, a Bonita Springs zone was included as part of the pilot project. The agency used in-house resources to identify their MOD zones and their consultant recommended zones from their TDP that lacked existing fixed-route services. ULTRA on Demand Transit is available in two service zones:

- **Bonita Springs** – service started in March 2022 and covers over 16 square miles
- **Lehigh Acres** – service started in February 2023 and covers 27 square miles

Initially, Uber provided the software for the ULTRA On Demand Transit service. Customers could book trips through a smart phone app or call Uber's customer service line. LeeTran transitioned from Uber to RideCo as their software provider and shared that the switch had been seamless.

LeeTran uses in-house vehicles and drivers for the MOD service. Lee County's marketing department provided additional resources for public outreach, webpage creation, and branding for their vehicles. They also utilized their drivers to assist in educating the public on the new service at their public outreach events.

### VoTran VoRide

VoTran's goals for a MOD service are to address underperforming fixed-routes with low ridership and to fill gaps where the existing fixed-route transit does not exist. VoRide is available in two service zones:

- **Deland Zone** – service started in December 2023
- **Debary, Deltona, and Orange City Zone** – service started in early April 2024

VoTran worked with a consultant to create their procurement document and used the Request for Proposals (RFP) approach to specify their needs and expectations. VoTran contracted with Via to provide a turn-key MOD service. Via provides the software, vehicles, and drivers. Via also provided marketing materials and social media content for VoTran to share with their customers. VoTran staff conducted outreach to libraries, senior living facilities, retirement communities, resource centers, and community centers to educate the community on how to use the new service. The VoRide smart phone app shows customers options to connect to VoTran's fixed-route system or to fully utilize the MOD service. Real-time information is used to provide the most time-efficient option for customers. Via also provides VoTran with a web-based dashboard that shows ridership metrics, including customer ratings and reviews.

### Breeze Transit's Breeze OnDemand

Breeze Transit implemented the Breeze OnDemand program as a response to their Board and citizen feedback of an underperforming existing fixed-route system. Sarasota County began to explore the potential of contracting out the existing fixed-route system. Challenges with staff turnover, shortage of drivers due to COVID, and funding shortfalls all contributed to an evaluation and consolidation of their existing fixed-routes. Through this evaluation, approximately 15 underperforming fixed-routes were removed and replaced with the MOD service. Breeze Transit was able to sell several of their newer buses to Escambia County Area Transit. Breeze Transit currently has a five-year plan to refresh their fleet.

Breeze OnDemand four service zones were implemented in June 2021 and currently include:

- **Downtown Sarasota/Lido Key/Longboat Key** – provides access to barrier islands on the Gulf Coast
- **Siesta Key** – provides service to barrier islands on the Gulf Coast
- **North Port Area** – provides service for a northeast region of the county

- **Venice/Engelwood Area** – provides service for a southeast region of the county

Similar to VoTran, Breeze Transit also contracts their service through Via. At the time of the interview, Breeze Transit was exploring adjustments to the barrier islands MOD service zone due to long wait times attributed to congestion and limited network options on and off the islands during peak hours.

## Lessons Learned from Peer Agencies

Although the service designs of LeeTran, VoTran, and Breeze Transit vary, lessons learned were similar across the MOD services.

- Educate your customers on your service goals and how the service works through communication, education, and outreach.
- Explain similarities or differences between existing paratransit or private ridehail (Uber/Lyft) services to your customers. For example, MOD is curb-to-curb service compared to paratransit door-to-door service.
- Begin training your drivers and staff about four months before implementing your new MOD program.
- Select in-house or turn-key solutions based on agency needs and capabilities. In-house allows you to manage vehicle maintenance and driver pay. Turn-key enables easier tracking of service costs.
- Define clear and specific performance needs in procurement documents, including: acceptable wait times, data formatting, ownership, and reporting requirements; and role and responsibilities for maintenance and background checks.
- Make agreements flexible to enable service expansions to increase the number of vehicles or to add or expand service zones.
- Budget for future costs due to system expansion or inflation.

# Zone Suitability Analysis

A zone analysis was conducted to identify areas within Brevard County most feasible/suitable for a MOD pilot project. Based on the goals of Space Coast Area Transit, literature review findings, and peer agency recommendations, opportunities for successful microtransit service should include the following characteristics:

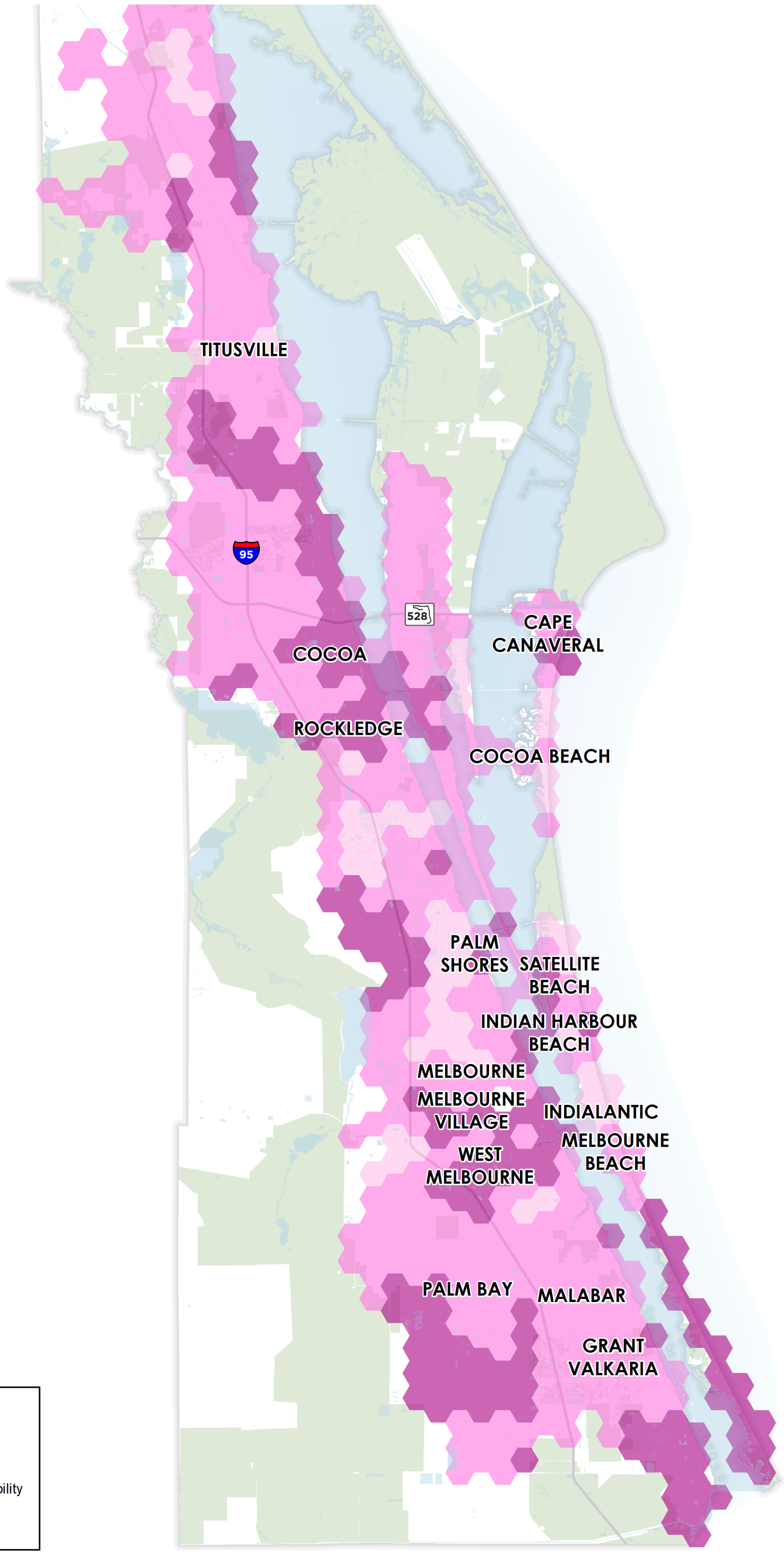
- Low to Moderate concentration of population and employment density
- High concentration of population and employment density in areas not conducive to large transit vehicle maneuverability
- No existing transit service or low transit ridership on existing fixed-route service

MOD services tend to perform better in low- to medium-density areas where smaller vehicles can accommodate the lower demand. MOD can provide effective service to areas that have moderate levels of population density but lack the overall high density to support robust fixed-route transit. Areas more suitable for MOD will include moderate population densities and lower fixed-route ridership. Socioeconomic characteristics that indicate a higher tendency to use transit, including MOD services, were considered. Transportation disadvantaged areas and activity-oriented jobs can lead to more trips throughout the day, rather than a concentration of trips during typical peak periods.

Therefore, potential MOD service zones were analyzed in uniformly sized areas and scored based on the following four criteria:

- Low to moderate density
- Low transit route ridership
- Transportation disadvantaged
- Low intersection density

**Figure 2** shows the MOD suitability based on existing conditions. Detailed methodology for scoring of the four criteria can be found in **Appendix B**.




**Legend**

- Low Suitability
- Moderate Suitability
- High Suitability

Miles

0 5 10

N

**Figure 2: Suitability Analysis**

Mobility on Demand

## Travel Pattern Analysis

In conjunction with the suitability analysis, origin-destination patterns from Space Coast Area Transit's Comprehensive Operations Analysis were reviewed along with data from Replica to identify key connections to transit, employment, education, healthcare, and tourism. These key destinations were targeted as potential opportunities for a MOD pilot project to provide the first-mile/last-mile connections and were captured in the modification of service zone boundaries. Most trips with destinations to each of the potential service zones were 8-20 miles in length. Trips that originated in each of the potential service zones were approximately 10-20 miles. To accommodate for the trip lengths of the majority of existing single-occupancy vehicle and transit trips within Brevard County, the potential MOD service zones need to be larger than the recommended 10-15 square miles for MOD. Performance metrics should be considered to accommodate the larger service zones, including the potential for longer wait times. To address longer wait times, additional vehicles may be deployed, which in turn may have higher operational costs for larger MOD service zones.

## Results

The zone analysis was conducted to account for both existing conditions and future growth. Potential MOD zones were created by grouping zones with high microtransit suitability into larger zones of 10-15 square miles, a typical microtransit area size, and defining potential MOD service types. Twelve potential service zones were identified from the preliminary MOD service zone identification based on the suitability analysis (ordered from north to south, mainland then Merritt Island/beaches):

- Mims
- Titusville-Cocoa Airport Authority (TICO) Area
- Port St. John
- Sharpes/Camp Road
- Cocoa West
- Viera
- West Melbourne
- Northeast Palm Bay
- Southwest Palm Bay
- Barefoot Bay
- North Merritt Island
- Cape Canaveral

Analysis conducted for the year 2045 showed similar trends in scores in the same potential service zones.

Based on Space Coast Area Transit and Space Coast TPO's ongoing coordination with local stakeholders, travel pattern analysis, potential fixed-route modifications, and general feedback, the following potential service zones were identified for further analysis of MOD suitability (in no specific order):

- Port St. John/Sharpes/Cocoa West
- Viera
- Melbourne/West Melbourne
- Palm Bay
- Cape Canaveral

Draft MOD service zone boundaries for the four areas above were created for stakeholder feedback, as discussed in the next section.

# Stakeholder Feedback

The Study Team met with local stakeholders to understand potential gaps, local information, plans for growth, and challenges that may impact potential MOD service zones within their specific jurisdiction. The following meetings with stakeholders occurred:

- Brevard County on August 29, 2024
- City of Melbourne & City of West Welbourne on September 10, 2024
- City of Cocoa Beach & City of Cape Canaveral on November 12, 2024
- City of Palm Bay on November 14, 2024
- City of Cocoa on November 20, 2024

Based on meetings with Brevard County (for the Port St. John/Sharpes and Viera zones), City of Cocoa, City of Melbourne, City of West Melbourne, City of Palm Bay, City of Cape Canaveral, and City of Cocoa Beach, service zone boundaries were modified. Zone overlaps were added to allow for transfer points at major destinations, such as existing transit transfer centers, airports, and future development. The outcome from these stakeholder meetings were nine service zones outlined below and shown in **Figure 3**:

- Cocoa Beach/Cape Canaveral (7 square miles)
- Cocoa (23 square miles)
- North Melbourne (23 square miles)
- Melbourne & West Melbourne (32 square miles)
- Palm Bay West (15 square miles)
- Palm Bay East (19 square miles)
- Palm Bay South (37 square miles)
- Port St. John (35 square miles)
- Viera (33 square miles)

Detailed maps of the nine MOD service zones are shown in **Appendix C**. These potential MOD service zones were presented to the Space Coast TPO Board and Committees at the March 2025 Meetings. Meeting summaries and presentations from the Stakeholder Meetings can be found in **Appendix D**.

**Figure 3: MOD Service Zones**

# Service Zone Prioritization

The nine MOD service zones identified based on the analysis and stakeholder feedback were prioritized based on the goals for MOD service. The prioritization considered the following factors:

- Population density
- Employment density
- Transportation Disadvantaged population
- Population not currently served by fixed route service
- Low ridership along existing fixed routes

All of the zones scored relatively similarly as they met the initial criteria determined to be the goals of implementing MOD service.

Potential MOD ridership was estimated through extrapolating 20% of existing stop-level ridership, 20% of paratransit ridership, and a latent demand factor for anticipated new riders. Daily stop-level ridership was provided by Space Coast Area Transit whereas origin-destination data was provided for existing paratransit riders. Daily forecasted ridership was used to estimate the number of service vehicles needed per revenue hour.

Annual operational costs were based on the number of service vehicles in each zone using the operational cost ranges from other contracted MOD services within the United States. These costs are planning level estimates estimated based on the number of vehicles anticipated and will be influenced by the size of the zone and estimated ridership. The summary of the prioritization scores, estimated hourly ridership, and planning-level operational costs are provided in **Table 1**.

***Table 1: Prioritization of Zones***

| Zones | Prioritization Score (out of 15) | Population Density (People/Sq Mi) | Employment Density (Jobs/Sq Mi) | Transportation Disadvantaged Population | Estimated Hourly Ridership per Revenue Hour | Estimated Annual Operational Cost |
|---|---|---|---|---|---|---|
| Cocoa | 11 | 1,330 | 730 | 71% | 10 | $425,000 - $1,000,000 |
| Cocoa Beach & Cape Canaveral | 10 | 3,385 | 2,154 | 41% | 14 | $425,000 - $1,000,000 |
| Melbourne & West Melbourne | 10 | 2,369 | 1,429 | 66% | 23 | $850,000 - $2,000,000 |
| North Melbourne | 10 | 2,358 | 2,489 | 81% | 6 | $200,000 - $500,000 |
| Palm Bay East | 10 | 2,270 | 1,189 | 88% | 11 | $425,000 - $1,000,000 |
| Palm Bay South | 10 | 1,257 | 191 | 100% | 3 | $200,000 - $500,000 |
| Palm Bay West | 10 | 1,688 | 260 | 96% | 9 | $425,000 - $1,000,000 |
| Viera | 10 | 1,569 | 769 | 25% | 4 | $200,000 - $500,000 |
| Port St. John | 9 | 1,063 | 256 | 5% | 2 | $200,000 - $500,000 |

# Conclusion

Through a review of national and local best practices, suitability analysis, and stakeholder feedback, the Study Team narrowed down the eleven preliminary MOD service zones to **nine MOD service zones**. These service zones were selected based on Space Coast Area Transit's goals to provide flexibility to efficiently serve the zones of growth within Brevard County, provide better first-mile/last-mile service to connect to fixed-routes, cost effectively increase the ridership in zones with low ridership on existing fixed-route service, and expand service in transportation disadvantaged zones. Based on the ridership estimates and prioritization analysis, all nine zones would provide relative suitability for a potential MOD service.

Successful MOD service will require sustainable funding and agency collaboration. The next steps for the study include coordination on a second round of stakeholder meetings to gauge interest from local agencies in partnering on a MOD pilot project. A Next Steps Report has been created to document this coordination and ultimately the selection of the service area for the MOD pilot.

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