



# St. Lucie County, Florida

## Transit Operations Analysis and New Mobility Planning





## TRANSMITTAL LETTER

July 31, 2018

Mr. Howard Tipton  
County Administrator  
2300 Virginia Avenue  
Fort Pierce, FL 34982

Pursuant to the Contract for Consulting/Professional Services Agreement dated June 12, 2018, we hereby present the Transportation Operations Analysis and New Mobility Planning report.

Our report is organized in the following sections:

<b>Executive Summary</b>	This provides a high-level overview and summary of the recommendations noted in this report.
<b>Engagement Scope and Objectives</b>	The project objectives are explained in this section, as well as a review of the approach.
<b>Summary of Procedures Performed</b>	This provides a high-level overview and summary of the procedures performed.
<b>Engagement Background</b>	This provides an overview of the County's Transportation operations and relevant background information
<b>Detailed Procedures and Results</b>	The project detailed procedures and results are explained in this section, as well as a review of the various phases of our approach

We would like to thank the staff and all those involved in assisting our firms with the execution and completion of this project.

Respectfully Submitted,

*RSM US LLP*

**RSM US LLP**

**Sam Schwartz Consulting, L.L.C.**

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## A. EXECUTIVE SUMMARY

St. Lucie County (SLC, or “the County”) engaged RSM, and sub-consultant Sam Schwartz Engineering, DPC (*Sam Schwartz*), to analyze current performance and the potential for emerging technologies for improving the County’s public transit services.

Following extensive staff interviews and peer agency analysis, *Sam Schwartz* observed that SLC’s forward-thinking priorities, willingness to experiment, and capacity to implement pilot programs put the County in a good position to benefit from the anticipated transportation shifts and new mobility services. Urban form and land use have worked against the establishment of fixed-route transit services that are able to meet the region’s rapid growth. By leveraging technology and transit supportive policy, the County is making great progress managing public transit services that harmonize with the County’s values and development goals.

To assist the County in building its capacity to provide public transit services, *Sam Schwartz* developed a set of observations and recommendations, split between transit operations analysis and new mobility planning. The recommendations include the following:

### **TRANSIT OPERATIONS ANALYSIS RECOMMENDATIONS**

- 1.1: Consider enacting measurable and verifiable goals related to mobility for residents and transit performance.
- 1.2: Make the prioritization of demand response into a policy to formalize the intention of providing this as the primary service.
  - 1.3.1: Update the terms of its service contracting agreement so that incentives are provided if the contractor meets certain cost performance metrics.
  - 1.3.2: Utilize new mobility strategies such as Transportation Network Companies (TNCs) to explore potential cost saving costs for demand-response services.
  - 1.4.1: Explore transitioning its fleet to vehicle propulsion types with lower costs for operations and maintenance (such as electric vehicles).
  - 1.4.2: Explore a peer review analysis with agencies and update the terms of its service contracting agreement to incentivize meeting county mobility goals and cost performance metrics.
    - 1.5.1: Utilize land use policy tools to encourage transit-supportive and transit-oriented development to ensure that as the County grows it becomes more supportive of successful transit services.
    - 1.5.2: Utilize parking policy tools to capture revenue and fund transportation.
  - 1.6.1: Make fixed-route transit more competitive by utilizing urban design and complete streetscape guidelines to focus improved access to transit across strategic corridors and key destinations.
    - 1.7.1: Explore the longer-term revenue impacts of providing a free transit network.
  - 1.8.1: Develop service performance standards (per Rec 1.1) that guide the development of a transit-friendly St. Lucie County.
    - 1.9.1: Explore innovative transit funding sources from local developer revenue (such as exactions and impact fees).
    - 1.9.2: Explore expanding additional advertising revenue at transit shelters, benches, and facilities.

## A. EXECUTIVE SUMMARY - CONTINUED

### NEW MOBILITY PLANNING RECOMMENDATIONS

2.1.1: Pursue New Mobility partnerships with a focus on meeting SLC goals and priorities.

2.1.2: Explore pilot projects with private operators that may help SLC understand the effects of new mobility services on its current system, developing a flexible policy that allows the County to test and monitor the performance of services.

2.1.3: It is important not to overly focus on the technology itself and its potential benefits. To this end, SLC may consider creating a framework or roadmap for realizing the benefits of emerging technologies.

2.2.1: Enhancing fixed route transit is considered best practice in New Mobility planning to avoid increasing congestion. In areas of less transit supportive urban forms, new mobility options can help support access to transit, increase efficiency of demand-response options. New Mobility services may lead to improved fleet cost effectiveness, due to estimated costs of energy (Electric Buses) and potentially labor (Automated Transit Vehicles).

2.2.2: New Mobility options should supplement existing fixed-route services rather than replacing them, if SLC prioritizes financial efficiency.

2.3.2: Consider grant programs that may offset the purchase costs of electric buses - Florida Power and Light may be a potential partner in this effort.

2.3.3: Consider electric buses in SLC's Transit Asset Management (TAM) plan.

2.4.1: Small-scale pilot projects, particularly related to autonomous vehicles (AVs), may assist with public awareness, education, and acceptance. SLC should consider partnering with academic institutions or private companies who are hoping to learn more about how the public may interact with autonomous transit services. Non-traditional fleet ownership models may offer potential for vehicle conversion.

2.4.2: The successful implementation of AVs will require collaboration between a wide range of stakeholders. These may include elected officials, state and local agencies, and private companies. SLC may consider forming a working group with all stakeholders to start the dialogue around goals for AV implementation and potential policy barriers.

2.5.1: To reduce the costs of providing demand-response services and improve service responsiveness, SLC may wish to explore partnering with TNCs and local taxi companies to provide demand-response trips. This partnership should include measures to ensure that non-ambulatory customers will have the same level of service as ambulatory customers.

## **B. ENGAGEMENT SCOPE AND OBJECTIVES**

St. Lucie County (SLC, or “the County”) engaged RSM, and sub-consultant Sam Schwartz Engineering, DPC (*Sam Schwartz*), to analyze current performance and the potential for emerging technologies for its transit network. The County expects to continue the rapid regional growth that it has experienced over the last two decades and is also planning for a potential station on the next phase of the Brightline. The intent of this analysis is to help prepare the transit planning for the next stage of growth and outlines specific recommended actions to achieve this goal.

The project objectives included the following:

1. Assess the efficiency and effectiveness of St. Lucie County’s use of funds to provide public transportation, by analyzing operating data and comparing the County’s transportation services related operating data and performance measures/metrics to other “like” jurisdictions and national data.
2. Consider the implications of appropriate new mobility advancements and the County’s future transportation needs.

## C. SUMMARY OF PROCEDURES PERFORMED

To achieve the scope of this review, *Sam Schwartz* used various procedures. *Sam Schwartz* was initially provided with a substantial amount of background information about the County's existing transportation programs. Our preliminary review included a detailed analysis of each of the master transit provider agreement (C14-06-359) contract for Demand Response and Fixed Route programs. *Sam Schwartz* also obtained and reviewed the St. Lucie County Transit Development Plan Annual Update and Progress Report published in 2017, and the St. Lucie County Public Transit Municipal Services Taxing Unit Annual Progress Report published in 2017 to enhance our understanding of the County's transit history, current conditions impacting the program, and the County's future transit considerations.

Prior to initiating on-site fieldwork, *Sam Schwartz* obtained and analyzed supplemental information and data for County transportation services, including:

- National Transit Database (NTD) 2016 Agency Profile for "Council on Aging of St. Lucie, Inc. DBA Community Transit"
- Program performance data including: boardings and ridership, route map and schedules, fare revenues, cost analyses, and others

The preliminary documentation review facilitated our understanding of the County's transportation programs; however, informational interviews were essential in understanding the County's processes. *Sam Schwartz* conducted process walkthroughs with the following key personnel from the County, who also served as our primary contacts during this engagement and provided us with the documents and information requested.

- Diana Wesloski, Community Services Director
- Murriah Dekle, Transit Manager
- Jeff Bremer, Deputy County Administrator

*Sam Schwartz* also conducted on-site process walkthroughs and informational interviews with St. Lucie County Council of Aging (COA) locations in Fort Pierce and Port St. Lucie. *Sam Schwartz* conducted interviews with the following personnel to confirm our understanding of certain processes and controls:

- COA:
  - Darrell Drummond, President / Chief Executive Officer
  - David Rodriguez, Transportation Director / Vice President

The above interviews were followed by field visits to the key County transportation facilities:

- Fort Pierce Intermodal
- Port St. Lucie Intermodal
- Housing Authority Fleet Storage
- Port St. Lucie Council on Aging
- Proposed Storage and Maintenance Site (Selvitz Road)

In addition, *Sam Schwartz* St. Lucie County transportation practices and needs with the following local stakeholders (in person and or via phone):

- St. Lucie Transportation Planning Organization
  - Peter Buchwald, Executive Director
  - Marceia Lathou, Transit Program Manager Title VI/ ADA Coordinator
- Florida Department of Transportation:
  - Jayne Petrowski, Senior Transit Coordinator, District 4
- Florida Commission for the Transportation Disadvantaged
  - John Irvine, Specialist

## C. SUMMARY OF PROCEDURES PERFORMED - CONTINUED

Following the in-person interviews and site visits, *Sam Schwartz* completed phone interviews with:

- St. Lucie County
  - Mark Satterlee, Deputy County Administrator
- St. Lucie County Economic Development Council
  - Peter Tesch, President

In addition to the procedures outlined above, throughout our review, where applicable and feasible, *Sam Schwartz* sought to benchmark the transit service provision and performance for the County with peer transit agencies. To perform peer analyses, *Sam Schwartz* identified twenty-six peer transit agencies with similar reporting characteristics. *Sam Schwartz* selected peers primarily based on service area population and urbanized area density using the National Transit Database (“NTD”). These variables capture the fundamentals of the core urban area and the scale to which the agency has extended its service area. *Sam Schwartz* used data from 2016 because that was the most recent year of data available from all identified peer agencies.

The St. Lucie County has a transit service area population of 298,563 with an urbanized area density of 1,807 residents per square mile, and the peer agencies identified with similar population and density of the service area are illustrated in Table 1 below. Using population density as a benchmark for identifying peer agencies ensures that our analysis included similar geographic areas, but it is not possible to ensure all characteristics match.

*Sam Schwartz* also identified other peer agencies that reflect the County’s unique characteristics as a low-density, coastal environment with significant seasonal tourism. These include several Florida transit agencies, which share density, age demographics and seasonal population shifts.

Table 1 lists some of the characteristics used for selecting peer agencies. Note that it reports population, square mileage, and density at two different geographic levels. The columns specified as “Service Area” represent the area with access to the agency’s services, while the columns specified as “Urbanized Area” give values for each entire urbanized area. To clarify further, the definition of a service area must include the area of three-fourths of a mile on each side of each fixed route for bus service and the area encompassing the origin to destination points wherever people can be picked up and dropped off for demand response service.

*Table 1: Saint Lucie County and Peer Agency Characteristics (Source: NTD 2016)*

Agency Name	City	State	Service Area Sq. Miles	Service Area Population	Urbanized Area Population	Urbanized Area Sq. Miles	Urbanized Area Density (Pop / Sq. Mi)
Allegheny County Transit	Cumberland	MD	131	68,780	51,899	33	1,591
Ben Franklin Transit	Richland	WA	616	251,151	210,975	102	2,059
Charlotte County Transit Division	Punta Gorda	FL	231	173,115	169,541	119	1,425
Chatham Area Transit Authority	Savannah	GA	438	265,128	260,677	165	1,575
Citrus County Transit	Lecanto	FL	49	30,858	80,962	90	895
Clay County Council on Aging, Inc., dba Clay Transit	Green Cove Springs	FL	881	210,000	1,065,219	530	2,009
Collier Area Transit	Naples	FL	2,025	323,785	310,298	187	1,660
Corpus Christi Regional Transportation Authority	Corpus Christi	TX	841	348,892	320,069	120	2,661

## C. SUMMARY OF PROCEDURES PERFORMED - CONTINUED

Table 2: Saint Lucie County and Peer Agency Characteristics (Source: NTD 2016) - continued

Agency Name	City	State	Service Area Sq. Miles	Service Area Population	Urbanized Area Population	Urbanized Area Sq. Miles	Urbanized Area Density (Pop / Sq. Mi)
<b>Council on Aging of St. Lucie, Inc.</b>	<b>Fort Pierce</b>	<b>FL</b>	<b>572</b>	<b>298,563</b>	<b>376,047</b>	<b>208</b>	<b>1,807</b>
County of Atlantic	Northfield	NJ	567	274,219	248,402	125	1,985
County of Volusia, dba: VOTRAN	South Daytona	FL	1,207	494,593	349,064	179	1,946
Cumberland County	Fayetteville	NC	658	329,403	310,282	198	1,567
Flagler Co. Public Transportation	Bunnell	FL	571	99,121	349,064	179	1,946
Gaston County	Gastonia	NC	364	211,127	169,495	139	1,223
Indian River County	Vero Beach	FL	216	143,696	149,422	97	1,546
Manatee County Area Transit	Bradenton	FL	743	322,833	643,260	327	1,969
Martin County	Stuart	FL	65	149,806	376,047	208	1,807
Mass Transportation Authority	Flint	MI	640	418,408	356,218	236	1,510
Nassau Council on Aging	Fernandina Beach	FL	227	393,807	393,807	227	1,735
Pasco County Public Transportation	Port Richey	FL	745	475,502	2,441,770	957	2,552
Pinellas Suncoast Transit Authority	St. Petersburg	FL	333	985,625	2,441,770	957	2,552
Red Rose Transit Authority	Lancaster	PA	952	420,920	402,004	248	1,624
Sedgwick County Transportation - Dept. on Aging	Wichita	KS	1,008	498,365	472,870	215	2,202
Southeast Area Transit	Preston	CT	305	158,629	209,190	152	1,376
St Johns County, Florida, Board of County Commissioners	St. Augustine	FL	600	195,823	69,173	43	1,607
Stark Area Regional Transit Authority	Canton	OH	581	375,586	279,245	166	1,678
The Gulf Coast Center	Texas City	TX	1,792	557,437	106,383	76	1,400
Victor Valley Transit Authority	Hesperia	CA	950	429,481	328,454	167	1,969
Worcester Regional Transit Authority	Worcester	MA	866	479,329	486,514	304	1,600
York County Transportation Authority	York	PA	911	381,751	232,045	132	1,755
Yuma County Intergovernmental Public Transportation Authority	Yuma	AZ	78	195,751	135,267	59	2,300

Subsequent charts presented in the report may not include all identified peer agencies due to the availability and/or applicability of certain NTD data.

## D. ENGAGEMENT BACKGROUND

St. Lucie County (SLC) has traditionally been a bedroom community for those employed in the West Palm Beach region. As Southern Florida (Miami through West Palm Beach) has become more urban and cosmopolitan, many have chosen to move North to SLC to take advantage of low real estate costs and the “Old Florida” feel. It is also home to seasonal population shifts, as older “Snowbirds” from the Midwest and East Coast take advantage of the weather during harsh winter months. The County is home to 298,307 residents (per the 2015 American Community Survey) and is growing rapidly. As seen in Figure 1, the population has doubled over the past 25 years ( $\approx 2\%$  per year).

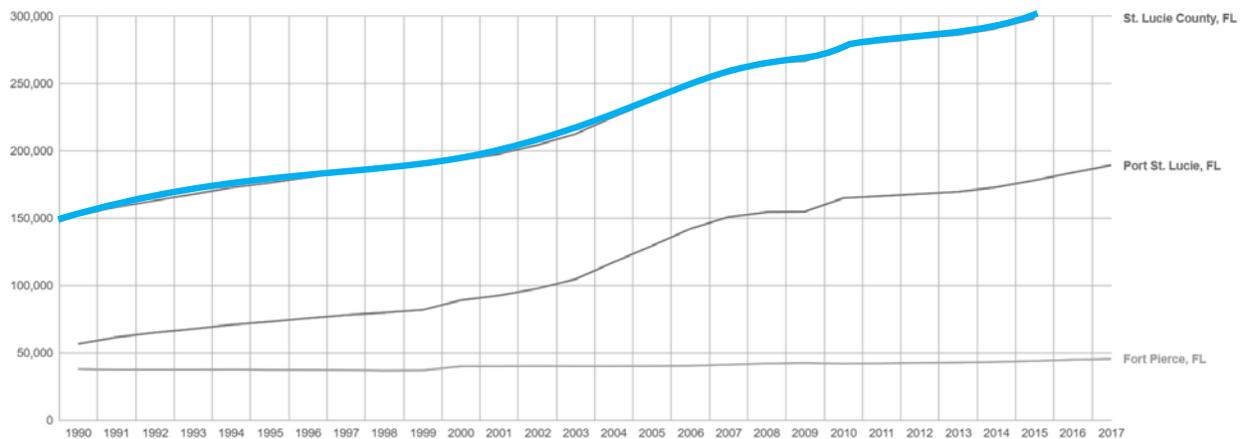


Figure 1: St. Lucie County, Port St. Lucie, and Fort Pierce - Population Growth 1990 to 2017

### 1. REGIONAL CONTEXT

St. Lucie County is part of the Treasure Coast region, comprising Indian River County to the north and Martin County to the south. Of the three counties, SLC has the greatest population and is the most developed economically - SLC has the largest number of employers and is an important regional workforce supplier (from Melbourne to West Palm Beach).

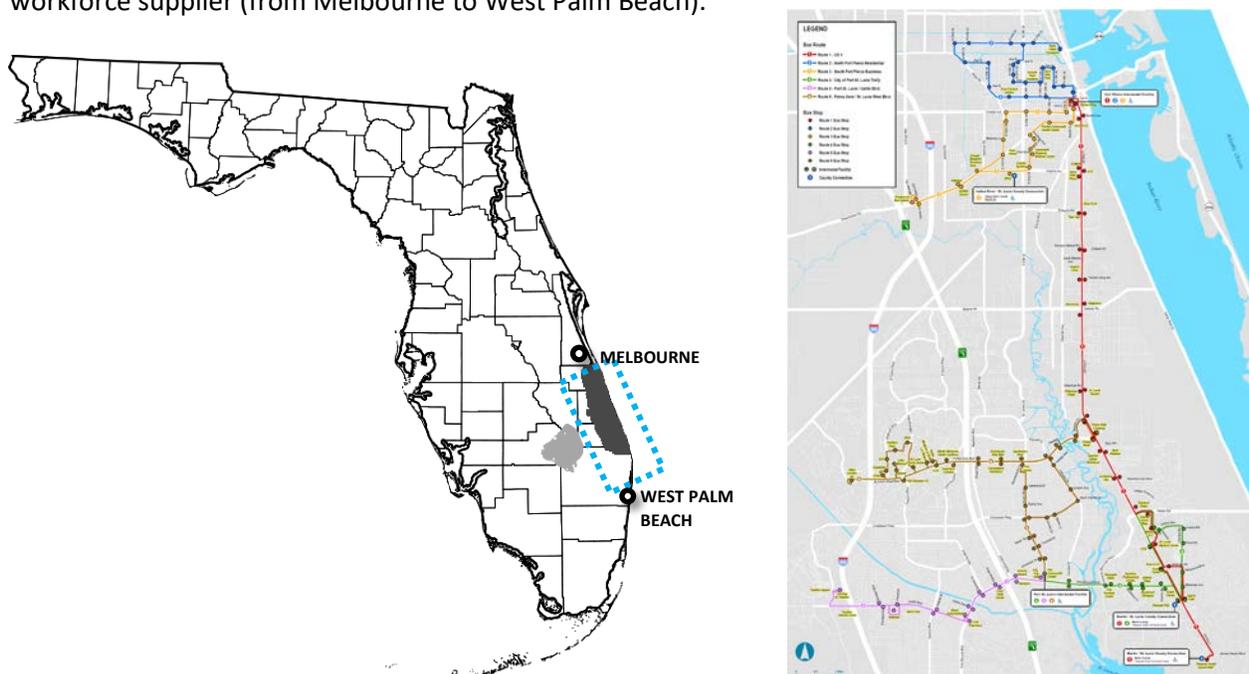


Figure 2: Treasure Coast Context (L) showing Melbourn and West Palm Beach and St. Lucie County Transit (R)

## **D. ENGAGEMENT BACKGROUND - CONTINUED**

### **2. COUNTY TRANSIT**

The St. Lucie County Department of Community Services operates the “Treasure Coast Connector,” a fixed-route service with seven routes that run on one-hour headways. Most routes operate between 6AM to 8PM on weekdays as well as on Saturdays from 8AM to 12PM and from 1PM to 4PM. The fixed route fleet comprises 9 vehicles.

In addition, the St. Lucie Alternative Transportation System (SLATS) provides Demand Response (DR) door-to-door services throughout the County for seniors and people with disabilities. Approximately 5,049 registered and eligible users are in the SLATS system. The service has three types of eligibility status:

- Unconditional status is assigned to people who are determined to be unable to ever independently use Treasure Coast Connector buses.
- Transitional status is assigned to people who are determined to be capable of using accessible Treasure Coast Connector buses but cannot presently do so because of a temporary disability.
- Conditional status is assigned to people who can use Treasure Coast Connector buses most of the time, but would, under certain circumstances and for certain trips, be prevented from independently using Treasure Coast Connector buses.

DR services require 24 hours advanced notice. However, because current demand is so high, customers often need to make reservations upwards of 72 hours in advance to secure trips. DR services are provided via a fleet of 58 medium-sized vehicles.

Per 2016 National Transit Database (NTD) data, SLC demand response service ran for 541,312 passenger miles via 101,758 unlinked trips at a total operating expense of \$2,747,294. In 2016, SLC fixed route service provided 2,612,161 passenger miles via 180,149 unlinked trips at an operating expense of \$1,862,649. Thus, the SLC transit system has invested predominantly in demand response services.

### **3. TRANSPORTATION DEMAND**

Land use is an important factor in shaping transportation demand. In the case of St. Lucie, there is a low-density, single use (predominantly low-rise residential) built environment with an asymmetrical road network of limited access arterials and minimal pedestrian infrastructure. Based on these characteristics, the demand for travel by public transit will be low and based on income (limited resources to prioritize spending on vehicle ownership, operation, and storage costs) and environmental design (how easy is local circulation for seniors and people with disabilities?). Strategic investments in transit infrastructure can increase transit demand, but it is important to right size the transit network and the types of services available.

Per the Federal Transit Administration, transit-supportive development refers to the virtuous cycle where the utilization of effective and predictable transit encourages surrounding development which, in turn, supports transit. Convenient access to transit can be a key attraction that fosters mixed-use development, and the increased density in station areas not only supports transit but may also accomplish other goals, including reducing urban sprawl, reducing congestion, increasing pedestrian activity, increasing economic development potential, realizing environmental benefits, and building sustainable communities.

While the County consists of 572 square miles of land (and 166 square miles of water), the bulk of the County’s population is split between Port St. Lucie (PSL), with 189,344 residents spread over 120 square miles, and Fort Pierce (FP), with 45,581 residents over 29 square miles. The remaining population is split across unincorporated areas.

## D. ENGAGEMENT BACKGROUND - CONTINUED

PSL has been growing rapidly in recent years. Its early 1960's sprawling, low density pattern is common of many General Development Corporation (GDC) developments in South Florida. With no designated central core, few planned arterials, and little diversity in land uses, PSL is challenging for public transit to serve. With its history and recent growth, PSL has only recently begin to develop focal points of growth that are transit-supportive.

Established in 1838 and incorporated in 1901, FP is one of the oldest communities on Florida's East coast. The FP historic downtown area is supportive of transit. It is compact, with a traditional grid system, small walkable blocks, and a diverse land use mix. However, the area is slowly developing economically. Key FP city center destinations are currently not well served by transit. Census data indicates that FP has the largest concentrations of people living below the poverty level, and zero-car households (Appendix Figure 19 through Appendix 22). It also has the least amount of jobs from major employers (Appendix Figure 18).

Figure 3 illustrates the County population density relative to its transit network.

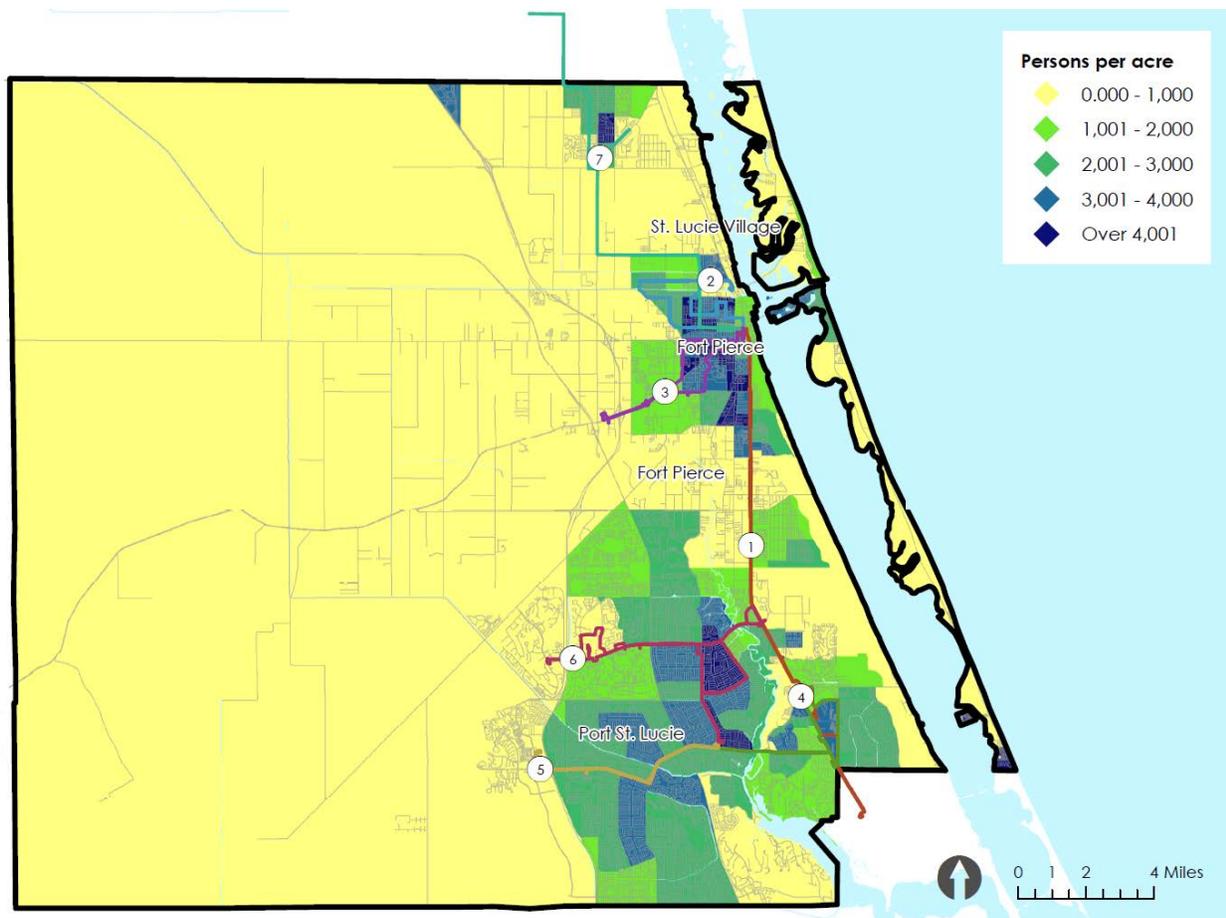


Figure 3: St. Lucie County Transit Network and Population Density

## E. ENGAGEMENT BACKGROUND - CONTINUED

### 4. PLANNING ISSUES AND OPPORTUNITIES

This section will briefly discuss the County’s transportation projects and investment priorities. SLC has been very innovative in exploring service enhancements and new programs. Transportation facilities and networks have the power to shape development, influence property values, and determine a region's character and quality of life.

Transit planning has been focused on the needs of those who are transit-captive and the transportation disadvantaged. Transit services in the County were first established to provide access to health care for SLC’s older population, and this has remained a key priority for the system. DR and FR transit services have historically been provided by a single operator, the Council on Aging of St. Lucie/Community Transit. The contract was most recently awarded in June 2014. An RFQ for the next contract is scheduled to be released in September 2018.

#### Free Fare Pilot

In September 2017, fixed route services began a two-year free fare pilot program that is funded through the Florida Department of Transportation (FDOT) Service Development Grant. SLC staff indicate that the free fare program has resulted in a significant increase in ridership. The County is currently not tied to a specific transit fare payment collection system and will reevaluate fare policy at the end of the pilot.

#### Direct Connect Pilot

St. Lucie County has experimented with “Direct Connect,” a public-private partnership with Lyft and local taxi providers to provide after-hours and weekend service for eligible recipients to and from “education/job training, employment, non-emergency healthcare, and life-sustaining activities” (Figure 4). This program was funded by the Florida Commission for the Transportation Disadvantaged (FCTD) Mobility Enhancement Grant (MEG) program and launched in 2017 with much acclaim. The program was recently paused due to the exhaustion of available funding of \$300,000. The program was in operation for one year and served 232 participants before being suspended. SLC has indicated that it has recently been awarded an additional \$100,000 and will soon enter into a contract with Uber.

#### Public Bike Share Pilot

Starting in March 2018, the County launched a bikeshare program operated by Zagster. The initial service utilizes a fleet of 50 bicycles spread between 9 stations throughout Fort Pierce and Port St. Lucie. Project performance data from Zagster (Figure 5) indicates that when compared to municipalities with similar fleet sizes, the program has less trips per month (247.60 compared to an average of 294.52) and less trips per bike per day (0.22 compared to 0.27 on average). This is a young program, whose slow early growth may be due to lack of public awareness. The County is in the process of developing its bicycle-supportive infrastructure, and many of the region’s miles of bicycle lanes share space with vehicles traveling over 30 mph. The stations may also not be in areas that would support the 2 to 3-mile trips that bikeshares are typically used for.



Figure 4: Brochure for Direct Connect Pilot Program

## D. ENGAGEMENT BACKGROUND - CONTINUED

St. Lucie Bike Share (50 Bikes)

Zagster Municipal Averages (40-60 bikes)

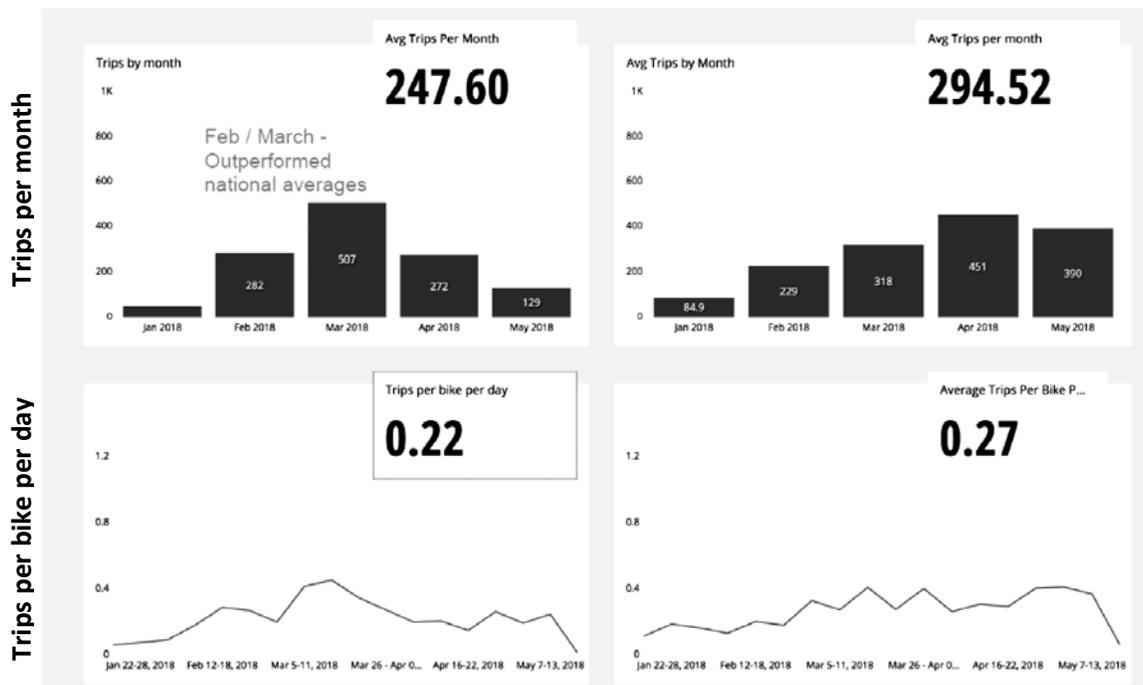


Figure 5: St. Lucie Bike Share Performance - Trips per month and Trips per bike per day (January to May 2018)

### Fort Pierce Potential Consideration for Commuter Rail Station

Downtown FP is a potential location for a station on the Brightline, a new inter-city, high-speed passenger rail service connecting Miami and Orlando that is slated to be operational by 2021. The potential station and access to high-capacity, inter-city public transit may have significant impacts on the County's economic development and the transportation patterns and practices of SLC residents. The potential FP station and adjacent development may represent a tremendous opportunity for the County. It is important that the County leverage developer interest and prioritize mixed-use residential and commercial Transit-Oriented Development over less productive uses (such as vehicle storage). Recognizing this potential transformation, County policy could protect valuable space in downtown FP and adjacent blocks and ensure that it is not negatively impacted by Park and Ride facilities.<sup>1</sup>

SLC's forward-thinking priorities, willingness to experiment, and capacity to implement pilot programs put the County in a good position to benefit from the anticipated transportation shifts and new mobility services. However, it is important that transportation planning and infrastructure be subservient to the County's values and development goals.

<sup>1</sup>Florida Department of Transportation Station Area Transit Oriented Development Readiness Tool <https://planfortransit.com/wp-content/uploads/2016/01/Station-Area-TOD-Readiness-Tool-User-Guide.pdf>

## E. DETAILED PROCEDURES AND RESULTS

### 5. TRANSIT OPERATIONS ANALYSIS

#### OBSERVATIONS

Sam Schwartz has developed the following set of observations based on our initial discovery and fact-finding study. Following interviews with SLC staff and a review of existing planning documents, St. Lucie County transit services were compared with 27 peer agencies, including SLC's treasure coast neighbors, 10 additional Florida agencies, and 7 similar agencies nationwide. Peers were identified using both population and transit service area.

**Observation 1.1:** SLC has established a clear set of programmatic goals and objectives in its 2017 Transportation Development Plan but has not implemented governing policies to establish transportation standards or a comprehensive framework for monitoring performance and evaluating transit service changes.

**Recommendation 1.1:** SLC should consider enacting measurable and verifiable goals related to mobility for residents and transit performance. Performance measures help Mobility Managers, and local officials identify and track how well they have clarified and defined mobility needs, as well as to create and design cost effective modes of transportation.<sup>2</sup> Performance measures require significant labor and data resources over time, so it is important to be strategic with those that are developed and ensure that the collection burden is not onerous. Setting network design and quality of service standards (Coverage vs. Frequency) and identifying realistic service targets (minimum boardings per revenue hour, reductions in net costs per passenger, number of trips diverted from higher-cost, demand-response services, etc.) can foster continuous and incremental improvement and help gauge the effectiveness of proposed service changes and new programs.<sup>3</sup>

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<sup>2</sup> National Center for Mobility Management (2014) - [https://nationalcenterformobilitymanagement.org/wp-content/uploads/2014/09/Performance\\_Measures\\_Final.pdf](https://nationalcenterformobilitymanagement.org/wp-content/uploads/2014/09/Performance_Measures_Final.pdf)

<sup>3</sup> Toronto Transit Commission Service Standards (2017) - [https://www.ttc.ca/PDF/Transit\\_Planning/TTC\\_Service\\_Standards.pdf](https://www.ttc.ca/PDF/Transit_Planning/TTC_Service_Standards.pdf)

## E. DETAILED PROCEDURES AND RESULTS - CONTINUED

**Observation 1.2:** Transit service in the County prioritizes demand-response services over fixed route services.

Compared to peer agencies, SLC is spending comparatively less on its fixed route services and more on its demand response services than its peers. SLC spends 40%, which is below the average of (63%) on fixed-route. For example, along the treasure coast, Martin County spends 71% and Indian River County spends 72% on fixed-route services (Figure 6).

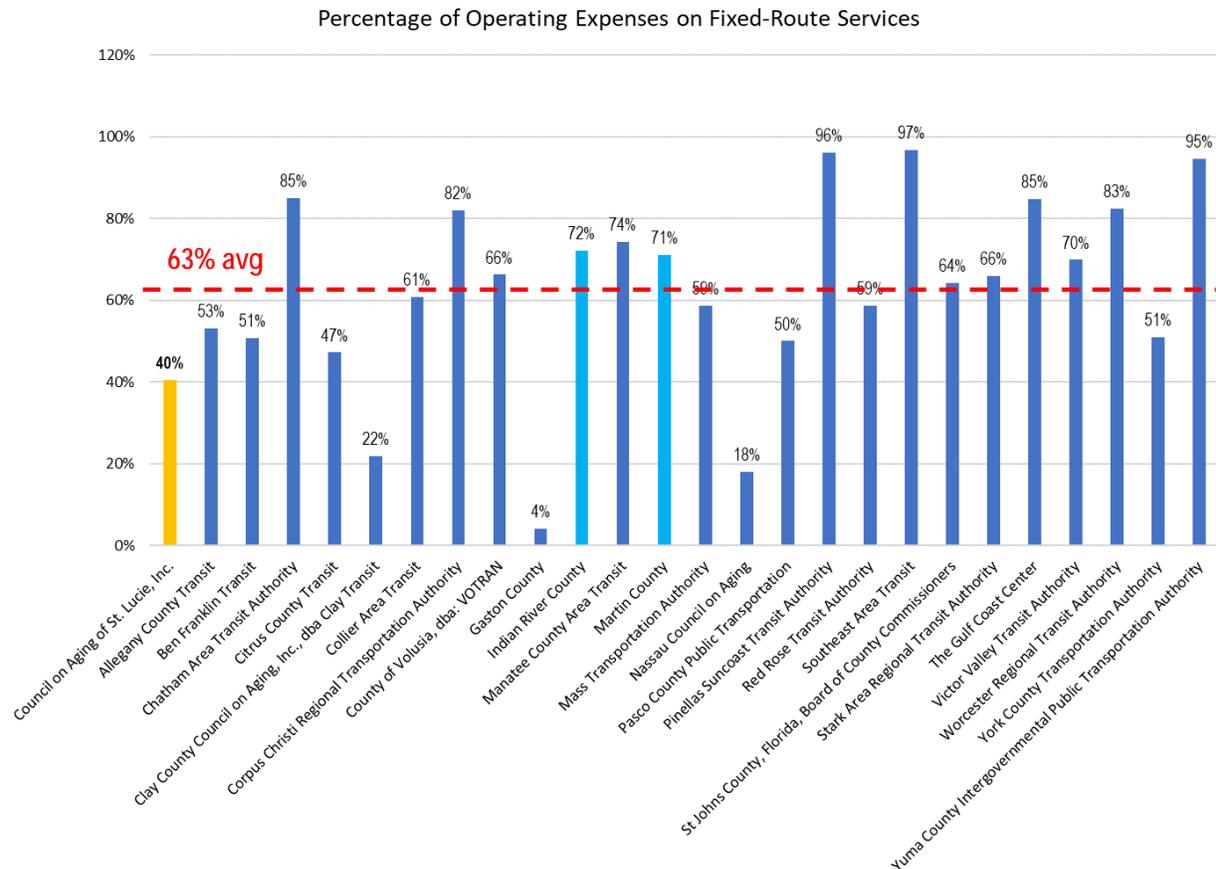


Figure 6: Percentage of Operating Expenses dedicated to Fixed-Route transit services

**Recommendation 1.2:** SLC should make the prioritization of demand response into a policy to formalize the intention of providing this as the primary service.

**Observation 1.3:** Cost of providing demand-response service is higher than average when compared with peer agencies. When evaluating expenses by both vehicle revenue mile and vehicle revenue hour, SLC's demand-response service operating expenses are higher than the peer agency average. Of the 20 agencies compared, the ratio of operating expenses to vehicle revenue miles (\$5.16/mile) for SLC demand-response services is ~34% higher than the peer group average (\$3.83/mile) (Figure 7). Similarly, the ratio of operating expenses to vehicle revenue hours (\$79.09/hour) for SLC demand-response services is ~28% higher than the peer group average (\$61.63/hour).

## E. DETAILED PROCEDURES AND RESULTS - CONTINUED

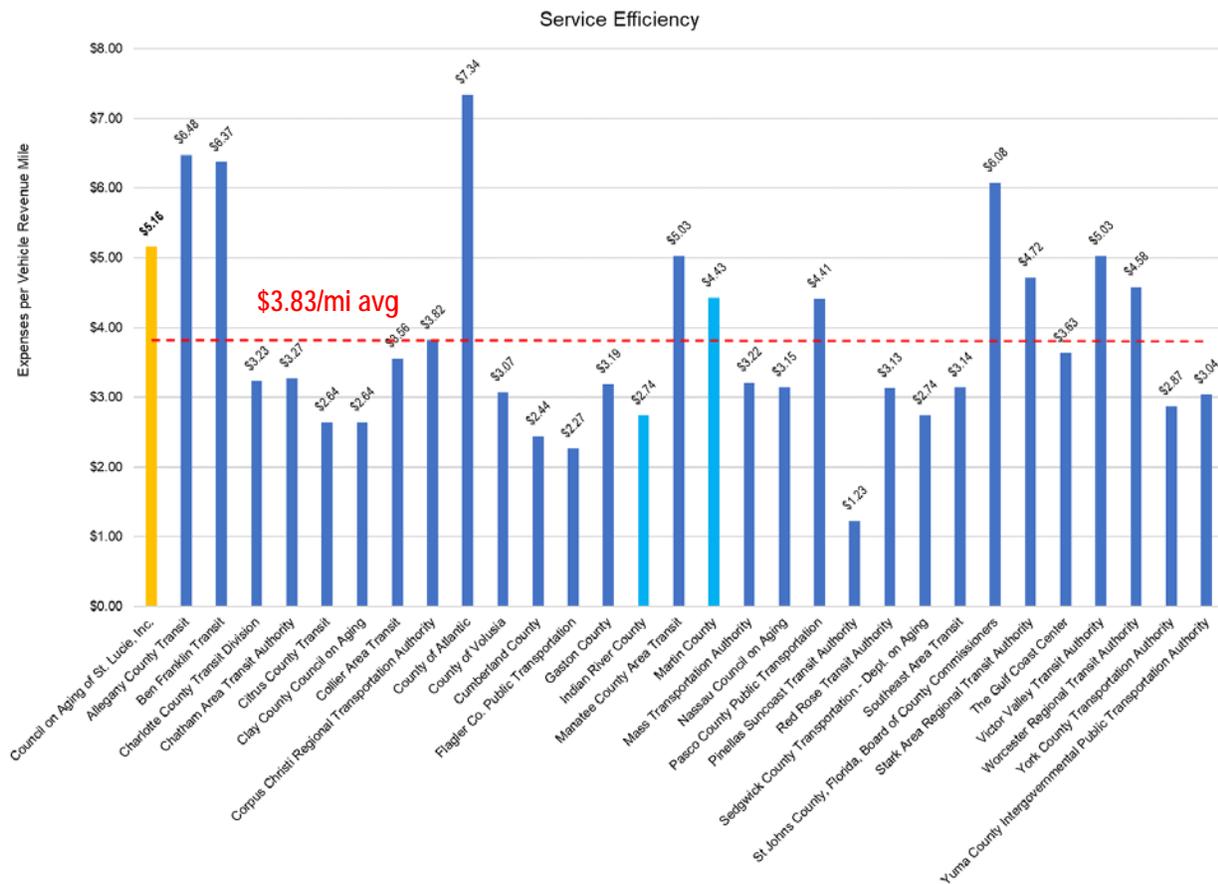


Figure 7: Demand-Response Operating Expenses per Vehicle Revenue Mile

While SLC's demand-response operating expense per passenger trip (\$27.00/trip) is in line with the average of peer agencies (\$27.15/trip), its operating expense per passenger mile (\$5.08/mile) exceeds the peer group average (\$3.20/mile) by ~59% (Figure 8). This information indicates that demand-response customers may be making shorter trips, reducing per trip costs, while still having higher than average operating expenses.

## E. DETAILED PROCEDURES AND RESULTS - CONTINUED

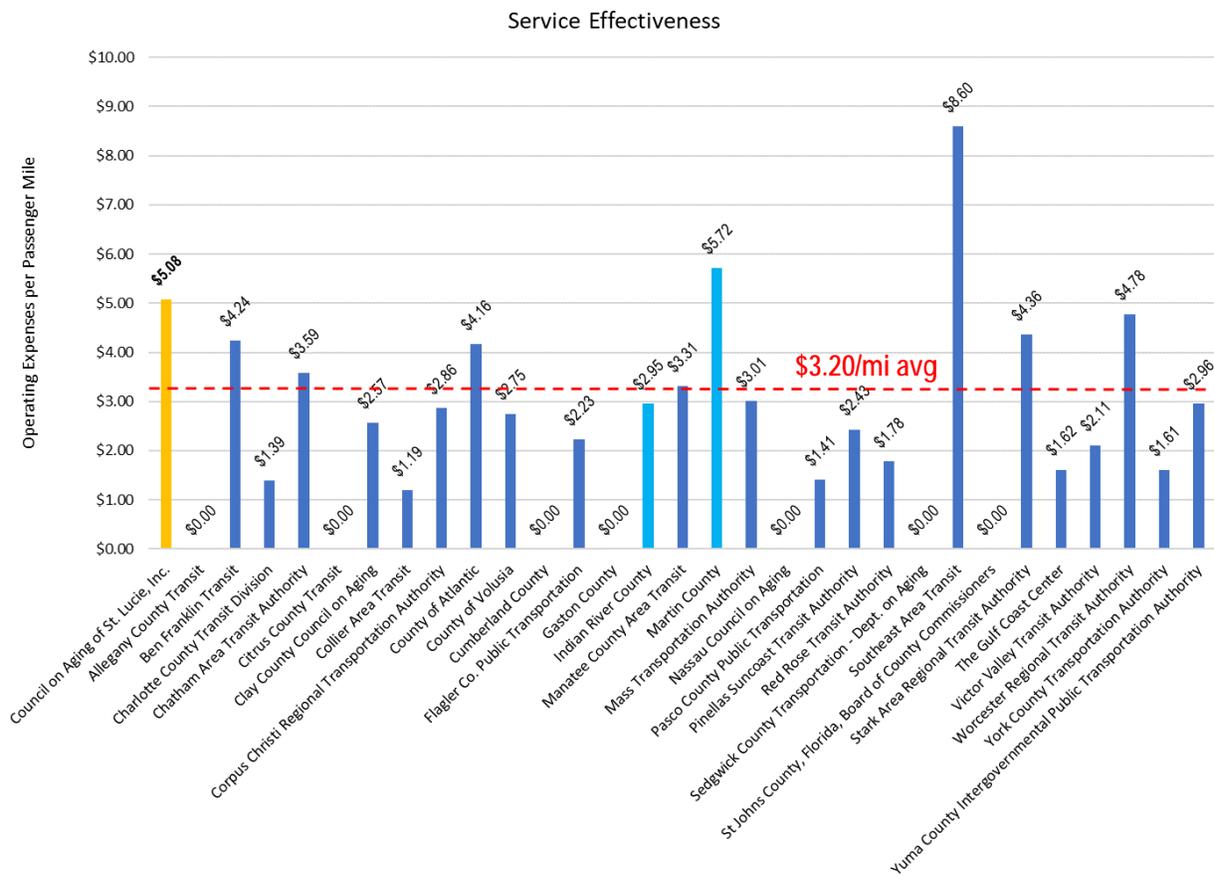


Figure 8: Demand-Response Operating Expenses per Passenger Mile

**Recommendation 1.3.1:** To reduce the costs of providing demand-response services, SLC may wish to update the terms of its service contracting agreement so that incentives are provided if the contractor meets certain cost performance metrics.

**Recommendation 1.3.2:** Potential cost saving costs for demand-response services may be found utilizing new mobility strategies such as Transportation Network Companies (TNCs) such as Uber, Lyft, or Juno. TNCs may be especially useful in meeting the needs of ambulatory demand-response transit customers. Recommendation 2.5 provides additional details toward this end.

**Observation 1.4:** Cost of providing fixed-route service is slightly higher than average compared to peer agencies. Using the peer agency 2016 National Transit Database (NTD) data, SLC's fixed route service operating expenses per vehicle revenue hour (\$73.36/hour) are  $\approx$ 5% higher than peer agency average of (\$69.75/hour) (Figure 9). SLC's fixed-route operating expenses per vehicle revenue mile (\$5.11/mile) are  $\approx$ 12% greater than the peer agency average (\$4.57/mile) (Figure 10). Well within reasonable range of its peers, operating costs may be driven by certain factors inherent to the Treasure Coast context, including the urban form and geography which may lead to higher fuel costs, geographic isolation of certain service areas, and high traffic, among others.

## E. DETAILED PROCEDURES AND RESULTS - CONTINUED

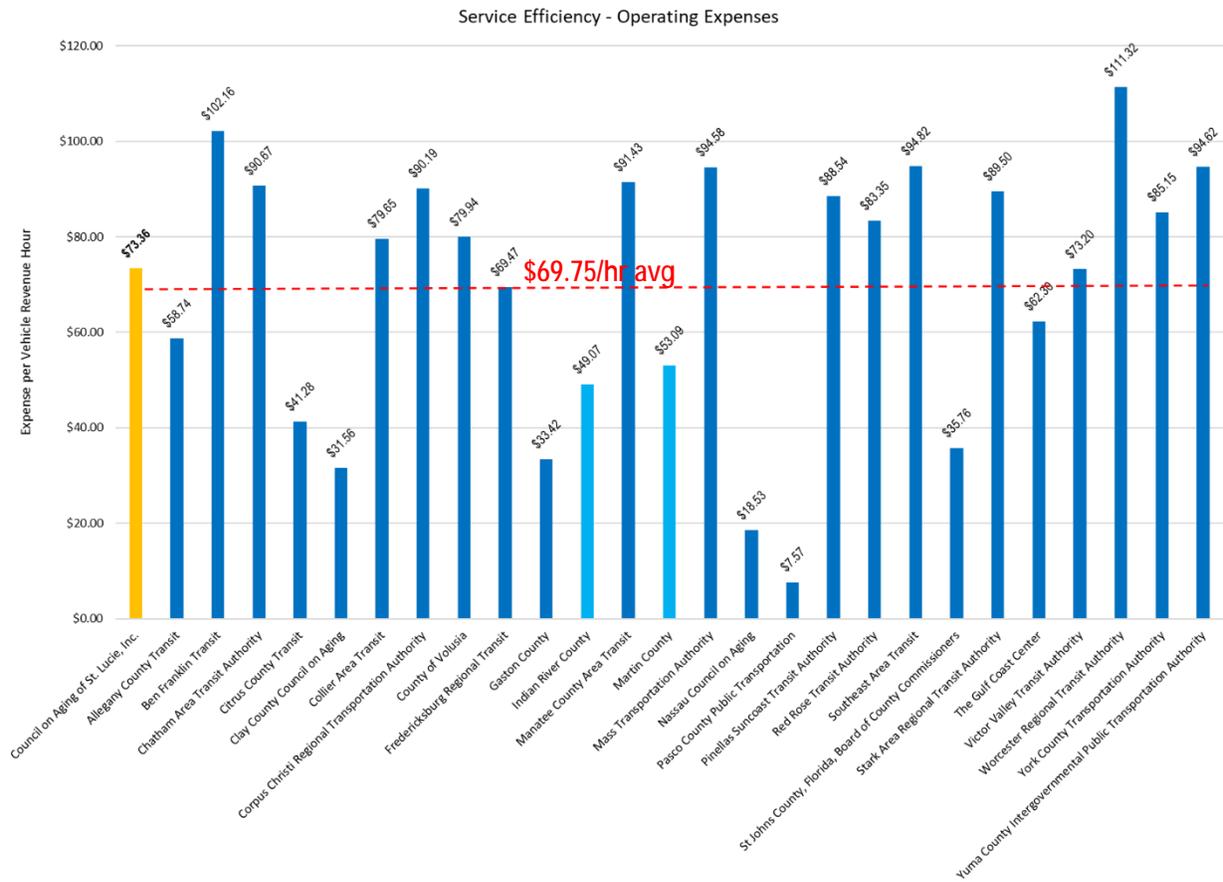


Figure 9: Fixed-Route Operating Expenses per Vehicle Revenue Hour

## E. DETAILED PROCEDURES AND RESULTS - CONTINUED

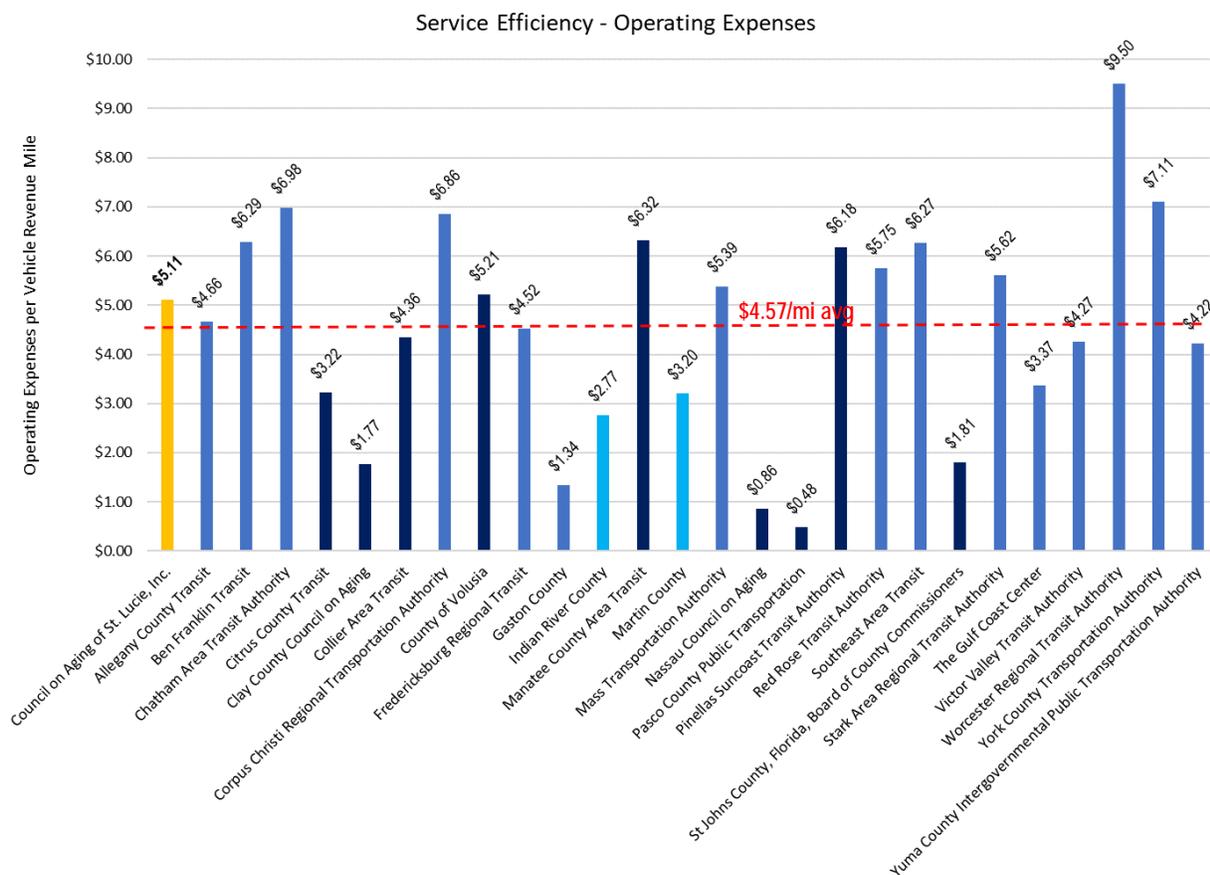


Figure 10: Fixed-Route Operating Expenses per Vehicle Revenue Mile

**Recommendation 1.4.1:** SLC should explore transitioning its fleet to vehicle propulsion types with lower costs for operations and maintenance (such as electric vehicles).

**Recommendation 1.4.2:** To similarly reduce the costs of providing fixed-route services, SLC may explore a peer review analysis with agencies and update the terms of its service contracting agreement. This is a strategic time to update and refine SLC’s agency-contractor relationships. Innovations in operations contracts and improved understanding of the benefits of effective contract regimes have simultaneously yielded cost savings and enhanced transit performance.<sup>4</sup> For example, incentives (such as financial bonuses) can be provided if the contractor meets certain County mobility goals and cost performance metrics.

<sup>4</sup> TransitCenter + Eno Center for Transportation (2017) “A Bid for Better Transit”  
<https://transitcenter.org/publications/a-bid-for-better-transit/>

## E. DETAILED PROCEDURES AND RESULTS - CONTINUED

**Observation 1.5:** Land-use and density make it difficult to provide efficient public transit services in the County. This development pattern is typical of South Florida, and much of the suburban developments across the country.

**Recommendation 1.5.1:** SLC should utilize land use policy tools to encourage transit-supportive and transit-oriented development to ensure that as the County grows it becomes more supportive of successful transit services.

As there is the potential for a mass transit station in downtown Fort Pierce, the County may wish to explore tools to reduce parking blight near the station. Developers and agencies in rural and urban contexts across the country are recognizing the unproductive nature of vehicle storage space. This is especially in developments adjacent to high-capacity transit. Value capture strategies generate sustainable, long-term revenue streams that can help repay debt used to finance the upfront costs of building infrastructure, such as transit projects. Revenue from value capture strategies can also be used to fund the operations and maintenance costs of transit systems.

**Recommendation 1.5.2:** SLC may utilize parking policy tools to capture revenue and fund transportation. For instance, The City of West Palm Beach encourages developers to buy-in to lower parking requirements to fund local transit and transportation improvements.<sup>5</sup> Such payment in-lieu of parking policies have been successful in developing transit supportive communities.

**Observation 1.6:** Most of SLC's transit users are captive. Public transportation in the County has been managed traditionally through the department of community service channels and funding sources reflect the needs of transportation disadvantaged. This may be reflective of the competitiveness and quality of public transit services the County provides. SLC's fixed-route services are operated at the minimum to meet passenger demand with maximum headways (time between vehicles) required to provide regular services. SLC fixed-route transit operates with minimum one-hour headways that may make services less attractive to by-choice riders.

**Recommendation 1.6.1:** To make fixed-route transit more competitive, SLC may utilize urban design and complete streetscape guidelines to develop a network of strategic mobility projects and physical improvements to corridors and key destinations. Projects may fill a gap in the existing bicycle, pedestrian, and transit networks, leverage existing facilities, improve safety, comfort, and convenience of streets, and expand travel options for all road users (Figure 11).

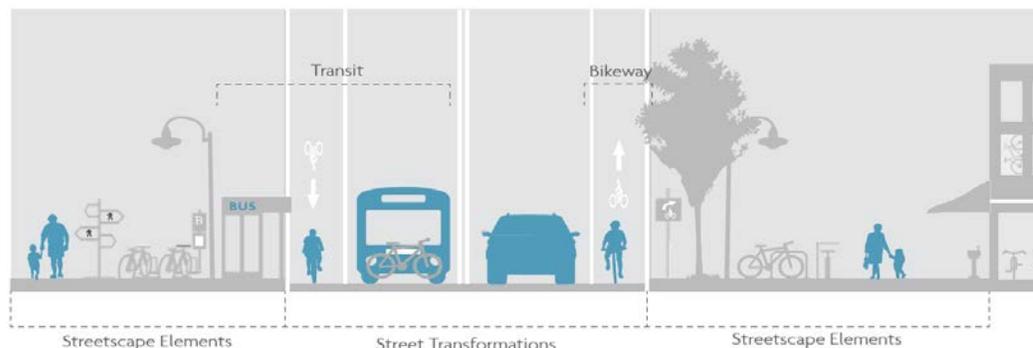


Figure 11: Possible streetscape elements and street transformations (West Palm Beach Mobility Plan)

<sup>5</sup> West Palm Beach Mobility Plan (2018) - <http://www.wpbmobility.com/>

## E. DETAILED PROCEDURES AND RESULTS - CONTINUED

Comprehensive and reliable transit provides transportation choice for everyone. To succeed, transit service must provide frequent, reliable, accessible, and convenient service. This type of high-quality, highly-accessible transit system connects regional areas to downtown and is paired with a local service downtown that connects to key destinations. Transit should work in tandem with users who walk and bike to create a seamless, convenient trip. Transit corridors should be designed with these users in mind, ensuring stops are close to grocery stores, parks, services, and job centers.

**Observation 1.7:** SLC's transit ridership is increasing. FY17 fixed-route ridership increased to 204,726 one-way passenger trips, which represented a 15% increase from FY16 levels (178,474). Following the 2-year state funded free fare pilot program and service span increases that were instated in 2017, the impact has been much more dramatic, initially increasing 52% (Figure 12) over the course of a single month. For the first 8 months after the free fare was implemented, fixed-route transit ridership increased by 191,278 riders when compared to the same time period in the previous year (representing a **124%** increase).

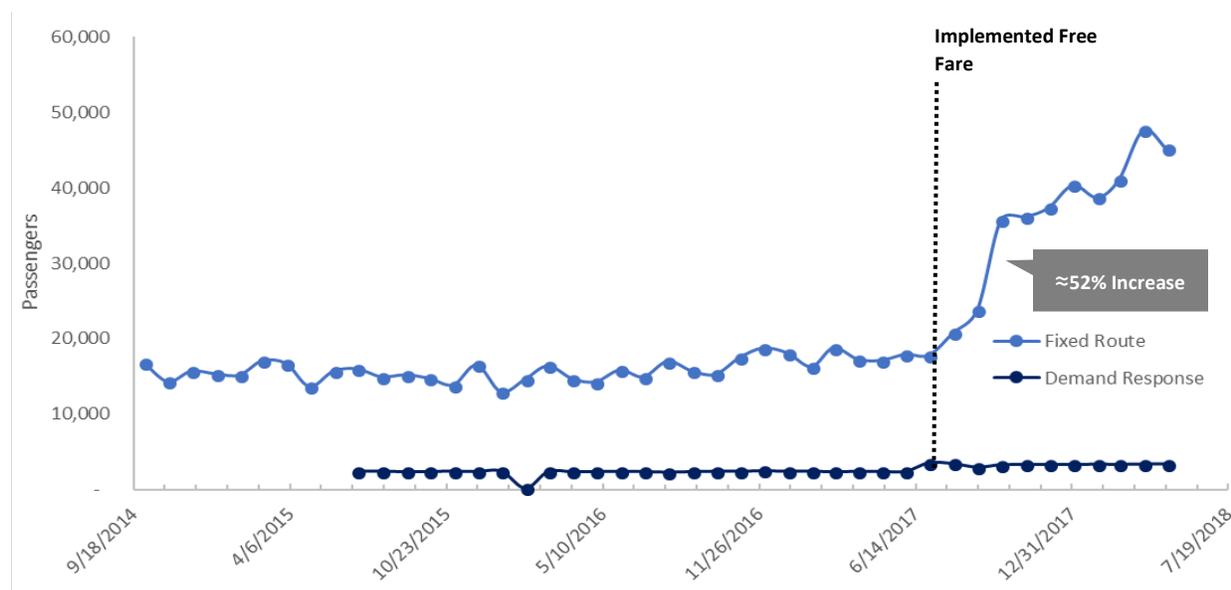


Figure 12: SLC Monthly Transit Ridership (10/2014 - 05/2018)

This is a good sign as nationally transit ridership levels have been generally declining. However, stakeholder interview anecdotes suggest that by-choice transit customers have not been attracted to the transit via this approach. As noted above, the population of SLC's service area is also increasing  $\approx 2\%$  annually.

**Recommendation 1.7.1:** SLC should re-assess the longer-term financial impacts of providing a free transit network. Successful fixed-route services must grow to remain competitive to other modes of travel. At a certain point the lost fare-box revenue will outweigh the reduced costs of fare collection tasks. If bringing fares back is a possibility for general customers, it is important that the County continue to provide subsidies to transportation disadvantaged populations (including children, seniors, people with disabilities, and people with low incomes).

## E. DETAILED PROCEDURES AND RESULTS - CONTINUED

**Observations 1.8:** SLC does not have service performance standards. The County may not be able to effectively identify relevant performance measures and evaluate the appropriateness or adequacy of its services and contemplated service changes, especially to prepare for future growth.

**Recommendation 1.8.1:** Develop service performance standards per Rec 1.1. The following goals may guide the development of a transit-friendly St. Lucie County:

- Increase frequency
- Improve reliability and predictability
- Enhance regional bus service to downtown Fort Pierce and core Port St. Lucie destinations
- Enhance fixed-routes to be more intuitive, frequent, reliable, and direct
- Integrate transit services better, including commuter bus and future commuter rail (Brightline) connections
- Support stable and equitable long-term transit funding sources
- Support improved inter-regional transit services
- Support a transit system that is easy to navigate and intuitive
- Support improvements to increase capacity and ensure fast, frequent, reliable, accessible and comfortable service
- Enhance access to transit by other modes, particularly walking and biking.

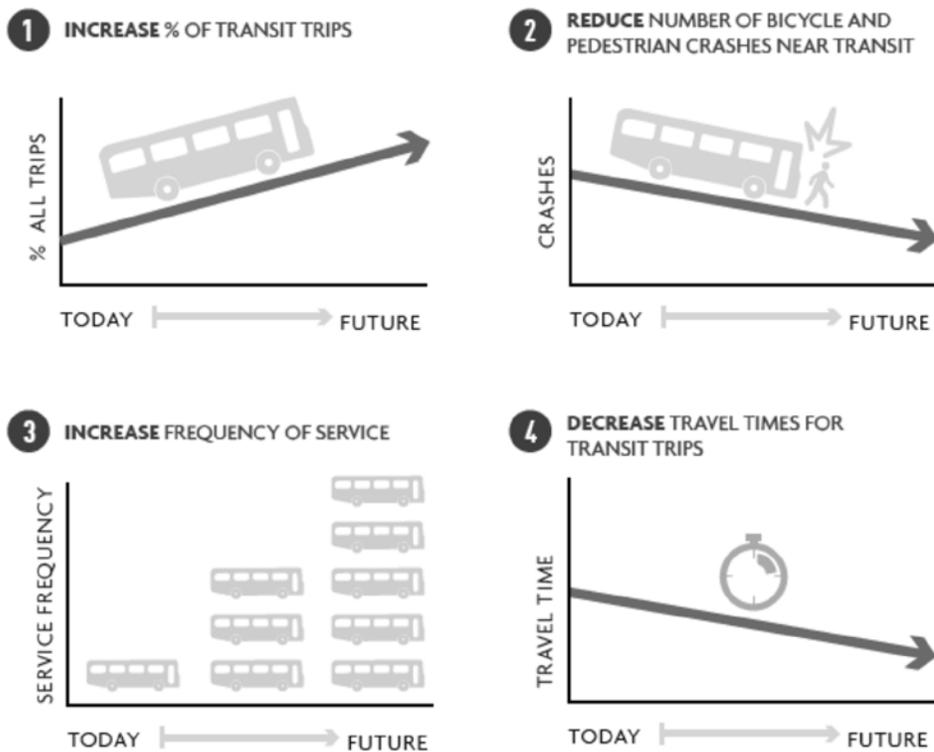


Figure 13: Examples of transit performance goals (West Palm Beach Mobility Plan)

## E. DETAILED PROCEDURES AND RESULTS - CONTINUED

**Observations 1.9:** Although ridership has grown, so have costs. Municipal Service Taxing Unit (MSTU) Fund subsidies for transportation grew from approximately \$1 million in in Fiscal Year (“FY”) 2003<sup>6</sup>, when County-funded public transit began, to over \$5 million in FY 2017<sup>7</sup> ( $\approx 7\%$  annual growth). Grant funding, including sources from Federal (FTA) and State (FDOT and FCTD) sources has also been significant. Grant funds have ranged from \$6.2 million in 2003<sup>8</sup>, decreasing to \$3.4 million in 2009<sup>9</sup>, then rising to \$4.4 million in 2017. MSTU and grant funding represent the transit division’s key funding sources. It is important to seek additional funding so that service levels match potential demand and are not just based on grant availability.

**Recommendation 1.9.1:** Explore innovative transit funding sources from local developer revenue (such as exactions and impact fees).

**Recommendation 1.9.2:** Explore expanding additional advertising revenue at transit shelters, benches, and facilities. Shelter advertising contracts are very common and will support improved shelter maintenance and transit supportive amenities (such as real-time arrival time dynamic display, push buttons to provide access to this information for people with visual disabilities, enhanced wayfinding signage, Wi-Fi, etc.)

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<sup>6</sup> FY 2003 Budget by Fund - St. Lucie County Board of County Commissioners

<http://www.stlucieco.gov/Home/ShowDocument?id=1794>

<sup>7</sup> FY 2017 Fund Expenditure Budget Summary Report - St. Lucie County Board of County Commissioners

<http://www.stlucieco.gov/Home/ShowDocument?id=6635>

<sup>8</sup> FY 2003 Fund Expenditure Budget Summary Report - St. Lucie County Board of County Commissioners

<http://www.stlucieco.gov/Home/ShowDocument?id=1774>

<sup>9</sup> FY 2009 Fund Expenditure Budget Summary Report - St. Lucie County Board of County Commissioners

<http://www.stlucieco.gov/Home/ShowDocument?id=1542>

## E. DETAILED PROCEDURES AND RESULTS - CONTINUED

### 6. NEW MOBILITY PLANNING

New Mobility is a catchall phrase referring to changes within the intersection of transportation and technology that are fundamentally shifting established views on how cities may best facilitate mobility for its residents. Three key trends are disrupting the transportation marketplace:

1. Technology - How people can live
2. Values - How people want to travel
3. Patterns - How people do live

Technology is driving changes in the way people desire to travel. For example, smartphones have made it easy for residents to access real-time data and a wide variety of transit options. There are opportunities to integrate different modes, allowing residents to seamlessly string together a variety of modes to complete a trip based on various use cases.

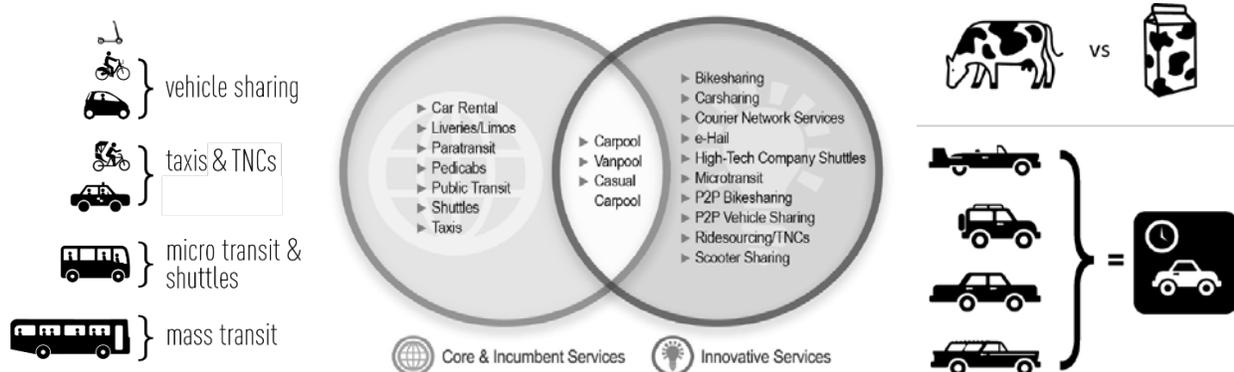


Figure 14: New Mobility Modes (Left – Sam Schwartz), Service Models (Center – UC Berkeley, Susan Shaheen), Technology-abled commodification of Mobility (Right – UC Berkeley, Susan Shaheen)

Autonomous vehicles are also on the horizon. Often referred to as New Mobility are transit services utilizing emerging technology (e.g. blockchain) or non-traditional business models (e.g. shared, peer-to-peer). Four areas of interest are automated driving, connected vehicles and transport networks, shared-use and electric technology. These may include on-demand services, ridesharing, bikesharing, and microtransit.

The opportunity that New Mobility services provide cities are exponential in terms of providing more efficient, cheaper, and convenient service. The challenge is uncertainty. Change in this burgeoning industry is swift and come with a range of potential outcomes. It is the role of SLC to determine what services may suite its unique local context and help it reach its goals. It is important to keep in mind that each region has a different starting point and specific needs. To best capitalize on this new technology, SLC must have a clear plan and predetermined outcomes. While New Mobility services may reduce the need for personal car ownership and has the potential to decrease congestion, if not managed effectively, the current status quo may prevail.

## E. DETAILED PROCEDURES AND RESULTS - CONTINUED

### OBSERVATIONS

**Observation 2.1:** New Mobility policy has the potential to allow SLC to significantly enhance the accessibility and mobility for SLC residents and seasonal visitors. The County prioritizes providing transit that provides a high-quality level of service and convenience with a goal of continuing to increase transit ridership. New Mobility has the potential to support and enhance these objectives. SLC has been extremely active in pursuing pilot programs and in attempting to secure grant funding for new mobility options.

When working with private sector partners, clarity regarding policy outcomes and performance standards (such as equitable access, data sharing, etc.) will ensure that all pursuits supports SLC's goals and objectives. When SLC selects service goals and performance measures (per Rec 1.1) these should guide decisions around New Mobility programs as well as fixed route programs. Common objectives that can apply across these programs might include financial efficiency (cost per customer trip), environmental sustainability (emissions per customer trip), service equity (coverage of different communities and demographics), and customer responsiveness (wait times.)

With a focus on outcomes, SLC can take advantage of technology available now while proactively planning for emerging technology, which could include the following -

- **Curbside Management** - Focus on digitizing the County's curbside assets to allow for flexible and efficient use of curb space to maximize the efficient movement of people and goods.
- **New Mobility** - Focus on the management and enforcement of mobility services. The collection and sharing of data is necessary in order for the County to understand changing user preferences and how to improve the transit system. New Mobility is only one piece of the transportation marketplace.
- **Autonomous Vehicles** - Focus on operations and policy that increases safety, reduces single-occupancy trips, and decreases congestion.

With high levels of uncertainty regarding potential deployment scenarios, particularly for autonomous vehicles (AVs), it is key that SLC also remains flexible and creates policy that is adaptable to future change and innovation. Tests and pilot projects will also allow SLC to understand how new modes affect customer behavior.

Many cities nationally are currently exploring the creation of transportation demand management programs that bring a variety of options under a single policy umbrella to increase accessibility and decrease dependence on single-occupancy vehicles. With flexibility, residents can choose modes that suit their use case. Economic incentives may encourage higher usage of particular modes, allowing SLC to realize its desired outcome.

**Recommendation 2.1.1:** Pursue New Mobility partnerships with a focus on meeting SLC goals and priorities. Clearly define how success of a New Mobility program will be measured and monitor those metrics throughout the partnership.

If the agency prioritizes customer responsiveness, TNC partnerships might be considered. If the agency prioritizes environmental sustainability, battery electric buses might be appropriate. If the agency prioritizes financial efficiency, traditional or automated bus service may be preferred.

**Recommendation 2.1.2:** Pilot projects with private operators may help SLC understand the effects of new mobility services on its current system. A flexible policy that allows SLC to test and monitor the performance of services should be created. If partnering with private operators, strong data sharing agreements should be included in contracts to ensure that SLC understands how services are impacting user behavior.

## E. DETAILED PROCEDURES AND RESULTS - CONTINUED

**Recommendation 2.1.3:** It is important not to overly focus on the technology itself and its potential benefits. To this end, SLC may consider creating a framework or roadmap for realizing the benefits of emerging technologies. For example, the Seattle Department of Transportation (SDOT) New Mobility Playbook uses the city’s goals to develop a set of five “plays” (concise strategies) for adopting emerging technologies in transportation, as shown below:

- Play 1: Ensure new mobility delivers a fair and just transportation system for all.
- Play 2: Enable safer, more active, and people-first uses of the public right of way.
- Play 3: Reorganize and retool SDOT to manage innovation and data.
- Play 4: Build new information and data infrastructure so new services can “plug-and-play.”
- Play 5: Anticipate, adapt to, and leverage innovative and disruptive transportation technologies.

Table 3: Potential Performance Metrics for New Mobility Projects (TransitCenter 2018)

Agency Goal	Agency Policy	Performance Metric
Operate a financially efficient organization	Deliver service efficiently	Cost per vehicle revenue hour
	Deliver service efficiently	Cost per vehicle revenue mile
	Deliver service efficiently	Cost per boarding
Make transit the preferred mode of travel	Reduce transit travel time	Median transit travel speed
	Reduce transit travel time	Median passenger travel speed
	Provide high frequency transit service	Percent of residents within a quarter-mile of 12 minutes or better transit frequency during weekday peak periods
	Provide high frequency transit service	Percent of residents within a quarter-mile of 12 minutes or better transit frequency all day, all week
	Increase reliability of transit service	Excess wait time
	Increase reliability of transit service	Percent of trips with bunches or gaps
	Increase reliability of transit service	On-time performance
	Provide transit service that is easy to walk to	Percent of residents within a quarter-mile of 30 minutes or better transit frequency
	Provide transit service where riders feel safe	Collisions per 100,000 miles
	Provide transit service where riders feel safe	Severe injuries and fatalities per 100,000 miles
	Provide transit service where riders feel safe	Reported crimes per 100,000 miles
	Provide electronic trip planning information to all riders	Percent of riders boarding at a stop with real-time information available
	Reduce financial burden on riders	Ratio of fare to median rider income
	Increase ridership	Average daily ridership
Increase transit mode share	Transit mode share	
Increase economic opportunity for all	Reduce transit travel time	Median number of jobs accessible within a 45-minute commute
Reduce environmental impact of transportation	Reduce greenhouse gas emissions	Annual tons of greenhouse gas emissions

## E. DETAILED PROCEDURES AND RESULTS - CONTINUED

### ASSESSING NEW MOBILITY TRANSIT

The following two observations utilize a methodology developed for the Seattle New Mobility Playbook. These analyses seek to examine “low productivity” service that could potentially be supplemented or replaced by point-to-point mobility options such as TNCs.

The analysis uses the following steps:

1. Identify costs for providing fixed-route, paratransit, and dynamically-routed TNC services (Figure 15)
2. Gather data showing usage of current transit and paratransit services
3. Calculate passengers per hour for existing services
4. Calculate the cost to Metro for existing services
5. Calculate the cost of providing all services through TNCs
6. Identify services that would be cost-neutral or cost-effective if provided by TNC

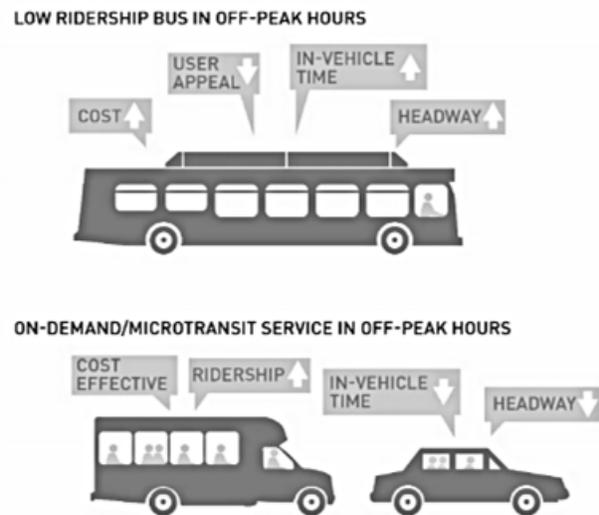


Figure 15: Comparison between New Mobility and traditional transit options

**Observation 2.2:** In an analysis of potential SLC fixed-route bus trips that may be better served at a comparable cost by shared mobility services, it was found that almost no trips of the existing fixed-route service will perform better to justify switching to TNCs based on financial reasons. Conversion of fixed route service to a TNC model would need other justifications, such as customer response times. Uber prices were used for comparison, as the company currently holds 70% - 80% of the ridesourcing market<sup>10</sup>

- The 2016 subsidy per unlinked passenger trip was **\$9.20**. (Source: NTD)
- The shift to a fare-free system increased bus ridership considerably but also reduced revenue. The trip-level review from March 2018 indicated similar costs per trip as in 2016. The off season is likely worse, though.
- The 2018 price for a comparable UberX trip would be **\$24 to \$35**. (Source: [www.uber-fare-estimator.com](http://www.uber-fare-estimator.com) and [www.uber.com/fare-estimate/](http://www.uber.com/fare-estimate/) trip of 14.5 miles)
- Based on March 2018 data, almost no trips of the existing service perform poorly enough to justify switching operation to TNCs on financial grounds. However, other seasons of the year may have different performance, and this does not consider nonfinancial factors that may be relevant.

<sup>10</sup> <https://www.cnbc.com/2018/05/14/lyft-market-share-051418-bosa-sf.html>

## E. DETAILED PROCEDURES AND RESULTS - CONTINUED

Figure 16 is a histogram summarizing the annual net cost required to transition existing SLC trips to operation by TNCs. Note that most trips in the category 0 to \$5,000 are from Route 7.

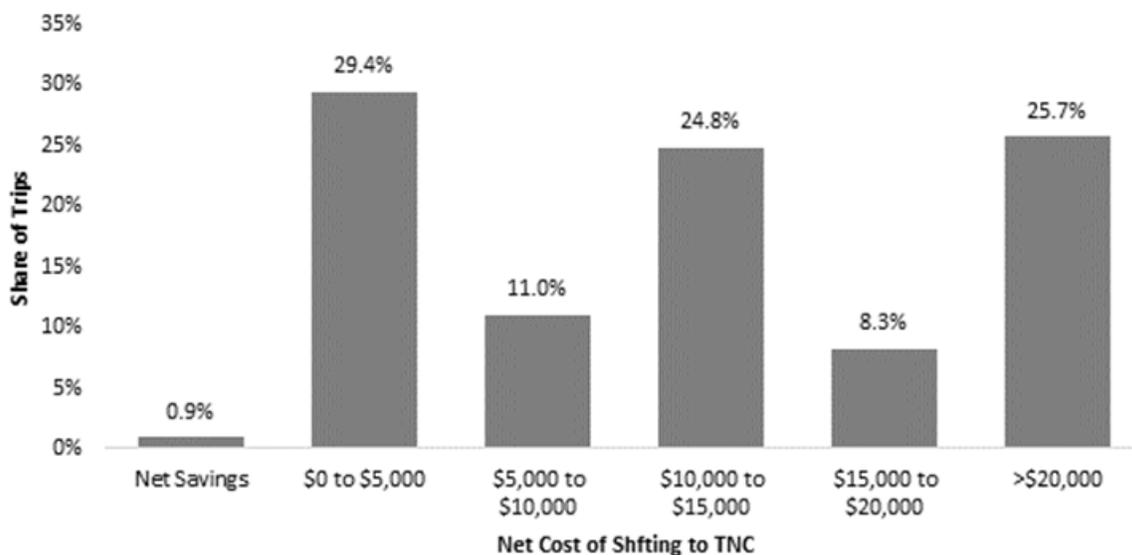


Figure 16: St. Lucie County distribution of Trips by Annual Cost per Trip of Transitioning to TNC

While using New Mobility to replace existing fixed-route service does not appear justified, New Mobility modes could still supplement the network. This could allow SLC to serve lower-demand markets such as overnight periods and very low-density areas using a demand-response model. Fixed-route microtransit could also be considered for lower demand markets. For example, in other regions companies like Chariot and Via have launched commuter shuttles focused on markets with less demand than supports traditional bus service. This might be explored for long-distance regional commutes or to connect users to the potential FP downtown commuter rail station. For any programs of this nature, it would be important to ensure that vehicles are accessible for customers with disabilities.

**Recommendation 2.2.1:** Enhancing fixed route transit is considered best practice in New Mobility planning to avoid increasing congestion. In areas of less transit supportive urban forms, new mobility options can help support access to transit, increase efficiency of demand-response options. New Mobility services may lead to improved fleet cost effectiveness, due to estimated costs of energy (Electric Buses) and potentially labor (Automated Transit Vehicles).

**Recommendation 2.2.2:** New Mobility options should supplement existing fixed-route services rather than replacing them, if SLC prioritizes financial efficiency. *Sam Schwartz* analysis found that almost no trips of the existing fixed-route service will perform better to justify switching to TNCs based on financial reasons. To supplement or expand the fixed route network microtransit options may be explored. There are currently a variety of microtransit services, on-demand and scheduled, dynamically routed or fixed-route.

## E. DETAILED PROCEDURES AND RESULTS - CONTINUED

**Observation 2.3:** It is likely that electric buses will play a prominent role in the agency's future.

Many American public transit operators are currently evaluating the possibility of transitioning their fleets to use battery-electric buses (BEBs.) Agencies typically test out a small number of vehicles to gain operational experience before planning to fully transition their fleets. This transition may be considered for reasons including environmental sustainability, reduced maintenance costs, and reduced fuel costs. (SLC fuel costs currently make up 8% of total operating expenses.)



Figure 17: King County Battery Bus and Charging Station (FTA)

Currently there are two main types of BEBs: Slow Charge BEBs charge at their depot while not in use, while Fast Charge BEBs charge during layovers along their routes. Slow Charge BEBs require modified designs of bus depots to accommodate charging infrastructure. Fast Charge BEBs require the siting of charging infrastructure at various locations in the service area. Local electrical utilities are often strong partners to provide technical assistance to transit agencies evaluating the potential for applying BEBs. In addition to providing new demand for electricity, BEBs can enhance the resilience of the electrical grid if the batteries can sell power back to the grid during demand peaks.

The state of the technology for BEBs is developing rapidly, with vehicle range growing longer, battery charging growing faster, and purchase prices becoming more affordable. Planning for a transition to BEBs requires understanding the levels of uncertainty associated with new technologies and future conditions. Peer agencies have addressed this by conducting Fleet Replacement Scenario Planning, which compares the life-cycle costs of a fleet continuing to use diesel buses with expected life-cycle costs of a fleet using different types of BEBs. Peer agencies also conduct BEB Operations Analysis to ensure that their existing service schedules can be operated within the battery limitations of BEB technologies.

Fleet lifetime savings may allow SLC to purchase additional busses to improve service and significantly improve capacity. Currently, the determining factor for the cost of electric buses is the price of its batteries, the prices of which are falling quickly. If a conservative 8% cost reduction for batteries year over year is considered, electric buses' lifecycle cost *may* be at parity with diesel buses over the next 15 years. Grant programs, including those from electric companies, may help offset the upfront cost of electric buses.

## E. DETAILED PROCEDURES AND RESULTS - CONTINUED

**Recommendation 2.3.1:** As SLC develops its new facility, SLC should ensure future compatibility for alternative power sources.

**Recommendation 2.3.2:** SLC should consider grant programs that may offset the purchase costs of electric buses - Florida Power and Light may be a potential partner in this effort. SLC should also continue to keep track of the prices of electric busses as prices are expected to continue to decrease as technology improves.

**Recommendation 2.3.3:** Electric buses should be considered in SLC's Transit Asset Management (TAM) plan which has been established to ensure that vehicles are replaced when they reach the end of useful life as defined by age and mileage.

**Observation 2.4:** Autonomous, electric buses will also have the potential to continue to reduce costs for SLC.

The primary cost for any transit service is labor compensation. For SLC's fixed route service, labor costs currently make up 66% of total operating expenses. Compensation and fringe benefits currently cost SLC \$136,236 per bus per year and \$1.63 million over a 12-year bus lifetime. Considering the current fleet of 9 busses, SLC has the potential to save \$1.23 million per year and \$14.71 million over 12 years, not considering the cost of adding automated technology to bus platforms.

**Recommendation 2.4.1:** Small-scale pilot projects, particularly related to autonomous vehicles, may assist with public awareness, education, and acceptance. SLC should consider partnering with academic institutions or private companies who are hoping to learn more about how the public may interact with autonomous transit services. Several cities in Europe and Asia are also testing out non-traditional ownership and maintenance models for autonomous bus fleets.

**Recommendation 2.4.2:** The successful implementation of AVs will require collaboration between a wide range of stakeholders. These may include elected officials, state and local agencies, and private companies. SLC may consider forming a working group with all stakeholders to start the dialogue around goals for AV implementation and potential policy barriers.

**Observation 2.5:** The average SLC demand-response trip could be operated at a lower cost using existing TNC services. That is, the cost per customer trip is lower using TNCs than using paratransit.

- The 2016 subsidy per unlinked demand-response passenger trip was **\$26.55**. (Source: NTD)
- The shift to a fare-free system caused a smaller increase in demand-response usage and reduced revenue in comparison to fixed-route.
- The 2018 price for a comparable UberX trip would be **\$10 to \$16**. (Source: [www.uber-fare-estimator.com](http://www.uber-fare-estimator.com) and [www.uber.com/fare-estimate/](http://www.uber.com/fare-estimate/) trip of 5.3 miles)
- Switching some paratransit trips to TNCs could be justified on financial grounds. However, this will only work for customers who do not require wheelchair-accessible vehicles (WAVs). Programs like UberWAV are only present in select cities currently.

Approximately 85.7% of SLC paratransit trips are ambulatory and do not require a WAV (SLC Demand-Response Data trips). If this share of paratransit trips could be shifted to use TNC services, the overall savings could reach \$1,180,000 annually. However, SLC would need to provide a comparable solution for WAV users.

## E. DETAILED PROCEDURES AND RESULTS - CONTINUED

Utilizing an app-based service such as Uber may help the County decrease response times. Currently, SLC suggests booking up to 72 hours in advance, while peer agencies suggest booking 24 hours in advance. Ridesourcing allows for on-demand service.

The Massachusetts Bay Transportation Authority (MBTA) has been running a pilot program with Uber and Lyft to offer on-demand transit services to paratransit customers from fall 2016<sup>11</sup>. Originally set to end in April 2018, the pilot has been extended to January 1, 2019. Subsidized rides are available during paratransit service hours and the fare policy is currently set as follows –

- For UberPOOL: customers pay the first \$1 for the trip and anything over a \$41 fare.
- For all other Uber services and all Lyft trips: customers pay the first \$2 and anything over a \$42 fare.

Each month, customers only receive a limited number of subsidized rides, based on their eligibility. TNC drivers are also unable to help customers board vehicles.

As of July 2018, the pilot has reached 1,200 riders. Using on-demand services have become so popular that one in five of those participating in a pilot program have stopped using the MBTA's regular paratransit service. The MBTA has also experienced cost savings. Rather than costing the MBTA \$35 per ride, service have cost the MBTA, on average, \$9. The contract between MBTA and Uber and Lyft have also allowed the transit agency to exert pressure on the private companies to have more accessible vehicles.

While TNCs are one of the most prominent forms of New Mobility currently available, other technologies could also be considered as alternative service models. Autonomous vehicles have the potential to continue to reduce costs. For SLC's fixed route service, labor costs currently make up 66% of total operating expenses.

**Recommendation 2.5.1:** To reduce the costs of providing demand-response services and improve service responsiveness, SLC may wish to explore partnering with TNCs and local taxi companies to provide demand-response trips. This partnership should include measures to ensure that non-ambulatory customers will have the same level of service as ambulatory customers.

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<sup>11</sup> <http://www.philly.com/philly/business/transportation/paratransit-septa-boston-uber-lyft-20170814.html>

## E. DETAILED PROCEDURES AND RESULTS - CONTINUED

### 7. APPENDIX

#### DISCOVERY MEETINGS

Key County transportation and planning stakeholders first discussed the comparative advantages and important destinations within the County. Next, the existing transportation conditions were reviewed and the challenges and opportunities facing the region were highlighted. Later interviews were completed by phone.

Table 4: Discovery Meetings

DATE	TIME	LOCATION	PARTICIPANTS	DESCRIPTION
6/18/18	11:00AM – 1:30PM	SLC Community Services 437 N. 7th Street, Fort Pierce	Diana Wesloski (SLC Community Services), Murriah Dekle (SLC Community Services)	<ul style="list-style-type: none"> <li>• Introduction</li> <li>• Review key planning studies, Discuss service delivery goals</li> </ul>
6/18/18	1:30PM – 3:30PM	Community Transit 1505 Orange Ave, Fort Pierce	Darrell Drummond (Council on Aging – Community Transit GM), David Rodriquez (CT - Operations Manager), Diana Wesloski, Murriah Dekle	<ul style="list-style-type: none"> <li>• Introduction to County Transit Operations</li> </ul>
6/18/18	4:00PM – 5:00PM	2300 Virginia Ave, Fort Pierce	Jeff Bremer, Diana Wesloski, Murriah Dekle	<ul style="list-style-type: none"> <li>• Introduce basics of New Mobility planning,</li> <li>• Discuss County Demographics, Develop transit scenarios</li> </ul>
6/19/18	9:00AM – 10:00AM	SLC Community Services 437 N. 7th Street Fort Pierce	Murriah Dekle, Jayne Petrowski (FDOT Senior Transit Coordinator)	<ul style="list-style-type: none"> <li>• Review FDOT’s transit grant programs,</li> <li>• Discuss Treasure Coast regional context from state’s perspective,</li> <li>• Understand FDOT’s role in new mobility planning</li> </ul>
6/19/18	11:00AM – 12:00PM	466 SW Port St Lucie Blvd #111, Port St. Lucie	Peter Buchwald (SLC Transportation Planning Organization), Marceia Lathou (SLC TPO), Diana Wesloski, Murriah Dekle,	<ul style="list-style-type: none"> <li>• Introduce role of SLC TPO (countywide MPO)</li> <li>• Review recent TPO initiatives</li> <li>• Review SLC context from TPO perspective</li> <li>• Understand SLC Title VI initiatives</li> </ul>
6/19/18	1:30PM – 3:00PM	Community Transit 2501 SW Bayshore Blvd, Port St. Lucie	Darrell Drummond, David Rodriquez, Diana Wesloski, Murriah Dekle	<ul style="list-style-type: none"> <li>• Additional discussion of County transit operations and planning priorities</li> </ul>
6/20/18	11:00AM – 11:30AM	SLC Community Services 437 N. 7 <sup>th</sup> Street Fort Pierce	John Irvine (FDOT Transportation Disadvantaged), Murriah Dekle	<ul style="list-style-type: none"> <li>• Review FDOT’s transportation disadvantaged grant programs</li> </ul>
7/12/18	1:00PM – 1:30PM	Phone Interview	Peter Tesch (St. Lucie County Economic Development Council)	<ul style="list-style-type: none"> <li>• County development priorities</li> </ul>
7/12/18	2:00PM – 2:30PM	Phone Interview	Mark Satterlee (St. Lucie County Deputy County Administrator)	<ul style="list-style-type: none"> <li>• County transportation needs</li> <li>• County operational perspective</li> </ul>

## E. DETAILED PROCEDURES AND RESULTS - CONTINUED

### NTD PEER COMPARISON

Table 5: NTD Analysis Peers (Illustrating differences between Urbanized Area Density and Service Area Density)

Agency Name	City	State	Service Area			Urban Area Name	Urbanized Area		
			Sq Miles	Population	Density		Population	Density	Area Sq Miles
Allegheny County Transit	Cumberland	MD	131	68,780	525	Cumberland, MD-WV-PA	51,899	1,591	33
Ben Franklin Transit	Richland	WA	616	251,151	408	Kennewick-Pasco, WA	210,975	2,059	102
Charlotte County Transit Division	Punta Gorda	FL	231	173,115	749	North Port-Port Charlotte, FL	169,541	1,425	119
Chatham Area Transit Authority	Savannah	GA	438	265,128	605	Savannah, GA	260,677	1,575	165
Citrus County Transit	Iecanto	FL	49	30,858	630	Homosassa Springs-Beverly	80,962	895	90
Clay County Council on Aging, Inc., dba Clay Transit	Green Cove Springs	FL	881	210,000	238	Jacksonville, FL	1,065,219	2,009	530
Collier Area Transit	Naples	FL	2,025	323,785	160	Bonita Springs, FL	310,298	1,660	187
Corpus Christi Regional Transportation Authority	Corpus Christi	TX	841	348,892	415	Corpus Christi, TX	320,069	2,661	120
<b>Council on Aging of St. Lucie, Inc.</b>	<b>Fort Pierce</b>	<b>FL</b>	<b>572</b>	<b>298,563</b>	<b>522</b>	<b>Port St. Lucie, FL</b>	<b>376,047</b>	<b>1,807</b>	<b>208</b>
County of Atlantic	Northfield	NJ	567	274,219	484	Atlantic City, NJ	248,402	1,985	125
County of Volusia, dba: VOTRAN	South Daytona	FL	1,207	494,593	410	Palm Coast-Daytona Beach	349,064	1,946	179
Cumberland County	Fayetteville	NC	658	329,403	501	Fayetteville, NC	310,282	1,567	198
Flagler Co. Public Transportation	Bunnell	FL	571	99,121	174	Palm Coast-Daytona Beach	349,064	1,946	179
Gaston County	Gastonia	NC	364	211,127	580	Gastonia, NC-SC	169,495	1,223	139
Indian River County	Vero Beach	FL	216	143,696	665	Sebastian-Vero Beach South	149,422	1,546	97
Manatee County Area Transit	Bradenton	FL	743	322,833	434	Sarasota-Bradenton, FL	643,260	1,969	327
Martin County	Stuart	FL	65	149,806	2,305	Port St. Lucie, FL	376,047	1,807	208
Mass Transportation Authority	Flint	MI	640	418,408	654	Flint, MI	356,218	1,510	236
Nassau Council on Aging	Fernandina Beach	FL	227	393,807	1,735		393,807	1,735	227
Pasco County Public Transportation	Port Richey	FL	745	475,502	638	Tampa-St. Petersburg, FL	2,441,770	2,552	957
Pinellas Suncoast Transit Authority	St. Petersburg	FL	333	985,625	2,960	Tampa-St. Petersburg, FL	2,441,770	2,552	957
Red Rose Transit Authority	Lancaster	PA	952	420,920	442	Lancaster, PA	402,004	1,624	248
Sedgwick County Transportation - Dept. on Aging	Wichita	KS	1,008	498,365	494	Wichita, KS	472,870	2,202	215
Southeast Area Transit	Preston	CT	305	158,629	520	Norwich-New London, CT-R	209,190	1,376	152
St Johns County, Florida, Board of County Commissioners	St. Augustine	FL	600	195,823	326	St. Augustine, FL	69,173	1,607	43
Stark Area Regional Transit Authority	Canton	OH	581	375,586	646	Canton, OH	279,245	1,678	166
The Gulf Coast Center	Texas City	TX	1,792	557,437	311	Texas City, TX	106,383	1,400	76
Victor Valley Transit Authority	Hesperia	CA	950	429,481	452	Victorville-Hesperia, CA	328,454	1,969	167
Worcester Regional Transit Authority	Worcester	MA	866	479,329	553	Worcester, MA-CT	486,514	1,600	304
York County Transportation Authority	York	PA	911	381,751	419	York, PA	232,045	1,755	132
Yuma County Intergovernmental Public Transportation Authority	Yuma	AZ	78	195,751	2,510	Yuma, AZ-CA	135,267	2,300	59

## E. DETAILED PROCEDURES AND RESULTS - CONTINUED

### TRANSIT DEMOGRAPHICS

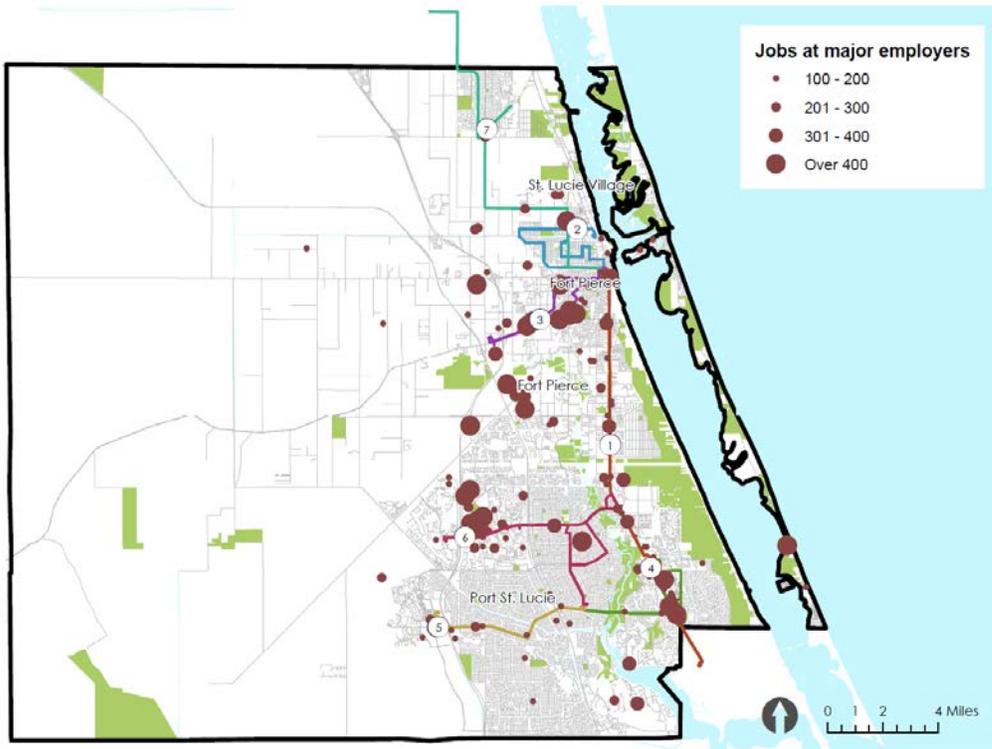


Figure 18: St. Lucie County Transit Network and Jobs at Major Employers

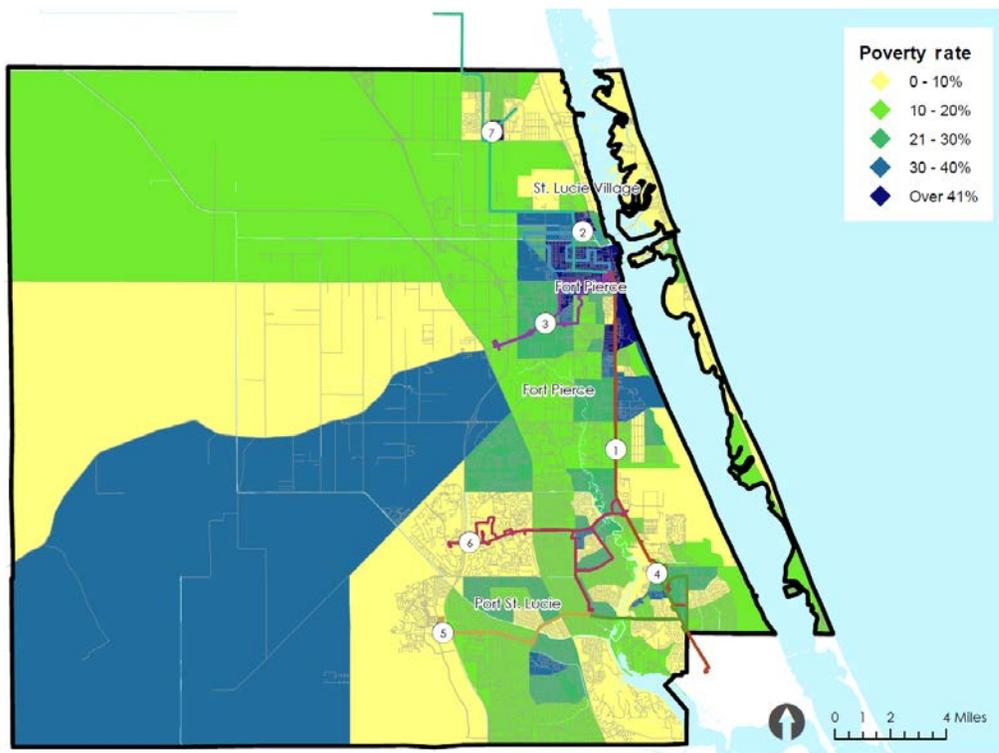


Figure 19: St. Lucie Transit Network and Populations in Poverty

## E. DETAILED PROCEDURES AND RESULTS - CONTINUED

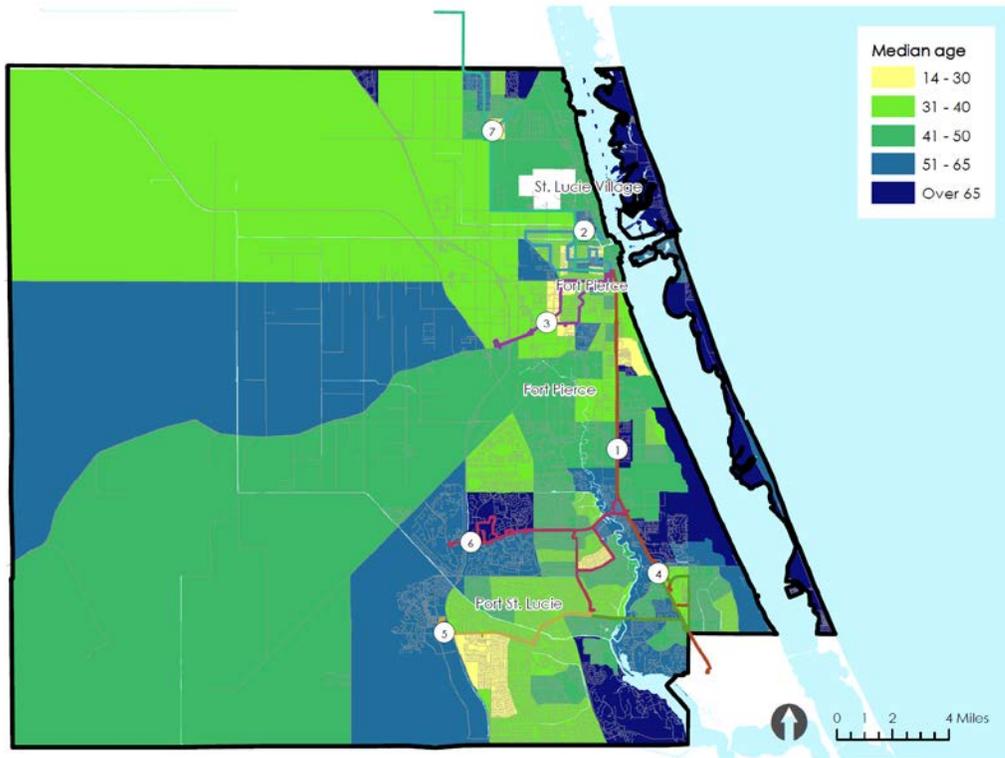


Figure 20: St. Lucie Transit Network and Median Age

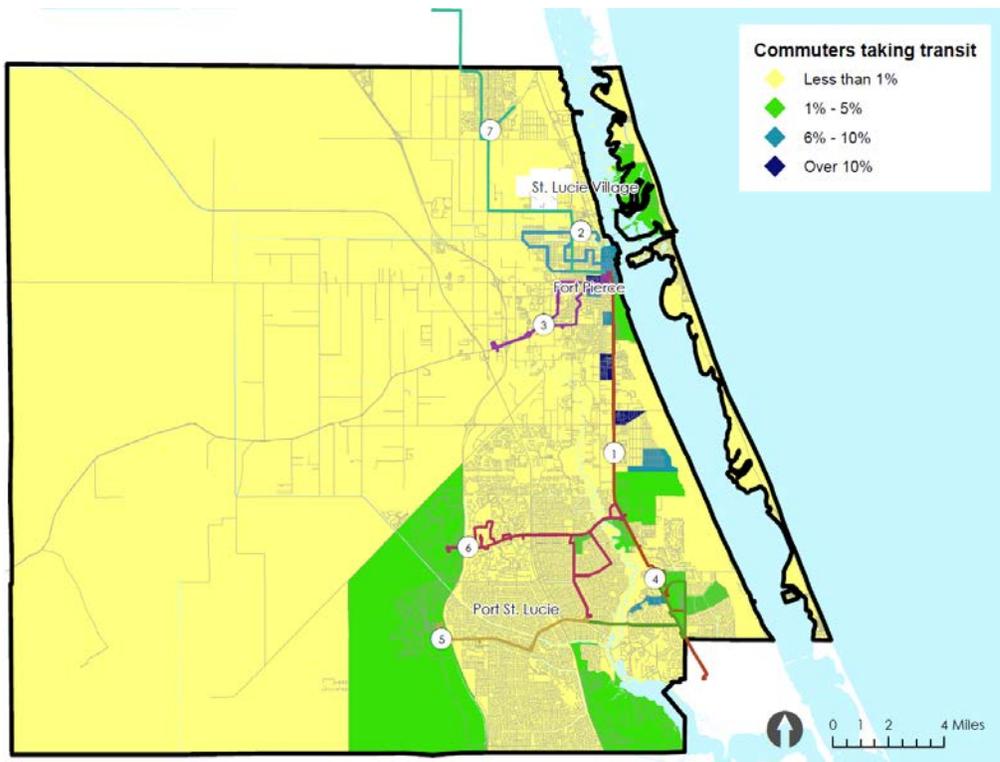


Figure 21: St. Lucie County Transit Network and % Transit Commuters (Journey to Work)

## E. DETAILED PROCEDURES AND RESULTS - CONTINUED

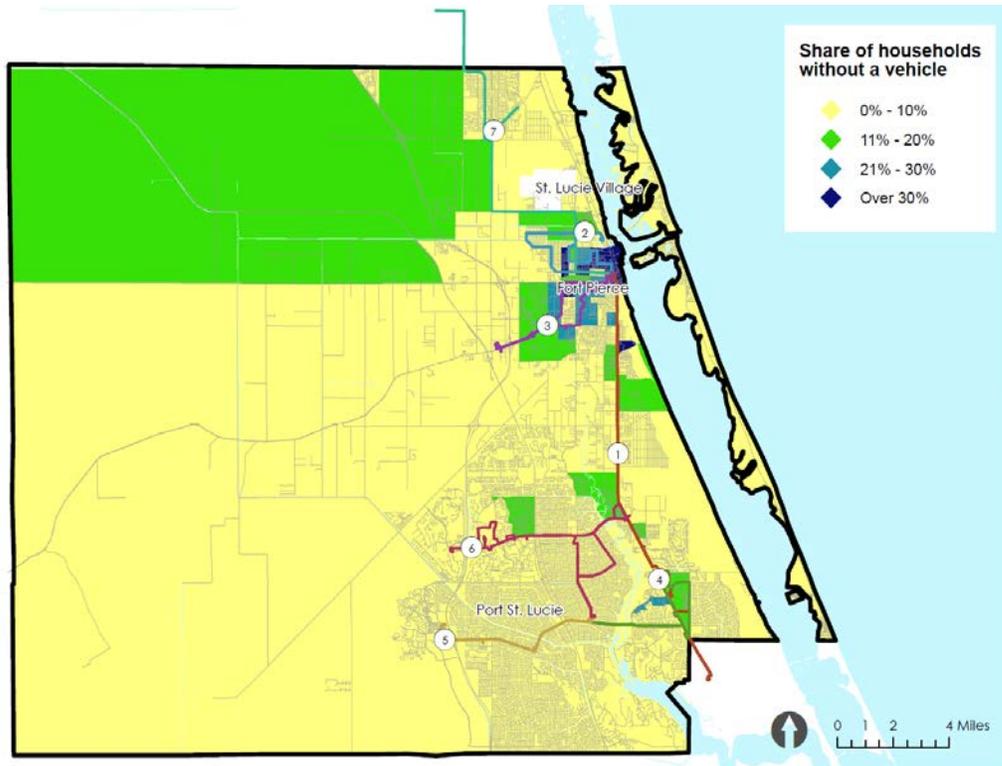


Figure 22: St. Lucie County Transit Network and Share of Households without a Vehicle

### FIXED ROUTE COST OF SERVICE

The following data is based on TCC performance from March 2018 with a span of service from 6:00AM to 8:00PM. *Sam Schwartz* estimates that the numbers would be much lower during the summer. In general, the earliest and latest trips perform worse than peak period trips. The table cells are color coded to indicate relative numbers of passengers per hours and costs per passenger for each route.

#### Route 1 – Treasure Coast Connector

The Treasure Coast Connector (Route 1) is a regional fixed route system servicing St. Lucie and Martin Counties. TCC has stops located off US 1 from Fort Pierce to Jensen Beach. It connects with Routes 2, 3, 4 and 6.

## E. DETAILED PROCEDURES AND RESULTS - CONTINUED

### *Route 1 Performance & Cost by Trip*

Trip Start	Passengers per Hour	Cost per Passenger
6:00*	4.9	\$15.08
6:00	14.6	\$5.03
7:00	23.7	\$3.10
8:00	25.8	\$2.84
9:00	24.8	\$2.95
10:00	26.8	\$2.74
11:00	27.9	\$2.63
<b>12:00</b>	27.3	\$2.69
<b>1:00</b>	29.3	\$2.51
<b>2:00</b>	25.3	\$2.90
<b>3:00</b>	26.6	\$2.76
<b>4:00</b>	33.6	\$2.18
<b>5:00</b>	21.5	\$3.40
<b>6:00</b>	24.3	\$3.03
<b>7:00*</b>	5.7	\$12.86

\* Indicates short trip

### **Route 2 – Treasure Coast Connector Plus**

The Treasure Connector Plus (Route 2) is a fixed route servicing St. Lucie County. This route connects with Route 1 and Route 3. This route runs along Avenue D as far west as 53rd Street, Juanita Avenue and back to 7th Street.

### *Route 2 Performance & Cost by Trip*

Trip Start	Passengers per Hour	Cost per Passenger
6:00	8.5	\$8.63
7:00	15.3	\$4.79
8:00	17.9	\$4.10
9:00	22.1	\$3.32
10:00	17.5	\$4.19
11:00	15.0	\$4.88
<b>12:00</b>	15.0	\$4.91
<b>1:00</b>	16.0	\$4.57
<b>2:00</b>	17.4	\$4.22
<b>3:00</b>	13.9	\$5.29
<b>4:00</b>	15.1	\$4.86
<b>5:00</b>	9.4	\$7.80
<b>6:00</b>	9.3	\$7.91
<b>7:00</b>	4.2	\$17.54

## E. DETAILED PROCEDURES AND RESULTS - CONTINUED

### Route 3 – Treasure Coast Connector Plus

The Treasure Coast Connector Plus (Route 3) is a fixed route servicing St. Lucie County. This route connects with Route 1 and Route 2. This route runs along Orange Avenue to 33rd Street to Okeechobee Road as far west as Peters Road, traveling east to Virginia Avenue, 23rd Street to Okeechobee Road connecting at 7th Street.

#### Route 3 Performance & Cost by Trip

Trip Start	Passengers per Hour	Cost per Passenger
6:00	10.3	\$7.14
7:00	13.7	\$5.36
8:00	24.6	\$2.98
9:00	26.9	\$2.73
10:00	29.5	\$2.49
11:00	34.9	\$2.10
12:00	21.6	\$3.40
1:00	33.2	\$2.21
2:00	28.0	\$2.62
3:00	33.3	\$2.20
4:00	25.8	\$2.84
5:00	20.2	\$3.63
6:00	16.3	\$4.51
7:00	9.6	\$7.65

### Route 4 – Port St. Lucie Trolley

The Port St. Lucie Trolley (Route 4) is a fixed route servicing St. Lucie County. This route connects with Route 1, 5 and 6. This route runs along Port St. Lucie Blvd, East to Leonard Road.

#### Route 4 Performance & Cost by Trip

Trip Start	Passengers per Hour	Cost per Passenger
6:00	5.3	\$13.91
7:00	6.7	\$10.90
8:00	9.2	\$7.99
9:00	9.9	\$7.44
10:00	12.5	\$5.87
11:00	10.1	\$7.27
12:00	8.7	\$8.45
1:00	11.8	\$6.21
2:00	11.8	\$6.21
3:00	10.7	\$6.84
4:00	11.7	\$6.26
5:00	10.8	\$6.78
6:00	7.8	\$9.44
7:00	4.2	\$17.54

## E. DETAILED PROCEDURES AND RESULTS - CONTINUED

### Route 5 – Treasure Coast Connector Plus

The Treasure Coast Connector Plus (Route 5) is a fixed route serving St. Lucie County. This route connects with Route 4 and 6. This route runs along Port St. Lucie Blvd and Gatlin Blvd.

#### Route 5 Performance & Cost by Trip

Trip Start	Passengers per Hour	Cost per Passenger
6:00	8.2	\$8.92
7:00	9.2	\$7.95
8:00	8.2	\$8.97
9:00	7.5	\$9.84
10:00	7.7	\$9.55
11:00	10.6	\$6.93
12:00	8.3	\$8.87
1:00	11.0	\$6.70
2:00	11.1	\$6.59
3:00	12.4	\$5.93
4:00	7.4	\$9.90
5:00	9.0	\$8.11
6:00	8.1	\$9.07
7:00	4.6	\$15.98

### Route 6 – Treasure Coast Connector Plus

The Treasure Coast Connector Plus (Route 6) is a fixed route serving St. Lucie County. This route connects with Route 1, 4 and 5. This route runs along Prima Vista Blvd and St. Lucie West Blvd.

#### Route 6 Performance & Cost by Trip

Trip Start	Passengers per Hour	Cost per Passenger
6:00*	4.0	\$18.34
6:00	5.5	\$13.34
7:00	11.5	\$6.38
8:00	10.8	\$6.77
9:00	10.2	\$7.17
10:00	11.0	\$6.67
11:00	9.9	\$7.44
12:00	9.6	\$7.65
1:00	11.1	\$6.59
2:00	11.6	\$6.32
3:00	11.8	\$6.20
4:00	12.1	\$6.08
5:00	7.8	\$9.36
6:00	5.6	\$13.02
7:00*	5.9	\$12.41

\* Indicates short trip

## E. DETAILED PROCEDURES AND RESULTS - CONTINUED

### Route 7 – Lakewood Park Express

The Lakewood Park Express is a regional fixed route system servicing Indian River and St. Lucie Counties. This route runs along St. Lucie Blvd and Ft. Pierce Blvd connecting with Routes 1, 2 and 3.

#### Route 7 Performance & Cost by Trip

##### Route 7 Southbound

Trip Start	Passengers per Hour	Cost per Passenger
7:30	6.0	\$12.23
8:30	3.7	\$19.68
9:30	5.2	\$14.16
10:30	5.0	\$14.67
11:30	4.2	\$17.54
12:30	3.3	\$22.42
1:30	5.4	\$13.68
2:30	3.7	\$19.68
3:30	4.1	\$17.93
4:30	6.6	\$11.05
5:30	6.5	\$11.37

##### Route 7 Northbound

Trip Start	Passengers per Hour	Cost per Passenger
7:00	6.6	\$11.05
8:00	4.1	\$17.93
9:00	5.3	\$13.91
10:00	5.6	\$13.02
11:00	5.5	\$13.45
12:00	5.0	\$14.67
1:00	7.0	\$10.48
2:00	5.5	\$13.23
3:00	7.5	\$9.72
4:00	5.5	\$13.23
5:00	7.6	\$9.61
6:00	1.0	\$73.36



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