



# Wave Transit's Short-Term Efficiencies and Long-Term Governing Model

**Objective 2: Long Term Governing Model** 

# **Final Report**

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### Introduction

While no one definition of governance exists and no one model can be held up as the ideal, there is general agreement that governance is what sets the parameters under which management and administrative systems will operate by addressing how power is distributed and shared, policies are formulated, priorities are set, and accountability is managed. The United Nations Educational, Scientific, and Cultural Organization (UNESCO) provides an instructive comparison of the difference between governance and management. In particular, this highlights the role of governance at the highest and most strategic levels of organization.

Governance	Management
-Set and norms, strategic vision and direction and formulate high-level goals and policies	-Run the organization in line with the broad goals and direction set by the governing body
<ul> <li>Oversee management and organizational performance to ensure that the organization is working in the best interests of the public, and more specifically the stakeholders who are served by the organization's mission</li> <li>Direct and oversee the management to ensure that the organization is achieving the desired outcomes and to ensure that the organization is acting prudently, ethically and legally.</li> </ul>	<ul> <li>Implement the decisions within the context of the mission and strategic vision</li> <li>Make operational decisions and policies, keep the governance bodies informed and educated</li> <li>Be responsive to requests for additional information</li> </ul>

Figure 2.1: Characteristics of Governance vs. Management (UNESCO)

As highlighted in a report written by the Transit Center and Eno Center for Transportation called "Getting to the Route of It: The Role of Governance in Regional Transit," in the context of transit governance it is vital to understand who has the authority to distribute funds, select projects, and make decisions. As such, any discussion of transit governance necessitates a discussion of funding. In this report, prepared for the City of Wilmington and New Hanover County, particular attention has been paid to the issues of funding and the governance of the current regional transit system, as it has been identified by stakeholders as one of the major regional challenges. This report also addresses governance considerations in a number of other areas to ensure that the model for the Wilmington-New Hanover County region is effectively employing best practices to deliver high-quality transit that meets the community's needs.

#### Principles of Effective Governance Criteria

The Wilson Center, in its report "Governance of Regional Transit Systems," identified the following characteristics as being critical to good governance. These themes emerge in governance studies across a variety of sectors:

**Coordination:** The mandate is broad enough to facilitate the development of an integrated transportation system for the metropolitan area and to allow costs and benefits to be shared fairly.

**Efficiency:** The structure permits strategic directions and priorities to be set and services to be delivered cost-effectively.

**Accountability:** Decision-makers can be held responsible for their actions and the decision-making process is easily-understood and transparent enough to encourage access and participation of all stakeholders.

**Responsiveness:** Local community needs and preferences are given due consideration.

**Sufficient and Sustainable Revenue:** The fiscal framework within which the board operates enables it to deliver on its mandate.

**Effectiveness:** Produces outcomes that are desirable linked to the customer experience, or more broadly, to economic, social, and environmental societal goals.

### **Report Organization**

The rest of this report is organized into the following sections:

**Current State** – Provides an overview of the current governance model and activities based on document review and stakeholder interviews. This includes the governance structure, board composition, current funding, decision-making processes, and reporting.

**Stakeholder Interviews** – Identifies key themes and observations stemming from interviews with City and County staff and elected officials, the Cape Fear Public Transportation Authority (CFPTA) staff and Board members, and Metropolitan Planning Organization (MPO) staff.

**Summary of Governance Observations** – Summarizes CFPTA's performance against the effective governance criteria.

**Peer Benchmarking** – Compares characteristics of the governance models of CFPTA's peer transit systems.

**Long-Term Governance Model** – Provides options and best practices for various components of governance, including structure, board composition, funding, etc. Recommends enhancements to CFPTA's governing model organized by the effective governance criteria.

### **Current State**

The Cape Fear Public Transportation Authority, operating as Wave Transit, is a regional transit authority that currently serves the City of Wilmington, New Hanover County, and Northern Brunswick County and is authorized to provide transit service up to 30 miles outside of the limits of the City of Wilmington. CFPTA was created in 2004 by a joint resolution between the City of Wilmington and New Hanover County. Prior to 2004, fixed route service was provided by the Wilmington Transit Authority, while demand response service was provided by New Hanover County.

### Governance and Organizational Structure

CFPTA is governed by an 11-member Board consisting of five (5) members appointed by the New Hanover County Board of Commissioners, five (5) members appointed by the Wilmington City Council, and one (1) jointly appointed member representing Human Services. The authorizing resolution specifies a term length of three years and provided the City/County with the authority to stagger the initial terms in order to avoid turnover of the Board all at once. The members are responsible for electing a Chairman and Vice-Chairman, as well as a Secretary who does not need to be a member of the Authority. According to interviews with Wave Transit management, a quorum of at least six (6) members has been met at every meeting since the inception of the Authority.

The CFPTA Executive Director is responsible for overseeing the day-to-day operations and performance of Wave Transit, and is the main liaison to the Board. In 2017, CFPTA reorganized its administrative staff in accordance with recommendations from the Wave Transit Personnel Committee and a consultant, with the stated goal of "more clearly defining succession at the higher ranks of the organization and more appropriately defining administrative roles." The new organization structure is depicted in Figure 2.2.

On the Operations side, the CFPTA Deputy Director oversees an outsourced transit management contractor (First Transit), which employs a General Manager, Assistant General Manager, Vehicle Maintenance Manager, and Assistant Vehicle Maintenance Manager. First Transit manages four main groups of employees: Fixed Route Dispatchers; Fixed Route Bus Operators; Technicians/Mechanics, and Service Attendants. First Transit also manages a Procurement Coordinator and Maintenance Clerk. These two employees, as well as the four groups described above, are not employees of First Transit or CFPTA; rather, they are employees of Transportation Management of Wilmington. This is because state law requires an intermediary to negotiate contracts with unions.





### Funding

CFPTA's operating budget is currently funded by a variety of sources, with the largest sources being Federal Transit Administration (FTA) funding (37%), City of Wilmington (16%), Passenger Fares (12%), and New Hanover County (12% - includes New Hanover County, Department of Social Services (DSS), and Department of Aging funding). Among New Hanover County's contributions, the largest share is from DSS (Van), which is reimbursement for the actual cost of providing demand response service. Wave Transit has one of the highest fares in state at \$2.00, just behind Charlotte's \$2.20. See Figure 2.3 for additional details.



Figure 2.3: CFPTA Operating Revenues, FY17-18 Budget

Operating Revenues	Amount (\$)	Percentage (%)
Federal	\$3,137,634	37%
(FTA 5303, 5307, 5310, 5316)		
City of Wilmington	\$1,363,257	16%
Passenger Fares	\$1,017,000	12%
University of North Carolina Wilmington (UNCW)	\$760,000	9%
State	\$937,150	11%
(NCDOT CTP, SMAP, ROAP)		
Other	\$276,239	3%
(Other Agencies, Brunswick Consortium, Carolina Beach, Other Income)		
New Hanover County	\$956,373	12%
New Hanover County	\$311,873	4%
DSS (Van)	\$635,000	8%
DSS (Work First)	\$4,500	<1%
Department of Aging	\$5,000	<1%

The authorizing resolution for CFPTA does not provide specific funding allocations or guidelines, just that the annual budget must be submitted to the City and County by March 15<sup>th</sup> of each year for approval by the Wilmington City Council and New Hanover Board of Commissioners. It also states that the City and County will provide the level of funding that their budgets permit. The lack of certainty around dedicated local funding levels has been cited as a challenge for Wave Transit to make long-term decisions about investments. This has also caused tension between the City and County in regard to how much each entity should contribute relative to one another.

The authorizing resolution was amended in 2015, mainly to include additional and more specific requirements for financial and performance reporting and additional language requiring CFPTA to seek City and County approval before making service or rate changes.

The other substantial change was a requirement that CFPTA maintain a minimum fund balance of 8% of the operating budget. If the balance falls below 8% for more than 24 months, the City and/or County may exercise termination options. Previously, the City of Wilmington has had to advance funds to CFPTA to address cash flow issues related to timing of state and federal grants. This reserve fund can also help CFPTA meet unanticipated funding needs on its own, without the need to solicit additional funding from other partners. Since the authorizing resolution was amended in 2015 CFPTA's fund balance has increased from 2.0% in Fiscal Year 2014-2015 to 6.8% in Fiscal Year 2016-2017. The graph below indicates CFPTA's annual fund balance for the six-year period from Fiscal Year 2011-2012 to Fiscal Year 2016-2017.



Data Source: CFPTA Operating Fund Balance Report

#### Wilmington Urban Area Metropolitan Planning Organization

What is not evident when looking at CFPTA's Operating Revenues is that about 20% of CFPTA's current FTA 5307 funding is discretionary on the part of the Wilmington Urban Area Metropolitan Planning Organization (WMPO), and as such, could be reduced or eliminated at any time. WMPO is a federally-mandated entity responsible for regional transportation planning that serves as the basis for federal

transportation funding across all modes. In 2018, WMPO allocated \$511,000 (about 20% of what they have available) from the Surface Transportation Program Direct Attributable Program (STP-DA). Direct Attributable funds are highway funds that MPOs are able to "flex" over to other transportation modes. WMPO does not require CFPTA to go through a competitive application process or provide specific details about what the funding will go towards. This is in contrast to most MPOs, who have some sort of competitive process. WMPO is actively reviewing this program, which may result in changes to the amount allocated to CFPTA or the application requirements. CFPTA currently spends this funding on preventative maintenance and ADA/DART services.

While the MPO does not have an official role on the Board, MPO staff provide comments, participate in CFPTA committees, and attend Board meetings. The MPO Board is designed such that there is overlap between its Board and CFPTA's Board. Of the 13 MPO Board members, one must be a New Hanover County member from CFPTA's Board.

#### University of North Carolina Wilmington

The University of North Carolina Wilmington (UNCW) is another major funding partner, and receives direct service for students and employees through a special transit service called the UNCW Seahawk Shuttle that serves the campus and surrounding areas. Students and employees can also ride all Wave Transit buses for free. The Seahawk Shuttle represents about 30% of Wave Transit's ridership and is growing. UNCW's contract is negotiated each year and is enough to cover approximately 70% of the incremental operating cost of the service. As a result, Seahawk Shuttle routes have a cost recovery over 200% higher than the average cost recovery of Wave Transit's other fixed routes. Recouping the actual costs of providing service through public-private partnership with local institutions benefitting from transit service is a best practice. Thus, a slight modification to the contract with UNCW to reflect the actual costs of providing service could substantially improve Wave Transit's financial stability.

#### Making Waves Foundation

The Making Waves Foundation is a nonprofit governed by a five-member Board of Directors appointed by CFPTA. The Foundation solicits donations in order to provide transportation fare subsidies to nonprofit agencies who provide assistance to members of the community in need and individuals who otherwise would not have access to transportation. Its mission is also to aid CFPTA in raising funds to promote and improve public transportation in Southeastern North Carolina. Most recently, the Foundation awarded five grant awards totaling \$2,500 to community organizations in need of transit assistance.

### **Decision-making**

The CFPTA Board has the autonomy to make decisions about internal policies, route adjustments, service changes, contracts, etc. A majority of members (6) constitutes quorum, and a majority vote of members present at a meeting is required to for the Authority to approve any actions.

In the 2015 amendment to the authorizing resolution, the City and County created additional requirements around notification and approval for certain Authority actions. Modifications to the schedules of rates, fees, and charges for the use of CFPTA services now require notification to the City and County. There is also a new provision that all extensions of service (including reduced headways, increased hours of operation, extensions or creations of new routes) must be approved by both the City and County before they can be implemented.

CFPTA is constrained budgetarily by its dependence on annual appropriations from the City and County, which do not provide a guaranteed funding level.

CFPTA's Board operates through a number of committees, with each committee making presentations to the full Board at monthly meetings. Some committees, such as the Planning and Operations Committee, are more active than others. Below is a brief description of the committees and the types of activities they engage in.

#### EXECUTIVE COMMITTEE

#### PLANNING AND OPERATIONS COMMITTEE

- Reports on ridership and revenue figures
- Presents on studies and plans

#### FINANCE & BUDGET COMMITTEE

- Reviews and monitors budgets
- Provides reports to Board

#### FACILITIES COMMITTEE

- Oversees procurements/reviews bids for major construction projects
- Oversees planning and execution of major construction projects
- Provides status updates on major construction projects to Board

#### PERSONNEL COMMITTEE

- Oversees development of policies affecting personnel (ex. recently revised employee manual)
- Presents policy changes to Board

#### WAVE CONNECT

- Oversees four programming areas: Travel Training, Accessible Van Service (DART), Fixed Route Access, and Community Engagement (includes Community Grant Program)
- Provides report to Board

### Reporting

#### Monthly Board Meeting

CFPTA's Board meets monthly and publishes meeting minutes to the Wave Transit website. This allows anyone, including members of the general public, to review what the Authority has discussed and the outcomes of any decisions. The following reports are typically provided at any given Board meeting:

- Staff Report Shares high-level information about items that will require Board review and approval. A recent example was an update to the Board on identification of local match funding sources and status update on when the Board could expect to review the procurement timeline for new buses
- Committee Reports Shares data and/or items for review and approval by the Board. Recent topics covered by Committee reports include sharing updates from the short-range transit plan, ridership and revenue updates, marketing, updates to the employee manual, and updates on special events
- Contractor's Report Provided by First Transit, this report typically includes updates on staffing, vehicle availability, cleanliness, and other issues affecting transit service that are within the control of the outsourced management company

Although the meeting minutes are fairly detailed, they do not include presentations or materials that may have been shared during the Board meetings.

#### Annual Report

CFPTA publishes a brief Annual Report that includes high-level ridership trends, financial information (operating revenues and expenses), highlights about key programs and initiatives (such as Wave Connect), and updates on major studies or initiatives. This report is two pages long and very narrative in nature. It does not contain performance metrics and provides limited support for claims.

#### Annual Audit

In the 2015 Amendment to the original authorizing resolution, the City and County added the following reporting requirements to be provided with the annual financial audit:

- Data to entail ridership numbers and fare revenue per route, including the fee schedule
- Costs to maintain each route with current and future service levels
- Costs to provide paratransit services which are contracted annually
- Costs to provide University of North Carolina Wilmington services
- Costs to provide additional services with details of the level of service
- A five (5) year Capital Improvement Program (CIP) updated annually

#### **Operating Statistics**

CFPTA publishes ridership and operating statistics on its website for anyone to access on a monthly basis. The information posted includes:

- Annual Ridership Includes a simple graph of each service's ridership comparing current fiscal year to prior fiscal year
- Monthly Ridership Provides year-to-date (YTD) ridership by month for each service

• Operating Statistics – Provides statistics for one month compared to the same month in the prior fiscal year, as well as YTD statistics. This report includes a more robust set of metrics, including productivity metrics. It also breaks down First Transit vs. Wave Transit-managed services. However, the data is presented without context or discussion. Performance targets have not been identified.

#### Plans, Studies, Program of Projects

Plans, studies, and program of projects are all available on Wave Transit's website. This includes peer analyses, evaluation of recently implemented route changes, forward-looking plans, and other documents.

### **Stakeholder Interviews**

Interviews were conducted with a variety of stakeholders to gain an understanding of varying perspectives on the current conditions, strengths, weaknesses, and challenges of the transit system and governance model.

#### Themes

- Region has struggled with the tension between providing a base level of service to more areas of the county versus focusing investments and service in areas of highest ridership (e.g. Wilmington).
- Lack of dedicated funding source makes transit planning difficult, especially long-term planning.
- Concern that they are trying to provide regional transportation without adequate funding for regional transit system.
- Lack of unified vision for role of transit in the region among city, county, and MPO.
- Lack of unified vision on governance and regionalism among city, county, and MPO.
- Issues with local governments in the county not wanting to contribute to Wave Transit, and not wanting service in their jurisdictions (e.g. some coastal communities).
- Perception that Boards of MPO and Wave Transit may be driven too much by social service aspect of public transportation, with not enough emphasis on productivity.
- MPO identifies as a significant funding partner, but may not be viewed as such.
- Most stakeholders expressed support for public transportation and recognize that it cannot be expected to be profitable, but there is concern that proper financial controls have been lacking and that growth has not been well-planned and supported by rigorous analysis ("routes have grown like a weed or wild vine"); would like to see it grow responsibly.
- Wave has had a history of asking for more funding or loans at the last-minute.
- Concern that when making capital investments, Wave may not properly plan for ongoing operating costs.
- Raised concern about reliance and responsible use of taxpayer use in general, not just from city/county perspective (e.g. responsible use of federal and state funds).
- Some political undertones to the discussion, suggesting that certain political affiliations may be more or less supportive of expanding the role of transit.
- Neither City nor County seem to be interested in taking over the system.
- Mixed interest in pursuing future funding from taxes; may not be palatable to community.
- Concern that funding contribution and authority on Board is mismatched; County funds less but has equal representation.
- There are certain areas outside of the county that have growing interest in transit, e.g. Brunswick and Pender.
- Although there is City/County representation on CFPTA Board, there is perception among other City/County elected officials that there is not enough direct communication between Director of CFPTA and elected officials. Want to be engaged in discussion prior to public forums.
- Multiple stakeholders mentioned promotion of the system is lacking, and believed that greater emphasis on marketing/promotion could help increase ridership and support for the system. Engage with business community and others to cross-promote services.

## Summary of Governance Observations

Based on the criteria for effective governance, the following table summarizes our observations. This will provide guidance as to where the current governance model could be adjusted or enhanced. For each criteria, a 1-5 scale was used where "1" indicates significant room for improvement and "5" indicates a best practice that should be maintained.

Governance Criteria	Assessment	Comments
Coordination	2	While CFPTA has broad enough authority to meet regional transportation needs, there is no mechanism in place to ensure costs and benefits are shared fairly. The City and County currently have equal representation on the Board, despite different levels of transit demand, current service, and funding levels. Brunswick County is served by CFPTA and contributes funding, but does not currently have Board representation.
Efficiency	3	CFPTA has authority to deliver cost-effective service and set strategic direction and priorities. Although interviews indicated a lack of unified vision for regional transit among the City and County, a review of the County's recent Comprehensive Plan indicates there may be more alignment than it seems on the surface.
Accountability	2	While much information is easily accessible to the general public via Wave Transit's website, there are no performance targets indicated in these materials or in annual reports. Tools for ensuring alignment of funding, service decisions, and plans with strategic priorities are lacking.
Responsiveness	4	CFPTA demonstrates strong community partnerships through Wave Connect and the Making Waves Foundation. The general public is involved in planning initiatives like the recent Short-Range Transit Plan.
Sufficient and Sustainable Revenue	2	CFPTA lacks any dedicated funding sources and must get funding approved by the City and County each year. This limits the ability of CFPTA to make long-term capital and operating investments. However, the requirement for CFPTA to maintain an operating reserve is best practice.
Effectiveness	3	CFPTA is investing in customer-centric improvements like real-time bus tracking. CFPTA also pursues environmental sustainability through facility design (LEED-certified) and vehicle type (CNG). CFPTA supports social goals through its community grant programs. However, CFPTA lacks clearly defined targets or priorities for which outcomes are most important to the community.

### Peer Benchmarking

As described in the Route Analysis (Objective 1 Report), 12 transit systems were identified as peer agencies to CFPTA based on similarities across a number of key characteristics. The table on the following page summarizes key findings related to the governance of these peer agencies. Information was compiled on organizational type, focus areas, board composition, funding, and other relevant items. The following three peer agencies were not included in the table due to limited information availability: Lexington Transit Authority, Tri-State Transit Authority, and Piedmont Authority for Regional Transportation. While CFPTA is not limited to the governance and funding mechanisms implemented in peer agencies, this provides a baseline comparison. Additional options and best practices in transit governance across the industry are provided in a separate section for consideration.

#### Key Observations on Peer Governance

- While there were transit systems that spanned multiple counties or even multiple state jurisdictions, most peers were heavily centered on a single municipality that exercises the most authority, provides the most funding support, and receives most of the transit service.
- Most peers had slightly smaller boards than CFPTA, and were often appointed by a City Mayor.
- Most organizations focused solely on provision of transit, though one agency oversaw a more broad set of areas of regional importance including workforce development and community and economic development.
- About half of peer agencies lacked dedicated funding, with several experiencing similar financial issues as CFPTA.
- About half of peer agencies have or are seeking dedicated tax revenues to provide some level of dedicated funding.
- One system had especially robust performance indicators for monitoring the transit system.

## Peer Governance Comparison

Peer Agency	Org Type	Focus Areas	<b>Board Composition</b>	Funding	Other Notes
Central Oregon Intergovernmental Council (COIC)	Council of Governments (3 counties; 8 cities)	<ul> <li>Transportation</li> <li>Workforce Development</li> <li>Community and Economic Development</li> </ul>	<ul> <li>17 members</li> <li>Representatives of member governments + 7 members representing private business sector, workforce development, and education</li> <li>Members appointed (member government seats must be held by elected officials)</li> </ul>	<ul> <li>Dedicated funding source: No</li> <li>In 2017, state legislation was passed giving COIC the authority to ask voters to levy a tax; but each community will seek funding separately</li> </ul>	<ul> <li>Currently operate 30-min service in Bend; demand response everywhere else</li> </ul>
Greater Roanoke Transit Company	Private nonprofit owned by City of Roanoke (3 cities)	• Transportation	<ul> <li>7 members</li> <li>Representatives of Roanoke City Council, city staff, a physically- challenged person, citizen-at-large, and rotating regional representative (Town of Vinton or Town of Salem)</li> </ul>	<ul> <li>Dedicated funding source: No</li> <li>Federal, state, and local funding (local agency contributions have increased over the years)</li> <li>County does not currently contribute or have fixed route service, but is considering it</li> <li>City of Salem and Town of Vinton</li> </ul>	• Contract with First Transit; General and Assistant General Manager are only First Transit employees
Winston-Salem Transit Authority (WSTA)	Independent Authority (1 city)	• Transportation	<ul> <li>8 members</li> <li>Appointed by Winston-Salem City Council upon recommendation of Mayor</li> <li>3-year terms</li> </ul>	<ul> <li>Dedicated funding source: Yes</li> <li>Motor vehicle privilege license fee</li> <li>City of Winston-Salem will cover WSTA's \$1.8 million budget shortfall</li> </ul>	

Peer Agency	Org Type	Focus Areas	Board Composition	Funding	Other Notes
Lakeland Area Mass Transit Authority	Independent Authority (1 County; several municipalities)	Transportation	<ul> <li>9 voting and 1 non- voting members</li> <li>Represent Polk County and its municipalities</li> </ul>	<ul> <li>Dedicated funding source: Yes</li> <li>Millage per \$1000 - .5000 mills</li> </ul>	<ul> <li>Publish most robust performance indicators with targets among any of the peer agencies</li> </ul>
Greensboro Transit Authority (GTA)	City Department (1 City)	• Transportation	<ul> <li>9 members</li> <li>Appointed by Greensboro City Council</li> <li>Two, two-year terms</li> <li>The City of Greensboro Public Transportation Division which oversees GTA is responsible for service planning, scheduling, and performance monitoring of all GTA transit services</li> </ul>	<ul> <li>Dedicated funding source: Yes</li> <li>In partnership with seven local universities and colleges, launched Higher Education Area Transit (HEAT), adding nine additional routes serving local institutions of higher learning and other select locations in Greensboro and Jamestown. Program is solely funded by schools.</li> </ul>	<ul> <li>Contracts with Transdev for drivers and maintenance</li> <li>City covers 130 sq. miles; also serves Jamestown campus of Guilford Technical Community College.</li> <li>Works with the Piedmont Authority for Regional Transportation (PART) to provide transportation access throughout the Triad</li> </ul>
Charleston Area Regional Transportation Authority	Independent Authority/ Council of Governments (1 County; several municipalities)	Transportation	<ul> <li>18 members</li> <li>Representatives of county and local governments</li> </ul>	<ul> <li>Dedicated funding source: Yes</li> <li>1/2 cent sales tax administered by County</li> <li>Budget must be approved by majority of local governments each year; there is only one major jurisdiction that does not contribute</li> </ul>	

Peer Agency	Org Type	Focus Areas	Board Composition	Funding	Other Notes
Green Bay Metro	City Department (service primarily in Green Bay, but also serves 4 other municipalities)	Transportation	<ul> <li>6 members</li> <li>All citizens appointed by the City of Green Bay Mayor, and confirmed by Green Bay Common Council</li> </ul>	<ul> <li>Dedicated funding source: No</li> </ul>	<ul> <li>Publishes quarterly and annual route reviews</li> </ul>
Kalamazoo Metro Transit System	Separate Independent Authorities for Fixed Route and Demand Response (1 County; several municipalities)	• Transportation	<ul> <li>11 members (Central County Transportation Authority) to oversee fixed route service.</li> <li>9 members (Kalamazoo County Transportation Authority) to oversee demand response.</li> <li>Both are appointed by Kalamazoo County Board of Commissioners</li> </ul>	<ul> <li>Dedicated funding source: Yes</li> <li>Millage per \$100075 mills</li> </ul>	<ul> <li>Especially creative with revenue generation efforts (painted bus contract revenues, sometimes tied to events)</li> </ul>
Fayetteville Area System of Transit (FAST)	City Department (service primarily in Fayetteville)	Transportation	<ul> <li>9 members</li> <li>Representatives of FAMPO, local business community, ADA customers, bus customers, city residents (within service area and beyond service area), FAST Driver/Operator</li> <li>2-year terms</li> <li>Volunteers apply, but are ultimately appointed by City Council</li> </ul>	<ul> <li>Dedicated funding source: Yes</li> <li>Vehicle tag fees</li> </ul>	

### Long-Term Governance Model

A proliferation of governance models exists in the transit industry. Generally, no one model has been identified as a best practice due to significant variation and unique circumstances of each region in which transit operates. However, there are a few key elements to successful governance that have been recognized throughout the industry. Furthermore, it is possible to break governance models into their component pieces, which is better suited for identifying best practices, advantages, and disadvantages, and will allow mixing and matching of the components that will best meet the region's needs.

The issue of regional governance has become increasingly important as cities become more economically interdependent with their surrounding areas, often leading to increased demand for transportation options between far apart activity or residential centers, as well as increased congestion on highways and roads. Typically, moving towards regional models of transportation delivery are associated with service and policy improvements.

As transportation needs become more regional in nature, the transit system must adapt to meet those needs in an effective and efficient manner as possible. In many cases, the markets of two or more existing transit systems begin to overlap, presenting increased need for coordination. In the case of CFPTA, there has traditionally been a single provider of fixed route service in the region centered around the City of Wilmington. Based on stakeholder interviews, CFPTA has received requests to extend the coverage of service to meet growth demands in other portions of New Hanover County and neighboring counties.

According to origin-destination commuting data collected by the U.S. Census Bureau, most City of Wilmington residents also work in the City of Wilmington. However, nearly double that amount are commuters from outside of the City limits, while a fairly large number of residents commute to areas outside of the City limits. This indicates potential regional transit demand beyond the City of Wilmington. While the effect is not as pronounced when conducting this analysis at the County level, nearly one-third of all workers in New Hanover County reside outside of the County limits and one-fifth of County residents leave the County to work. This suggests potential regional transit demand beyond New Hanover County.

Figure 2.4: Commuting Flows for Wilmington (left) and New Hanover County (right). The dark green arrow indicates commuters flowing into the target area. The circular arrow represents the commuters staying within the target area. The light green arrow indicates commuters flowing out of the target area.



The tables below indicate the specific counties that New Hanover County workers are commuting to and from. The table on the left indicates that 70.2% of New Hanover County residents who are employed work somewhere in the County. Brunswick County is the next most common work location, though only 4.5% of New Hanover County workers commute there. The table on the right indicates that among all workers in New Hanover County, 59.6% are residents, 10.2% commute from Brunswick County, and 7.8% commute from Pender County.

*Figure 2.5: New Hanover County Resident Commuting Patterns (left) and New Hanover County Worker Commuting Patterns (Right)* 

Jobs Counts by Counties Whe Employed - Primary	ere Worke Jobs	ers are	Jobs Counts by Counties Wher Primary Jobs	e Workeı	rs Live -
	201	15		201	15
	Count	Share		Count	Share
All Counties	81,963	100.0%	All Counties	96,453	100.0%
New Hanover County, NC	57,513	70.2%	New Hanover County, NC	57,513	59.6%
Brunswick County, NC	3,673	4.5%	Brunswick County, NC	9,800	10.2%
Wake County, NC	3,551	4.3%	Pender County, NC	7,490	7.8%
Mecklenburg County, NC	1,997	2.4%	Wake County, NC	2,299	2.4%
Pender County, NC	1,973	2.4%	Onslow County, NC	1,924	2.0%
Cumberland County, NC	1,002	1.2%	Columbus County, NC	1,500	1.6%
Onslow County, NC	893	1.1%	Mecklenburg County, NC	1,234	1.3%
Guilford County, NC	744	0.9%	Cumberland County, NC	1,053	1.1%
Columbus County, NC	737	0.9%	Craven County, NC	691	0.7%
Horry County, SC	639	0.8%	Bladen County, NC	584	0.6%
All Other Locations	9,241	11.3%	All Other Locations	12,365	12.8%

Looking at the same information broken down to specific municipalities, most New Hanover County residents work within the City of Wilmington. Similarly, most commuters from outside of the County work in the City of Wilmington.

*Figure 2.6: New Hanover County Resident Commuting Patterns to Municipalities (left) and New Hanover County Worker Commuting Patterns from Municipalities (Right)* 

Jobs Counts by Places (Citie Where Workers are Employed	s, CDPs, - Primar	etc.) / Jobs	Jobs Counts by Places (Citie Where Workers Live - Prir	s, CDPs, nary Job	etc.) s
	201	5		201	5
	Count	Share		Count	Share
All Places (Cities, CDPs, etc.)	81,963	100.0%	All Places (Cities, CDPs, etc.)	96,453	100.0%
Wilmington city, NC	44,392	54.2%	Wilmington city, NC	29,622	30.7%
Raleigh city, NC	2,132	2.6%	Murraysville CDP, NC	4,573	4.7%
Kings Grant CDP, NC	1,640	2.0%	Myrtle Grove CDP, NC	2,782	2.9%
Charlotte city, NC	1,550	1.9%	Kings Grant CDP, NC	2,591	2.7%
Wrightsville Beach town, NC	1,229	1.5%	Leland town, NC	2,514	2.6%
Myrtle Grove CDP, NC	1,166	1.4%	Ogden CDP, NC	2,068	2.1%
Carolina Beach town, NC	1,120	1.4%	Carolina Beach town, NC	1,627	1.7%
Porters Neck CDP, NC	932	1.1%	Silver Lake CDP, NC	1,601	1.7%
Northchase CDP, NC	845	1.0%	Porters Neck CDP, NC	1,490	1.5%
Fayetteville city, NC	723	0.9%	Wrightsboro CDP, NC	1,284	1.3%
All Other Locations	26,234	32.0%	All Other Locations	46,301	48.0%

Wave Transit currently operates service to the Leland area in Brunswick County with funding from the Brunswick Consortium. Brunswick County does not currently operate its own fixed route service, but has expressed interest in exploring additional fixed route service, potentially in partnership with Wave Transit. Brunswick County will be participating in a Community Connectivity Plan (CCP) with North Carolina Department of Transportation (NCDOT) this year, which will explore opportunities for expansion of services and better regional coordination and connectivity.

Figure 2.7: New Hanover County Future Land Use Map

In New Hanover County's Comprehensive Plan, updated in 2016, the plan calls for a change in development patterns to a denser, mixed-use style of land use in targeted areas and corridors, while

preserving large portions of rural and natural resources (see map to left highlighting multiple growth nodes). It also specifically embraces regionalism, including the promotion of a regional approach to transportation and management. Among the transit-supportive development types included in the plan are: Employment Centers, General Residential, Urban Mixed-Use, and Community Mixed-Use. Each of these types is accompanied by a visual guide that addresses the built form and transportation modes most suitable to serve that area. Figure 2.8 shows a comparison of the most transit-supportive land use and least transit-supportive land use.

The Create Wilmington Comprehensive Plan's growth strategies also envision a central role of public transportation, and identifies areas for transit-oriented development (Figure 2.9) where



transit hubs will be surrounded by higher intensity development and mixed uses. The Plan identifies corridors where it envisions faster transit travel times,

more comfortable transit

Figure 2.9: City of Wilmington Transit-Oriented Development

conditions, and a strong relationship to high- and moderate-density land alking, and bicycling. Similar to

riding and waiting

uses that facilitate walking, and bicycling. Similar to New Hanover County, it also specifically calls for strong regional collaboration.

Given the development of these two highly synergistic comprehensive plans, both of which had robust public involvement and engagement processes, the foundation exists for expanding the role and performance of public transit through a regional approach.



Figure 2.8: NHC Urban Mixed-Use (Top) and Rural Residential (Bottom) Typologies



Туре	Description	Advantages	Disadvantages	Consideration for Wilmington Region
City- Dominant	The largest city has the most representation on the Board. Typically, service is concentrated in the city and most funding comes from the City.	<ul> <li>Higher likelihood that transit investments are made that will affect more people</li> <li>Typically, higher productivity and service levels that attract new ridership</li> </ul>	<ul> <li>Since areas outside of the city are less likely to receive transit service at all, or have much more limited service, there may be less opportunity for customers traveling regionally</li> <li>Funding tends to be vulnerable to budget cuts and/or stagnates</li> </ul>	Based on the population, ridership, current service levels, and level of funding, it would be more typical for the City of Wilmington to have greater representation on the Board.
Shared City- County	There is equal representation between one city and one county on the Board.	<ul> <li>Higher likelihood that some level of transit service will be provided throughout region</li> </ul>	<ul> <li>Tends to lead towards a coverage model, which is less productive and less likely to spur additional ridership</li> <li>Can exacerbate city-suburb or urban-rural tensions</li> </ul>	This is the current model. Best practice suggests that the New Hanover County may be overrepresented in the current model.
Multi-City or County	There are multiple cities and counties represented on the Board.	<ul> <li>Typically provides more opportunities and better service for customers traveling regionally</li> </ul>	<ul> <li>There can be tensions between involved parties stemming from funding levels vs. service levels</li> </ul>	New Hanover, Brunswick, and Pender counties have experienced double-digit population growth between 2010-2016, increasing the demand for transportation between these counties. Expanding the regional model to include Brunswick and/or Pender should be considered.
Elected Officials	There are elected officials on the Board.	<ul> <li>Encourages local buy-in and support for major service changes, projects, referendums, etc.</li> <li>Close to constituent needs</li> </ul>	<ul> <li>Pressure to succumb to political needs</li> <li>May be less engaged as a function of time and many competing priorities</li> </ul>	Best practice suggests that it is not necessary for an elected official to serve on the Board. However, being in regular, direct communication with elected officials is critical.
Other Stakeholders	There are other stakeholders on the Board, such as members of the general public, business community, health community, etc.	<ul> <li>Provides additional perspectives</li> <li>Fosters partnerships that can help increase funding, ridership, etc.</li> </ul>	<ul> <li>Can have tendency to focus exclusively on own domain, rather than what's good for the whole</li> <li>Not as accountable as city or county officials</li> </ul>	CFPTA already has representation from DSS. Given the service and funding relationship with UNCW, it may be worthwhile to include a UNCW representative on the Board.

### Comparison of Governance Model Components Composition

### Funding (Other than Federal and State Grants)

Туре	Description	Advantages	Disadvantages	<b>Consideration for Wilmington Region</b>
Discretionary Contributions	Local and county governments contribute a discretionary amount of funding each year from their general fund.	<ul> <li>Provides most flexibility to the local and county governments to spend money on what they deem is most important year-to-year</li> </ul>	<ul> <li>Funding may be volatile year-to- year</li> <li>Long-term funding uncertainty makes long-term transportation planning and investments difficult</li> </ul>	This is the current state. The lack of a dedicated funding source was cited by nearly all stakeholders as a major issue. Peers with this model tended to face budget challenges.
Formula- Driven Contributions	Local and county governments contribute an amount defined by agreed upon formula. Typically, formulas are based on some combination of:	<ul> <li>Transit system can count on a more stable source of base level funding, enabling it to make longer-term plans and investments</li> <li>Perceived as more fair, as formula is agreed upon by participating parties</li> </ul>	<ul> <li>Potential for transit system to become underfunded if formulas or contribution amounts aren't periodically updated</li> <li>Funding tied to amount of service can result in weaknesses in the regional transit system if a municipality chooses to contribute less</li> </ul>	A base level of funding, potentially with increases tied to inflation or some other indicator, would at least provide CFPTA with a stable funding source.
Local Option Sales Tax (LOST)	Sales tax approved by voter referendum to fund transit.	<ul> <li>Easy to collect</li> <li>Generates substantial dedicated revenue, especially when economy is strong</li> <li>Typically preferred by citizens over property tax increases</li> <li>Allowed under current North Carolina General Statutes</li> </ul>	<ul> <li>Requires significant investment in referendum campaign to educate voters and garner support</li> <li>Imposes additional costs on residents</li> <li>Risk of not passing or being appealed through another referendum<sup>1</sup></li> <li>Can be volatile (e.g. in economic downturn if spending goes down)</li> </ul>	<ul> <li>Wave Transit supports a transit sales tax, which would require a resolution of the New Hanover County Commissioners to place the question as a referendum.</li> <li>A statistically valid, unbiased community survey should be conducted to gauge support for Wave Transit and a possible sales tax prior to pursuing.</li> <li>Generally, other forms of revenue should be exhausted prior to pursuing taxes.</li> </ul>

<sup>&</sup>lt;sup>1</sup> According to the Center for Transportation Excellence, 2016 saw the most number of transit measures ever on ballots across the United States – 78 measures across 26 states.

Туре	Description	Advantages	Disadvantages	<b>Consideration for Wilmington Region</b>
Other Taxes	Vehicle registration tax* Rental car tax Gas tax Petroleum and transportation industries tax Payroll tax Mortgage Recording tax <sup>2</sup>	<ul> <li>Generates substantial revenue</li> <li>Typically preferred by citizens over property or sales taxes</li> <li>Does not necessarily require referendum</li> <li>In the case of Mortgage Recording tax, it is tied to regional growth by design</li> <li>Vehicle registration tax is allowed under current NC General Statutes</li> </ul>	<ul> <li>Most required amendments to legislation, so are better suited as long-term options</li> <li>Additional administrative needs</li> </ul>	Among these options, there is precedent for the vehicle registration and rental car taxes in NC, which are currently used to fund GoTriangle. Wake County approved the rental car tax in 2000 and generates approximately \$8M annually. Wave Transit may support a tax on vehicle registration fees. A legal opinion should be sought to determine the County and/or City's role in utilizing the vehicle registration and the mechanism for doing so. See Page 25-26 for further discussion. Rental car and/or vehicle registration taxes would likely be easier to implement and more politically feasible than a sales tax.
Fees	Ridesharing Fee (Uber, Lyft)	<ul> <li>Does not require referendum</li> <li>More targeted than a tax</li> <li>Used to capture the costs imposed by the entity (e.g. excess congestion caused by ridesharing services)</li> </ul>	<ul> <li>May have strong opposition from affected parties</li> <li>Can cause people to use personal cars instead of ridesharing services (rather than transit)</li> </ul>	
Tolls	Involves allocating a portion of a charge to users for use of a bridge or road.	<ul> <li>By allocating some funding to transit, the improved transit system has potential to attract more riders and further reduce congestion</li> <li>Higher tolls have the potential to encourage some to switch to transit and further reduce congestion</li> </ul>	<ul> <li>While there is often still opposition to tolls, surveys have indicated growing public support for tolls (and preference for tolls over taxes)</li> <li>Potential for opposition from those who believe toll revenue should only be spent on roads and bridges</li> </ul>	Tolled roads/bridges have been considered to address issues around growth and congestion in the region. There may be a future opportunity for a portion of toll revenues to be allocated to transit as a strategy to encourage transit use and lessen congestion.

<sup>&</sup>lt;sup>2</sup> The Mortgage Recording tax is specific to New York State. 0.25% of each transaction funds regional transportation authorities.

Туре	Description	Advantages	Disadvantages	<b>Consideration for Wilmington Region</b>
Public- Private Subsidy Partnerships	Through partnership with local businesses and institutions, the funding partner contributes enough funding to cover the cost of the service to their location in return for its employees (or students, in the case of universities), to ride for free.	<ul> <li>Funding partners receive direct benefit</li> <li>Increases cost recovery</li> </ul>	<ul> <li>Requires extensive commitment to fostering and expanding relationships for most success</li> <li>Additional administrative needs</li> </ul>	CFPTA currently uses this model in its funding and service relationship with UNCW. This model has also been proven to work with community colleges, nursing homes, corporate headquarters or large offices, hospitals, etc. A robust program can generate millions of dollars in revenue and drive cost recovery up significantly.
Land Value Capture	Involves the selling or leasing of development rights around transit assets (typically around stations or major facilities). Can also involve taxation- based schemes that target users and nearby landowners. Often positioned as special purpose levies (e.g. special assessment districts, betterment charges, development charges and tax incremental financing).	<ul> <li>Leverages value generated by transit improvements</li> <li>Targeted to specific, localized area</li> </ul>	<ul> <li>More suitable for transit systems that have commuter rail, subway, or light rail</li> <li>Requires clear understanding of impact of transit on future land values</li> <li>Requires large degree of coordination with local stakeholders</li> </ul>	The Downtown Multi-Modal Transportation Center, which is anticipated to eventually connect local and intercity buses, the Downtown Trolley, and new intercity rail service, may present an opportunity to pursue this type of funding mechanism.

\*Notes on the Applicability of Vehicle Registration Fees for Funding of Public Transportation:

North Carolina General Statute 20-97 allows municipalities to levy a vehicle tax of up to \$30 per vehicle. 20-97 (b1) (2) allows up to \$5 of the vehicle tax to be used to support public transportation. [See <u>https://www.ncleg.net/gascripts/statutes/statutelookup.pl?statute=20-97</u> for statute language.]

The paragraph describing use of the vehicle tax for public transportation states, "This subdivision only applies to a city or town that operates a public transportation system as defined in G.S. 105-550." This raises the question of whether vehicle tax funds can be applied to a public transportation system that is operated by an authority, such as Wave Transit, versus a public transportation system operated by a municipality. This question would ultimately need to be resolved via legal interpretation. There are, however several items that can inform the conversation.

North Carolina General Statue 160A-583 of Article 25 states, "The establishment and operation of a transportation authority as herein authorized are governmental functions and constitute a public purpose, and the municipality is hereby authorized to appropriate funds to support the establishment and operation of the transit authority. The municipality may also dedicate, sell, convey, donate or lease any of its interest in any property to the authority. Further, the authority is hereby authorized to establish such license and regulatory fees and charges as it may deem appropriate, subject to the approval of the governing body of the municipality. If the governing body finds that the funds otherwise available are insufficient, it may call a special election without a petition and submit to the qualified voters of the municipality the question of whether or not a special tax shall be levied and/or bonds issued, specifying the maximum amount thereof, for the purpose of acquiring lands, buildings, equipment and facilities and for the operations of the transit authority. Any special election shall be conducted in accordance with G.S. 163A-1592. (1977, c. 465; 1979, 2nd Sess., c. 1247, s. 45; 2013-381, s. 10.29; 2017-6, s. 3.)" [See

https://www.ncleg.net/EnactedLegislation/Statutes/PDF/ByArticle/Chapter\_160A/Article\_25.pdf for statute reference.]

160A-583 of Article 25 suggests that municipalities do have the ability to create dedicated funding streams, including taxes, to support transportation authorities operating within their jurisdictions.

Additionally, there is precedent for municipalities and/or counties utilizing vehicle registration fees to fund transportation authorities. In Wake County, North Carolina, a \$3 increase in the vehicle registration fee was approved to generate funds for the regional transportation authority GoTriangle. [See <a href="https://www.newsobserver.com/news/traffic/article119068643.html">https://www.newsobserver.com/news/traffic/article119068643.html</a> and <a href="https://www.newsobserver.com/news/traffic/article134334079.html">https://www.newsobserver.com/news/traffic/article119068643.html</a> for articles discussing this vehicle registration fee increase.]

It is recommended that Wave Transit, New Hanover County, and the City of Wilmington seek legal counsel on allowances and limitations of the application of vehicle registration fees.

### Recommendations

Recommendations are summarized based on the criteria for effective governance.

Governance Criteria	Recommendation
Coordination	It is recommended that the City of Wilmington be given the majority seats on the Board, and to consider allocating seats to UNCW, WMPO, and/or other key community partners or citizen representatives. In the short term, it is recommended that funding contributions of the City of Wilmington and New Hanover County be formula-based for a defined time period (with options for renewal), while other dedicated funding options are explored and pursued. It is recommended that the formula remain in place (although possibly at a reduced rate), even if alternative revenues are generated. Given regional growth and interest, it is recommended that CFPTA coordinate closely with Brunswick County during their Community Connectivity Plan process as a means to explore further opportunities for regional coordination.
Efficiency	Through a strategic planning process, it is recommended that CFPTA establish alignment and commit to strategic and prioritized goals that are inclusive of customer value, community value, and organizational effectiveness measures. Best practice suggests that metrics should be outcomes-based rather than effort-based (e.g. customer satisfaction, cost recovery, etc.). A sample Performance Scorecard is provided in Appendix 1. The CFPTA Board should be heavily engaged in developing the strategic plan, with opportunities built into the process to solicit feedback from a wider stakeholder group consisting of elected officials and other city and county staff. Once the strategic direction and performance metrics/targets are set, the CFPTA staff should be given full authority to make service and operational decisions that it determines will best allow it to meet these targets. As described on the following page, the CFPTA Board will hold staff accountable by means of monitoring a robust Performance Scorecard.
Accountability	Based on the strategic plan and performance metrics, CFPTA should publish actual performance against these goals (ideally on a quarterly basis and annually). Changes in service or new capital projects should be evaluated against the expected impact on key performance indicators both before and after project/service implementation.
Responsiveness	CFPTA should continue to enhance community partnerships and solicit feedback from the general public.

Governance Criteria	Recommendation	
Sufficient and Sustainable Revenue	<ul> <li>CFPTA should pursue multiple new revenue sources in order to establish a dedicated funding stream and minimize reliance on any one source.</li> <li>Recommendations (in order of suggested priority) include: <ul> <li>Develop formula for local funding</li> <li>Expand revenue partnerships (aim to replicate the UNCW partnership with other institutional partners)</li> <li>Explore opportunities to capture value around the Multi-Modal Transportation Center</li> <li>Pursue rental vehicle tax and vehicle registration tax</li> <li>Pursue local option sales tax</li> </ul> </li> </ul>	
Effectiveness	The recommended Performance Scorecard aligned with a clear strategic plan will allow CFPTA and its stakeholders to evaluate the effectiveness of CFPTA across a variety of dimensions, including customer and community value. This is also an effective management tool that can be used by operational staff to set employee performance goals, determine priorities for day-to-day tasks, and have actionable information to inform areas in need of attention.	

Overall, the Wilmington-New Hanover County region's current governance structure is appropriate and flexible enough to accommodate recommended changes to the Board composition if all parties come to an agreement around the changes. The biggest improvement to Wave Transit service would be the securing of dedicated funding – this will allow the realization of the transit vision described in both New Hanover County and the City of Wilmington's Comprehensive Plans. Finally, a much more robust, strategic, and actionable performance management system will greatly enhance CFPTA's ability to manage transit effectively, while also providing funding partners, stakeholders, and the general public with transparency into the transit system's performance and impact.

### Appendix 1 Sample Scorecard

### Performance Scorecard

CATS	TRAX===		Perfo Sco	ormar recar	ice d
Management Principal	Metric Name	Performance Goal	Performance Results	Goal Points	Earned Points
	Net Promoter Score - Fixed Route	31%		5	
	Net Promoter Score - Rail	31%		2	
	Net Promoter Score - Paratransit	31%		1	
	Overall Customer Satisfaction - Fixed Route	85%		5	
Customers	Overall Customer Satisfaction - Rail	88%		2	
	Overall Customer Satisfaction - Paratransit	90%		1	
	Customer Satisfaction with Vehicle Operators	85%		4	
	Complaint Resolution	90%		2	
	Customer Satisfaction with Call Center Interactions	85%		2	
	Customer Satisfaction with Service Coverage	89%		1	
	Subtotal			25	
	Patt Service Coverage Threshold	< 80%		/	
	Dept Service Coverage Threshold	1.15		/	
	Operating Cost/Revenue Mile – Rail	\$29.75		2	
Financial	Customers/Revenue Mile - Fixed Route	1.5		3	
	Customers/Revenue Mile - Rail	10		1	
	Customers/Revenue Hour - Paratransit	2		1	
	Directly Generated Revenue	3%		2	
	Subtotal			25	
	Adherence to Asset Replacement Plan	80%		6	
Canital	Adherence to Asset Replacement Budget	90%		6	
Program	Miles Between Breakdowns - Fixed Route	12,000		4	
	Miles Between Breakdowns - Rail	5,000		1	
	Vehicle Down Time (average days)	2		3	
	Subtotal	2004		20	
	Employee Engagement	80%		5	
Employees	% of Employee Performance Goals Achieved	85%		4	
Employees	% of Employees Engaged in Professional Development	85%		3	
	Customer Satisfaction with CATS Employees	85%		3	
	Subtotal			20	
Stakeholder	Public Satisfaction with Management of the System	84%		5	
Engagement	% of Public Aware of 2030 Plan	60%		3	
	Public Satisfaction with 2030 Plan	85%		2	
	Subtotal			10	
	TOTAL			100	

The sample Performance Scorecard, developed by TransPro in collaboration with Charlotte Area Transit System (CATS) leadership and department heads, is used by for quarterly performance monitoring in service and management areas identified as most important to the agency's success. Performance results are shared with Charlotte City Council, internally with the entire CATS organization, and publicly with transit customers and community stakeholders.





# Wave Transit's Short-Term Efficiencies and Long-Term Governing Model

**Objective 1: Short-Term Efficiencies** 

# **Final Report**

August 2018

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#### 2

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### Current State & Peer Comparison

### **Current State**

Service Description

Wave Transit provides bus service primarily in the City of Wilmington, with five routes extending beyond the city limits into New Hanover County, and one route extending into Brunswick County.

Wave Transit has five categories of service:

- Community Routes
- Seahawk Shuttle
- Downtown Trolley
- Dial-A-Ride Transportation (DART)
- Vanpool

Wave Transit **community routes** are traditional fixed routes that operate on a regular schedule and represent the largest share of service in terms of both ridership and service hours. The community routes consist of Routes 101, 103, 104, 105, 106, 107, 108, 201, 202, 204, 205, 207, 209, and 301. These routes are open to all members of the public. Fixed route schedules and a route map are included in the appendix of this report. The operation of Wave Transit community routes is contracted out to transportation provider First Transit.

The **Seahawk Shuttle** consists of nine fixed routes that serve the University of North Carolina Wilmington (UNCW). The Seahawk Shuttle consists of Routes 701, 702, 703, 704, 705, 706, 707, 711, and 712. Seahawk Shuttle routes are partially funded by UNCW and primarily serve the UNCW campus and surrounding areas, with one route connecting to Wave Transit community routes at Forden Station. As with Wave Transit community routes, Seahawk Shuttle routes for free. Non-students can also ride Seahawk Shuttle routes, but must pay a fare to do so. Seahawk Shuttle schedules and a route map are included in the appendix of this report. The operation of Seahawk Shuttle routes is contracted out to transportation provider First Transit.

The map below illustrates the Wave Transit community fixed routes and Seahawk Shuttle routes.





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The **downtown trolley** is a free fixed route service that circulates through downtown Wilmington on a 20-minute cycle. The downtown trolley is designated as Route 203 and is open to all members of the public. The operation of the downtown trolley is contracted out to transportation provider First Transit.



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**Dial-A-Ride Transportation (DART)** is Wave Transit's demand-response service. Demand-response service is a shared ride, curb-to-curb service in which customers schedule their rides ahead of time. DART service is available to individuals whose disability prevents them from independently accessing fixed route service. Those wishing to utilize DART service must submit an application and undergo a screening process. While fixed route services are contracted out to First Transit, Wave Transit directly operates DART services.

The Wave Transit **Vanpool** program is a carpooling service in which Wave Transit, in partnership with the Wilmington Urban Area Metropolitan Planning Organization (WMPO), provides a van for use by a group of commuters who coordinate pickups, drop-offs, and vehicle driving among themselves. The vanpool system is managed by Wave Transit in coordination with WMPO.

An overview of each service mode is provided in the table below.



### Service Profile by Mode

	Community Routes	Seahawk Shuttle	Trolley	DART	Vanpool
Service Type	Fixed Route	Fixed Route	Fixed Route	Demand Response	Shared Ride
Service Operator	First Transit	First Transit	First Transit	Wave Transit	Wave Transit
Service Days	Monday-Sunday	Monday-Friday	Monday-Sunday	Monday-Sunday	
Service Hours	<u>Monday-Saturday</u> 6:00 AM-9:00 PM <u>Sunday</u> 9:00 AM-6:00 PM	7:00 AM-6:40 PM	<u>Monday-Friday</u> 7:10 AM-8:50 PM <u>Saturday</u> 10:30 AM-8:50 PM <u>Sunday</u> 10:30 AM-5:30 PM	<u>Monday-Saturday</u> 6:00 AM-9:00 PM <u>Sunday</u> 9:00 AM-6:00 PM	Determined by vanpool members.
# of Routes	14 Routes	9 Routes	1 Route	No fixed routes. Schedules vary daily based on demand.	No set routes. Service is determined by vanpool members.
Service Frequency	<ul> <li>12 routes have 60- minute frequency</li> <li>1 route has 30- minute peak frequency and 60- minute off-peak frequency</li> <li>1 route has 3-hour frequency</li> </ul>	<ul> <li>7 routes have 20- minute frequency</li> <li>1 route has 7.5- minute peak frequency and 15- minuter off-peak frequency</li> <li>1 route has 30- minute frequency</li> </ul>	20 Minutes	No set routes or stop schedules. Stop times and locations vary daily based on demand.	No set routes. Service is determined by vanpool members.
# of Vehicles	37 vehicles distributed between community routes and Seahawk Shuttle routes		2	24	2
FY 16-17 Ridership	949,378	364,708	45,905	57,963	4,727
FY 16-17 Operating Costs	5,206,069	1,168,412	305,506	1,349,409	


## Ridership

Ridership is a measure of the usage volume of a transit system. It reflects the number of boardings generated by the system. For fixed route service, ridership is also referred to as unlinked passenger trips. The "unlinked" designation is relevant in passenger journeys that involve transferring from one bus to another. Under the standard definition of ridership, a journey involving a transfer would represent two passenger boardings.

Wave Transit's annual ridership has fluctuated over the course of the past 12 years amidst a slight downward trend. Annual ridership decreased from 2005 to 2010, experienced an increase between 2010 and 2012, and decreased again between 2012 and 2017. This represents a 1.3% average annual decrease in ridership over a 12-year period, with several up and down fluctuations within that span.



Data Source: Wave Transit Annual Reports for 2007-2017



Wave Transit provided 1,417,964 rides in FY 16-17, the most recently completed fiscal year. This figure reflects the total ridership of all service modes, including community fixed routes, Seahawk Shuttle fixed routes, the free downtown shuttle, and DART demand-response service. The following graph reflects the distribution of ridership among these four service types.



## Fixed Route Service Productivity

Ridership measures passenger volume. It does not by itself reflect the performance of a transit system, however. It is possible, for example, to generate increased ridership but to do so inefficiently. Service productivity reflects the efficiency with which a transit system delivers service. Service productivity refers to the average volume of passenger activity per unit of service provided, and is commonly measured as Customers per Revenue Hour or Customers per Revenue Mile. Measuring service productivity allows an agency to determine how effectively it is aligning service deployment with customer demand.

As with overall ridership, Wave Transit's fixed route productivity has fluctuated over the past ten years. [Note: This reflects all fixed route services, including community routes, Seahawk Shuttle routes, and the downtown trolley.] Unlike ridership, which experienced a decrease, fixed route productivity increased 5.7% over a ten-year period to a rate of 16 Customers per Revenue Hour FY 16-17. Within that ten-year span, fixed route productivity decreased from 2007 to 2010, increased from 2010 to 2013, and decreased from 2013 to 2017. These trends are illustrated in the following graph.

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Data Source: National Transit Database, 5a FY17 NC URBAN Op Stats Data Collection Form

## Fixed Route Service Levels

While there have been several route changes in recent years, the total volume of fixed route service (as measured in revenue hours) has decreased over the past ten years and remained stable over the past five years, as illustrated in the graph below.



Data Source: National Transit Database, 5a FY17 NC URBAN Op Stats Data Collection Form



## Budget

Wave Transit's annual operating budget has remained relatively stable over the past five years. The FY 17-18 budget of \$8,357,253 is just 1.1% higher than the FY 13-14 budget of \$8,265,000.



Data Source: Wave Transit Adopted Budget Document for FY17 and FY18



## **Fixed Route Peer Comparison**

To better understand Wave Transit's profile and performance, TransPro compared various aspects of Wave Transit to similar agencies. While internal comparisons can be made to track Wave Transit's own performance over time, comparisons to peer agencies can help Wave Transit understand its performance in the context of industry-wide trends.

## Wave Transit Peer Group

A set of Wave Transit peer agencies was selected via a two-step process.

First, TransPro identified a set of candidate agencies using a methodology described in Transit Cooperative Research Program (TCRP) Report 141. This methodology assesses agency similarity based on a variety community and transit agency characteristics. By focusing on community characteristics in addition to transit agency characteristics, this methodology takes into account the interaction between community dynamics and transit agency elements.

Second, TransPro submitted the candidate peer agencies identified via the methodology above to the project committee. The project committee reviewed the candidates and selected the agencies it felt were most relevant for comparison purposes.

Based on the above process, the following ten agencies were selected for inclusion in the peer comparison:

Transit Agency	Location
Kalamazoo Metro Transit System	Kalamazoo, MI
Tri-State Transit Authority	Huntington, WV
Greater Roanoke Transit Company	Roanoke, VA
Lexington Transit Authority	Lexington, KY
Lakeland Area Mass Transit District	Lakeland, FL
Green Bay Metro	Green Bay, WI
Winston-Salem Transit Authority	Winston-Salem, NC
Fayetteville Area System of Transit	Fayetteville, NC
Greensboro Transit Authority	Greensboro, NC
Charleston Area Regional Transportation Authority	Charleston, SC

The peer comparison of Wave Transit to the above agencies focuses exclusively on the fixed route portion of each agency's service.

The data used in this peer comparison was obtained from the National Transit Database (NTD). The data reflects performance in Fiscal Year 2016, which is the most recent year for which NTD data is available.



## System Overview

Transit Agency	Annual Ridership	Annual Operating Expenses	# of Weekday Fixed Routes	# of Vehicles in Peak Service
Wave Transit	1,393,573	\$6,978,971	24	25
Charleston Area Regional Transportation Authority	3,868,214	\$14,013,254	18	70
Fayetteville Area System of Transit	1,532,118	\$6,024,335	18	24
Greater Roanoke Transit Company	2,211,393	\$7,011,634	25	35
Green Bay Metro	1,323,000	\$5,827,880	15	25
Greensboro Transit Authority	3,913,676	\$13,998,285	16	41
Kalamazoo Metro Transit System	1,915,567	\$6,794,973	19	28
Lakeland Area Mass Transit District	1,304,808	\$9,805,544	27	30
Lexington Transit Authority	3,783,730	\$17,654,606	24	54
Tri-State Transit Authority	883,320	\$5,178,749	13	27
Winston-Salem Transit Authority	3,006,358	\$11,453,306	31	36

The following table provides an overview of each agency, with Wave Transit listed first.

Data Source: National Transit Database for Fiscal Year 2016

The categories in the above table convey the relative scale of each agency in terms of customer volume, service footprint, and agency size.

Wave Transit is on the smaller side of its peer group in terms of ridership and size. It ranks 8<sup>th</sup> out of 11 agencies in ridership, 7<sup>th</sup> out of 11 in operating expenses, and 9<sup>th</sup> out of 11 in the number of vehicles operating during peak levels of service.

While Wave Transit is on the lower side in the size categories of ridership, expenses, and vehicles in peak service, it ranks 4<sup>th</sup> out of 11 agencies in the number of routes operating during weekday service. This is largely a result of there being nine Seahawk Shuttle routes dedicated to serving the University of North Carolina at Wilmington. While other agencies in the peer group provide service to local colleges and universities, Wave Transit's nine Seahawk Shuttle routes represent the greatest number of routes dedicated to university service among its peers.



## Performance Comparison

The following table provides a comparison in three key performance areas: route productivity, vehicle health, and cost efficiency.

**Customers per Revenue Hour** is a measure of route productivity. It reflects ridership activity per unit of service delivered. Agencies generally seek to maximize this value. One way to interpret this metric is the larger the value, the fuller the buses.

**Revenue Miles Between Vehicle Failures** is a measure of vehicle health. It indicates the average number of miles an agency's vehicles can be driven before experiencing a breakdown that interrupts service. Larger values are desirable for this metric, as larger values represent fewer bus breakdowns. This metric is influenced by two main factors: vehicle maintenance performance and vehicle age.

**Operating Expense per Revenue Hour** is a measure of cost efficiency. It reflects the average amount it costs to deliver a unit of service. Higher values represent higher service delivery costs, and vice versa.

Each of these three metrics represents a rate, a per unit normalized metric. Because these metrics are normalized by service delivery units, agencies of different sizes can be evaluated against each other in an "apples to apples" comparison. Thus, Wave transit can be meaningfully ranked against its peers in the three performance areas shown in the table below.

Transit Agency	Customers per Revenue Hour	Revenue Miles Between Vehicle Failures	Operating Expense per Revenue Hour
Wave Transit	16.11	1,773	\$80.68
Charleston Area Regional Transportation Authority	20.17	16,975	\$73.06
Fayetteville Area System of Transit	16.41	11,729	\$64.53
Greater Roanoke Transit Company	20.25	5,468	\$64.21
Green Bay Metro	16.66	4,458	\$73.39
Greensboro Transit Authority	24.24	10,381	\$86.70
Kalamazoo Metro Transit System	22.63	1,618	\$80.29
Lakeland Area Mass Transit District	14.64	3,670	\$110.05
Lexington Transit Authority	21.21	3,301	\$98.97
Tri-State Transit Authority	15.07	3,555	\$88.34
Winston-Salem Transit Authority	21.92	5,352	\$83.49

Data Source: National Transit Database for Fiscal Year 2016



Wave Transit performs below its peer group average in route productivity (Customers per Revenue Hour) and vehicle health (Miles Between Vehicle Failures). Wave Transit performs at the level of its peer group average in cost efficiency (Operating Expense per Revenue Hour). These three areas are explored in further detail below.



Data Source: National Transit Database for Fiscal Year 2016

Wave Transit ranks 9<sup>th</sup> out of 11 agencies in its peer group in route productivity. Wave's productivity level of 16 Customers per Revenue Hour is 15% below the peer group average of 19 Customers per Revenue Hour. One way to interpret this is that Wave Transit's buses tend to be less full on average than those of its peer group.

Route productivity is impacted by a variety of factors. One such factor is the inherent demand for transit in the community. Another factor is the agency's approach to addressing that demand. For example, some agencies emphasize geographic coverage when designing their route structure, while other agencies emphasize ridership. Route networks designed to emphasize geographic coverage tend to generate lower levels of productivity than networks designed to emphasize ridership. These issues, along with Wave Transit's approach to addressing them, will be discussed in Route and Trip Performance Analysis section of this report.

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Data Source: National Transit Database for Fiscal Year 2016

Wave Transit ranks 10<sup>th</sup> out of 11 agencies in its peer group in vehicle reliability. Wave's vehicle performance of 1,773 miles between vehicle failures is 71% below the peer group average of 6,207 Miles Between Vehicle Failures. One way to interpret this is that Wave Transit's buses experience more frequent breakdowns on average than those of its peer group.

Two key factors that impact vehicle reliability are vehicle maintenance performance and vehicle age.

The average age of Wave Transit fixed route fleet in the peer comparison year of FY 2016 was 7.5 years. This represents the 4<sup>th</sup> youngest vehicle fleet in the peer group, and is 13% younger than the peer group average of 8.6 years. Given Wave Transit's lower average vehicle age relative to its peers, vehicle age does not appear to be the driving force behind Wave's low vehicle reliability ranking. [It should be noted that the current age of the Wave Transit fixed route fleet (which includes 21 35-foot buses, 16 28-foot buses, and 2 trolley buses) has increased to 9.0 years as of April 2018. It is not know how this compares to Wave's peer agencies at the time of this writing.]

In cases of low vehicle performance, if vehicle age does not appear to be an issue, then an area to investigate is the performance of the vehicle maintenance function. Such an investigation was conducted to inform why Wave Transit's vehicle reliability is lower than that of most of its peer agencies.

One indicator of vehicle maintenance performance is Preventive Maintenance Inspection (PMI) On-Time Performance. The FTA requires transit agencies to perform preventive maintenance inspections on federally funded vehicles at regular intervals as per vehicle manufacturer specifications. Intervals may vary, but are often every 6,000 miles for transit buses.



An effective preventive maintenance inspection program is crucial to vehicle performance. As one would expect, well-maintained vehicles tend to experience fewer maintenance issues.

The vehicle reliability graph above reflects Fiscal Year 2016, as that is the most recent year for which NTD data is available for purposes of peer comparison. According to its Monthly Operations Reports (OpStats), Wave Transit's Preventive Maintenance (PMI) On-Time Performance during that fiscal year was 67%. This is a low level of PMI performance, and can be interpreted to mean that Wave Transit had a low level of compliance with vehicle manufacturer specifications for regular vehicle maintenance. This may explain Wave Transit's low level of vehicle performance compared to its peers.

Wave Transit's PMI On-Time Performance has since improved. According to the OpStats reports, their average PMI On-Time Performance over the past three years was as follows:

- FY16 67%
- FY17 90%
- FY18 (through end of February) 98%



Data Source: National Transit Database for Fiscal Year 2016

Wave Transit ranks 6<sup>th</sup> out of 11 agencies in its peer group in cost efficiency. Wave's fixed route expense level of \$81 per Revenue Hour is almost exactly equal to the peer group average of \$82 per Revenue Hour. This suggests that Wave Transit's fixed route operating costs are in line with those of its peer agencies.



## **Ridership Trends**

As indicated in the table below, Wave Transit's fixed route ridership increased between 2010 and 2012, then decreased between 2012 and 2016.

Year	Fixed Route Ridership
FY 10	1,352,235
FY 11	1,486,460
FY 12	1,530,520
FY 13	1,517,716
FY 14	1,455,224
FY 15	1,476,773
FY 16	1,393,573

Data Source: National Transit Database for Fiscal Years 2010-2016

Wave Transit's ridership trajectory is similar to that of its peers, as indicated in the following graph. Ten of the eleven agencies in the peer group experienced a decline in ridership between 2012 and 2016. Wave's ridership decrease of 9% during that period was slightly lower than the average peer group decrease of 11%. The similarity of Wave Transit's five-year ridership profile with that of its peer group suggests that its recent ridership decrease is consistent with industry trends.



Data Source: National Transit Database for Fiscal Years 2010-2016

Wave Transit's ridership profile in the above graph is nearly identical to that of Green Bay Metro.



## **Budget Trends**

Wave Transit's fixed route operating expenses increased by over 10% from 2010 to 2011 and again from 2011 to 2012. After these two years of double-digit increases, fixed route operating costs leveled off. The next three years saw slight increases of 2%, 2%, and 3%. These three years were followed by a 2% decrease in fixed route operating expenses from 2015 to 2016.

	Fixed Route	%
Year	<b>Operating Expenses</b>	Change
FY 10	\$5,230,372	
FY 11	\$5,928,941	13%
FY 12	\$6,590,474	11%
FY 13	\$6,744,871	2%
FY 14	\$6,885,798	2%
FY 15	\$7,089,409	3%
FY 16	\$6,978,971	-2%

Data Source: National Transit Database for Fiscal Years 2010-2016

Wave Transit's 6% increase in fixed route operating expenses between 2012 and 2016 was less than the peer group average increase of 9%. This indicates that Wave Transit's operating costs are increasing less rapidly than those of its peers.



Data Source: National Transit Database for Fiscal Years 2010-2016



# **Financial Indicators**

A review of Wave Transit's financial records was conducted to assess Wave's financial position, trends, and practices. The following areas were investigated in carrying out this assessment:

- Fund balance
- Budget adherence
- Revenue projection
- Audit results

A profile of each of these areas is provided in the following pages.

## **Fund Balance**

Under the terms of an agreement with New Hanover County, Wave Transit is required to maintain a fund balance of 8%. The graph below indicates the annual fund balance for the most recently completed six fiscal years.



Data Source: CFPTA Operating Fund Balance Report

In reviewing the data presented in the fund balance graph above, two key results stand out.

- 1. Wave Transit has not met the 8% fund balance requirement.
- 2. Wave Transit's fund balance has increased in each of the past fiscal years.

Looking at these two results in conjunction with each other suggests that while Wave Transit's fund balance is below the required 8%, its cash position is on an upward trend toward meeting that requirement.





## **Budget Adherence**

A high-level indicator of a transit agency's financial stewardship is whether or not it adheres to its spending plan. This can be evaluated by comparing its planned expenditures with its actual expenditures. The following graph compares Wave Transit's budgeted operating expenses with its actual operating expenses for the most recently completed four fiscal years.



Data Source: CFPTA Budgets for Fiscal Years 2016-2017 and 2017-2018

As the above graph shows, Wave Transit operated within its planned budget for each of the past four fiscal years.

## **Annual Revenue Projections**

A transit agency's budgeted revenue represents the amount of funds it expects to have available in the upcoming fiscal year. Realistic revenue projections are critical to financial stability. Overestimating the amount of available revenue can lead to an inability to fully fund an agency's operating plan and can lead to operating deficits. Thus, it is informative to determine if Wave Transit generates realistic revenue projections in advance of each fiscal year. The following graph compares Wave Transit's budgeted operating revenues with its actual operating revenues for the most recently completed four fiscal years.





Data Source: CFPTA Budgets for Fiscal Years 2016-2017 and 2017-2018

As the above graph shows, Wave Transit's actual operating revenue was consistent with its actual operating revenue in each of the past four fiscal years. In each year, actual revenue was slightly less than budgeted revenue. The revenue deviation ranged from 0.3% in FY 16-17 to 3.7% in FY 15-16.

## Audit Results

Wave Transit undergoes an independent financial audit every fiscal year to assess its financial practices and internal controls. Its most recent was completed in November 2017 and reflects the fiscal year ending June 30, 2017. The audit analyzes Wave Transit's financial practices and financial position in detail, provides discussion regarding its investigation, and provides a summary of its findings.

The summary of the FY 16-17 audit's findings is provided on the following pages. The key takeaway from the summary of findings is that no material weaknesses or significant deficiencies were identified in Wave Transit's financial statements, federal awards, or state awards.



#### Schedule of Findings and Questioned Costs For the Fiscal Year Ended June 30, 2017

#### Section 1. Summary of Independent Auditor's Results

#### Financial Statements

Type of report the auditor issued on whether the financial statements audited were in accordance with GAAP:	Unmodifie	ed
Internal control over financial reporting:		
Material weakness(es) identified?	_Yes	<u>√</u> No
Significant deficiency(ies) identified?	_Yes	✓_None Reported
Noncompliance material to financial statements noted	l? _Yes	<u>√</u> No
Federal Awards		
Internal control over major federal programs:		
Material weakness(es) identified?	_Yes	No
Significant deficiency(ies) identified?	_Yes	None Reported
Type of auditor's report issued on compliance for major federal program:	U	Inmodified
Any audit findings disclosed that are required to be reported in accordance with 2 CFR 200.516(a)?Yes	_√_No	
Identification of major federal program:		
CFDA Numbers Nam	e of Federal	Program or Cluster
20.507/20.526	Federal T	ransit Cluster
Dollar threshold used to distinguish between Type A and Type B Programs	\$750,000	
Auditee qualified as low-risk auditee?	<u>√</u> Yes	No

(Continued)

Source: CFTA 2017 Audit Report



#### Schedule of Findings and Questioned Costs (Continued) For the Fiscal Year Ended June 30, 2017

#### Section I. Summary of Independent Auditor's Results (Continued)

#### State Awards

Internal control over major state program:

Material weakness(es) identified?	_Ye	s _	<u>✓</u> No
Significant deficiency(ies) identified?	_Ye	s _	✓ None Reported
Type of auditor's report issued on compliance for major state program:		Unmodifie	d
Any audit findings disclosed that are required to be reported in accordance with the State Single Audit Implementation Act.	_Yes	_√_No	
Identification of major State program:			
Program Name		St	tate #
State Maintenance Assistance Program		D	OT - 09
	(Continue	d)	

Source: CFTA 2017 Audit Report

#### Schedule of Findings and Questioned Costs (Continued) For the Fiscal Year Ended June 30, 2017

Section II.	Financial Statement Findings
	None reported
Section III.	Federal Award Findings and Questioned Costs
	None reported
Section IV.	State Award Findings and Questioned Costs
	None reported
Source: CFTA	2017 Audit Report



# Route and Trip Performance Analysis

## Ridership Data Source

Tracking the number of bus rides provided to the community is a basic function of transit system operations. Ridership figures are used for a variety of functions, including service planning and required reporting to federal and state oversight bodies. Given the importance of these functions, accurate tracking of ridership is critical. This section reviews Wave Transit's method for tracking bus ridership.

#### Ridership Data Source: Industry Survey

There are a variety of technology-based systems used by transit agencies to measure ridership. The two main passenger counting technologies are Automatic Passenger Counters (APCs), and fareboxes

Automatic Passenger Counters (APCs) are devices that automatically count and record bus boardings and alightings. APCs are typically linked to an automatic vehicle location system, which allows the devices to also identify the specific location at which each boarding and alighting takes place. APCs are typically able to track ridership for the entire transit system as well as for subsets of the system. These subsets include ridership by route, trip, and bus stop. Because of their high degree of accuracy, their link to vehicle location technology, and their automatic nature, APCs are generally the desired method of ridership tracking for transit agencies. APCs require both capital and operating investments, which can be considered a barrier for some transit agencies.

Fareboxes are designed to count fare payments (including both cash fares and bus pass usage) and to safeguard the cash collected from customers. Fareboxes that record each individual fare payment can be used to keep track of ridership, with the number of riders being equivalent to the number of fare payments logged by the fareboxes. Fareboxes can typically track overall system ridership and ridership by route. It is sometimes possible to track ridership by trip through extensive manual data work, but fareboxes generally do not automatically track ridership by trip. Fareboxes also do not automatically track ridership for individual bus stops. The tracking of bus stop ridership can be achieved by linking an automatic vehicle location system to the farebox system, but fareboxes on their own do not typically track ridership for individual bus stops.

APCs are generally considered to be more accurate than fareboxes in tracking ridership. The main reason for this is their automatic nature. Fareboxes can require the bus operator to interact with the farebox for certain fare payment types. This introduces human error into the transaction. Because of their automatic nature, APCs do not carry the risk of driver entry error.

#### Ridership Data Source: Wave Transit Performance

Wave Transit utilizes GFI fareboxes to track fixed route ridership (GFI denotes the farebox manufacturer). Ridership for the free downtown trolley, Route 203, is tracked via manual ridership counts. Paratransit ridership is obtained via the CTS scheduling software (CTS denotes the software manufacturer). Since this section of the report is focused on fixed



route performance, this discussion will focus on Wave Transit's method for tracking fixed route ridership.

As indicated above, GFI fareboxes are currently used for tracking fixed route ridership. This includes the Seahawk Shuttle routes. Every time a customer fare is logged into the farebox a ride is recorded (this can also include free fares). Additional information recorded with each fare includes the method of payment, the date and time of the transaction, the route on which the transaction occurred, and the bus on which the transaction occurred. This information allows Wave Transit to run reports on overall ridership, ridership by route, ridership by payment type, and other factors.

Wave Transit recently completed a technology initiative that linked the farebox system with the automatic vehicle location system. This provides Wave Transit with the ability to link customer boardings to specific bus stops. Wave Transit began collecting ridership by bus stop via this system on March 5, 2018.

## Ridership Data Source: Assessment of Wave Transit Performance

Wave Transit's use of GFI fareboxes as a source of ridership data is in line with the practices of agencies that do not have Automatic Passenger Counters. It is common practice for transit agencies without Automatic Passenger Counters to use farebox data as a basis for generating ridership figures.

The use of farebox data has both advantages and disadvantages. Advantages include:

- It is easy to generate overall and route level ridership figures via the system's reporting function
- Because the passenger counting technology is part of the farebox, the system is able report ridership by fare payment type
- Since buses are already equipped with fareboxes, separate technology is not required for tracking ridership
- Ridership data can be collected every day on every bus and route throughout the entire system

Disadvantages of using the GFI farebox to track ridership include:

- Certain fare types require bus operators to performance specific farebox functions, which introduces the element of human error
- While the farebox system provides standard reports for obtaining overall ridership and ridership by route, there are no standard reports for obtaining ridership by trip. Calculating ridership by trip requires extensive manual data work.
- There are no standard farebox reports for obtaining ridership by bus stop. [Wave Transit recently obtained the ability to obtain stop level ridership data, but it required the linking of two technologies the farebox system and the automatic vehicle location system.]



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## Ridership Data Source: Recommendations

Wave Transit's use of farebox data for ridership tracking is consistent with accepted industry practices. Still, we suggest several recommendations in the area of ridership tracking.

Short-term recommendations:

- Conduct periodic data validation assessments of GFI farebox ridership data. One possible methodology is to compare GFI farebox data to manually collected data for specific routes and time periods.
- Verify the quality of stop level ridership data generated by the farebox system. Wave Transit only recently gained the capability to obtain stop level ridership data (data collection commenced on March 5, 2018). As with any new system, the results need to be validated. Wave Transit has indicated that validation of this new stop-level ridership technology is on their list of upcoming projects. It should be noted that the technology for generating bus stop ridership data does not impact the collection of overall system ridership data or ridership by route data.

Long-term recommendation:

• Consider investing in Automatic Passenger Counters (APCs). While farebox data is a common source of ridership data, APCs provide added benefits over fareboxes. The automatic nature of APCs removes the element of human error associated with fareboxes, thus making APCs more accurate. Also, APC's provide count and location data for bus alightings in addition to bus boardings and allow for more robust reporting of ridership patterns.

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## **Route Performance Analysis**

### Route Performance Analysis: Industry Survey

Transit agencies utilize a variety of measures to assess route performance. These include productivity metrics such as Customers per Trip and Customers per Revenue Hour. Financial measures such as Cost Recovery are also used. [Cost Recovery indicates the percentage of the cost of operating transit service that is gained back through revenue generated by the service, such as cash fares, pass sales, and service subsidy payments.]

Overall ridership, while important, does not by itself reflect the performance of a transit route. Two routes with the same ridership level are not necessarily equally strong if one route operates longer in generating that ridership. Two theoretical routes with the operating statistics indicated in the table below help illustrate this.

			Customers per
Route	Daily Ridership	Revenue Hours	Revenue Hour
Route A	1,000	20	50
Route B	1,000	25	40

Route A and Route B both pick up 1,000 riders per day. Because Route A operates for fewer hours, however, it generates more customers per hour of service. Route A is therefore considered to be more productive than Route B. This concept of productivity is what is assessed with metrics such as Customers per Trip and Customers per Hour. Cost Recovery is also a measure of productivity. Specifically, it is a measure of financial productivity.

Measuring productivity factors in the resources expended to generate ridership in a way that ridership by itself does not. Productivity metrics are crucial in assessing system performance and therefore form the basis of the Wave Transit route analysis.

#### Route Performance Analysis:

Wave Transit Performance Overview and Assessment

### Analytical Overview

This performance analysis evaluates the performance of Wave Transit's fixed route system. This includes Wave Transit's community routes along with the Seahawk Shuttle that provides service to the University of North Carolina Wilmington (UNCW).

This evaluation reflects performance during the months of March 2018 and April 2018. Ridership data was obtained from Wave Transit's farebox system, which is Wave's source of official ridership figures. Service hour and service mile data was obtained from Wave Transit schedules and scheduling reports. Operating cost factors were obtained from Wave Transit's finance department.

Performance was evaluated via the following metrics.

- Ridership
- Customers per Trip



- Customers per Hour
- Cost Recovery
- Trip Score Index (the Trip Score Index is a metric that balances customer volume and cost recovery in a single metric)

In addition to evaluating performance metrics, the following service characteristics were calculated for each route. These factors served as inputs to the metrics listed above.

- Number of Trips
- Service Hours
- Service Miles
- Operating Cost
- Fare Revenue
- Subsidy Revenue

Fixed route performance was evaluated at the system, route type, route, time of day, and bus stop levels. Separate analyses were conducted for weekday, Saturday, and Sunday service to reflect the fluctuation of transit demand throughout the week.



## Aggregate Fixed Route Performance

Aggregate fixed route performance reflects the combined performance of all Wave Transit fixed routes, which includes community routes and Seahawk Shuttle routes. The following graphs and data table indicates overall Wave Transit performance on weekdays, Saturdays, and Sundays.







Service Day	Daily Trips	Daily Boardings	Customers per Hour	Cost Recovery	Average Trip Score
Weekday	542	4,896	15.7	36%	12
Saturday	165	1,758	10.7	15%	6
Sunday	99	892	9.0	13%	5

As illustrated in the above graphs and table, Wave Transit generates more riders and is more productive on Weekdays than on weekends, and is more productive on Saturdays than on Sundays. This is typical of most transit systems, as workweek activities drive most of the ridership.



## Community Route versus Seahawk Shuttle Route Performance

The route analysis compared the performance of Wave Transit community routes with Seahawk Shuttle routes. While all routes are open to the public, the nature of each set of routes is different.

Community routes are concentrated in the central area of Wilmington and extend into some of the surrounding areas. Most of these routes operate on a 60-minute cycle and are utilized by members of the community at large. This service includes Routes 101, 103, 104, 105, 106, 107, 108, 201, 202, 204, 205, 207, 209, and 301.

Seahawk Shuttle routes are concentrated mostly within a one-mile radius of the UNCW campus. These routes are shorter and more frequent than community routes. Most of them operate on a 20-minute cycle. They are utilized almost exclusively by UNCW students. This service includes Routes 701, 702, 703, 704, 705, 706, 707, 711, and 712.

Seahawk Shuttle routes operate Monday through Friday when UNCW is in session. As such, this analysis focuses on weekday service only.

The following graphs and data table compare overall community route performance with overall Seahawk Shuttle performance.







Route Type	Weekday Trips	Weekday Boardings	Customers per Service Hour	Cost Recovery	Average Trip Score
Community Routes	205	2,823	13.8	21%	8
Seahawk Shuttle Routes	337	2,073	19.3	70%	18

As indicated above, Wave Transit community routes have higher overall ridership than Seahawk Shuttle routes. While community routes generate more ridership, Seahawk Shuttle routes are more productive, as measured by Customers per Hour. Seahawk Shuttle routes carry 19.3 customers for every service hour on average, compared to 13.8 customers per service hour for community routes. This can be interpreted to mean that Seahawk Shuttle buses tend to be more full than community route buses. [Note: A service hour represents a single hour of service for an individual bus. Two buses on the road simultaneously for an hour would represent a total of two service hours.]

Seahawk Shuttle routes are also more cost-effective than community routes, as measured by cost recovery. Seahawk Shuttle service recovers 70% of service operating costs via customer fares, compared to 21% cost recovery for community routes. This is mostly a result of UNCW's financial support of Seahawk Shuttle service. UNCW contributed \$737,000 toward Seahawk Shuttle service in Fiscal Year 2017 and is budgeted to contribute \$760,000 in Fiscal Year 2018. This represents the total customer payment for these routes, as UNCW students can utilize the service for free. While UNCW's total payments cover 70% of the service operating costs, the remaining 30% of service operating costs are supported by Wave Transit. As a result, Wave Transit is paying approximately \$315,000 per year to operate service that primarily benefits UNCW. This will be further discussed in the Service Subsidy Agreements portion of this analysis.



#### Route Level Performance

The route level performance analysis provides a detailed accounting of the performance of each fixed route in the Wave Transit system. This helps identify the strengths and weaknesses within the system and to identify underperforming routes that may need to be addressed.

The following graphs and data tables indicate performance by route for weekday, Saturday, and Sunday service.







Weekday Performance by Route					
		Daily	Customers	Cost	Average
Route	Daily Trips	Boardings	per Hour	Recovery	Trip Score
101	27.5	531	19.3	27%	10
103	15	200	13.3	17%	7
104	15	180	12.0	16%	7
105	15	199	13.3	18%	7
106	15	197	13.1	18%	7
107	10	69	6.9	9%	4
108	15	224	14.9	22%	8
201	15	319	21.2	27%	11
202	15	213	14.2	20%	7
204	12	71	5.9	39%	10
205	15	250	16.6	25%	9
207	15	114	7.6	9%	4
209	15	229	15.3	22%	8
301	5	28	5.5	14%	5
701	32	186	17.6	65%	17
702	32	249	23.5	69%	19
703	31	203	19.9	73%	19
704	32	148	14.0	69%	17
705	21	66	6.3	73%	17
706	32	267	25.3	68%	19
707	90	619	27.5	77%	22
711	32	237	22.4	68%	19
712	35	98	8.5	62%	15

Saturday Performance by Route							
		Daily	Customers	Cost	Average		
Route	Daily Trips	Boardings	per Hour	Recovery	Trip Score		
101	15	264	17.6	24%	9		
103	15	150	10.0	13%	5		
104	15	100	6.7	9%	4		
105	15	142	9.4	13%	5		
106	15	152	10.1	14%	5		
107	10	71	7.1	9%	4		
108	15	164	11.0	16%	7		
201	15	249	16.6	21%	9		
202	15	162	10.8	15%	6		
205	15	149	9.9	15%	5		
209	15	128	8.5	12%	5		
301	5	28	5.6	14%	5		



Sunday Performance by Route							
Route	Daily Trips	Daily Boardings	Customers per Hour	Cost Recovery	Average Trip Score		
101	9	137	15.2	21%	8		
103	9	77	8.5	11%	5		
104	9	63	7.0	9%	4		
105	9	68	7.6	10%	4		
106	9	88	9.8	13%	5		
107	6	39	6.5	8%	4		
108	9	90	10.0	15%	5		
201	9	128	14.2	18%	7		
202	9	69	7.7	11%	5		
205	9	70	7.8	12%	5		
209	9	52	5.8	8%	4		
301	3	12	4.0	12%	4		

Among the Wave Transit community routes (Routes 101 – 301), when factoring in the combined impact of both Customers per Hour and Cost Recovery, the strongest performers are Routes 101, 201, and 204.

Routes 101 and 201 are similar in that they are among the highest performers in both Customers per Hour and Cost Recovery. Route 101 weekday service carries 19.3 customers per hour on average and has a cost recovery of 27%. Route 201 weekday service carries 21.2 customers per hour on average and also has a cost recovery of 27%.

Route 204, the Brunswick County, differs from Routes 101 in that it carries only 5.9 customers per hour, which is the second lowest among all fixed routes. This low productivity is balanced by a high cost recovery of 39%, which helps to boost its average trip score. This high level of cost recovery is driven by the fact that the Brunswick Consortium contributes approximately \$90,000 in financial support for the route. With this support, the cost recovery for this route would drop to approximately 6%.

Among Seahawk Shuttle routes (Routes 701-712), Routes 706 and 707 are the strongest performers, with both routes averaging over 25 customers per service hour.

Routes 107, 207, and 301 are the lowest performers among Wave Transit community routes. These three routes have Customers per Hour levels of 6.9, 7.6, and 5.5, respectively, and cost recoveries of 9%, 9%, and 14%.

Among Seahawk Shuttle routes, Routes 705 and 712 are the lowest performers. Route 705 carries 6.3 customers per hour and Route 712 carries 8.5 customers per hour. By comparison, the other seven Seahawk Shuttle routes average 21.5 customers per hour.

Opportunities for addressing the lower performing routes identified above will be discussed in the Opportunities for Productivity Improvements section.



## Route Cost Summary

The following table reflects the approximate cost and revenue associated with each Wave Transit fixed route.

Annual Route Revenue and Cost Summary							
	Fare	Contract	Total	Incremental	Cost		
Route	Revenue	Revenue	Revenue	Cost	Recovery		
101	\$147,751	\$0	\$147,751	\$565,120	26%		
103	\$59,295	\$0	\$59,295	\$372,929	16%		
104	\$51,323	\$0	\$51,323	\$358,681	14%		
105	\$58,384	\$0	\$58,384	\$349,461	17%		
106	\$59,331	\$0	\$59,331	\$358,681	17%		
107	\$22,126	\$0	\$22,126	\$246,384	9%		
108	\$66,549	\$0	\$66,549	\$323,479	21%		
201	\$95,371	\$0	\$95,371	\$382,149	25%		
202	\$62,801	\$0	\$62,801	\$341,918	18%		
204	\$17,178	\$91,875	\$109,045	\$282,306	39%		
205	\$70,985	\$0	\$70,985	\$322,641	22%		
207	\$27,416	\$0	\$27,416	\$318,729	9%		
209	\$64,100	\$0	\$64,100	\$338,566	19%		
301	\$8,652	\$9,375	\$18,026	\$127,383	14%		
701	\$0	\$72,336	\$72,336	\$111,642	65%		
702	\$0	\$72,336	\$72,336	\$104,184	69%		
703	\$0	\$70,075	\$70,075	\$96,112	73%		
704	\$0	\$72,336	\$72,336	\$105,013	69%		
705	\$0	\$71,925	\$71,925	\$98,961	73%		
706	\$0	\$72,336	\$72,336	\$106,670	68%		
707	\$0	\$154,124	\$154,124	\$199,242	77%		
711	\$0	\$72,336	\$72,336	\$106,670	68%		
712	\$0	\$79,117	\$79,117	\$126,640	62%		

The values in the table above were obtained in the following manner:

## Fare Revenue

Fare Revenue reflects the amount of money collected from passenger fares. This value was obtained by multiplying the number of riders by the average fare payment for each route. The average fare payment of \$0.95 per ride was obtained by dividing community route farebox revenue and pass sales by community route ridership for Fiscal Year 2017.

#### Contract Revenue

Contract Revenue reflects the amount of funding provided by outside partners to help support a given route. Route 204 Contract Revenue reflects payments from the Brunswick Consortium. Route 301 Contract Revenue reflects payments from Carolina Beach. Contract



Revenue for Routes 701-702 reflects the total UNCW payments prorated among routes based on service hours per route.

### Total Revenue

Total Revenue is the sum of Fare Revenue and Contract Revenue.

#### Incremental Cost

Incremental Cost reflects the costs directly associated with operating a bus route, such as operator wages, fuel costs, and vehicle maintenance costs. It does not include overhead costs, such as administrative salaries, office supplies, or utility costs. Incremental Cost is calculated by multiplying the incremental cost per service hour by the number of service hours, multiplying the incremental cost per service mile by the number of service miles, and then adding those two products together. The incremental service rates of \$46.14 per service hour and \$1.66 per service mile were obtained from the Wave Transit Finance Department.

### Cost Recovery

Cost Recovery reflects the percentage of route operating costs recovered through Fare Revenue and Contract Revenue. It is calculated by dividing Total Revenue by Incremental Cost.



### Performance by Time of Day

It is common for transit agencies to experience variations in ridership levels throughout the course of a day. Many agencies experience peaks in the morning and afternoon rush hours, with a midday dip in between those two periods.

While Wave Transit experiences a slight ridership peak between 8:00 AM and 11:00 AM on weekdays, with a slight decrease in the midday, the peak is not dramatic. The morning peak also occurs later than the traditional peak work commuting time of 6:00 AM – 8:00 AM that many other transit agencies experience. This suggests that Wave Transit's ridership may not be heavily dependent upon traditional business commuters.









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### Performance by Geographic Area

Assessing routes based on productivity measures is useful in understanding overall route performance levels. An additional level of insight can be gained by determining the locations along a route that drive ridership activity. Route performance indicators reveal how a route is performing. A geographic assessment of route activity reveals where a route is performing.

The following map indicates average weekday boardings at bus stops along each fixed route. Each dot represents a bus stop location at which boardings occur. Bus stops at which no boardings occur are not shown on the map. The dots are colored and weighted based on the number of daily bus boardings, with larger dots indicating higher levels of daily bus boardings. The number of boardings associated with each dot is indicated in the map legend.



Several route-specific items stand out based on the bus boarding locations and volumes shown in the map.

• Route 107 (College Road) generates most of its ridership around Forden Station and at Monkey Junction. Few rides are generated along South College Road between those two locations.



- Route 204 (Brunswick Connector) generates relatively low levels of ridership, and that ridership is spread out along the route.
- Route 207 (North) generates relatively low levels of ridership, and that ridership is spread out along the route. Additionally, the airport, the New Hanover County Jail & Sheriff's complex, and the Cape Fear Community College North Campus do not generate significant levels of ridership. This is significant, as one of the main purposes of this route is to serve those locations.
- Route 301 (Pleasure Island) generates low levels of ridership.
- Routes that operate closer to the city core tend to generate higher ridership than routes that extend beyond the city core. One exception to this is Route 201, which generates ridership between Downtown Station and Monkey Junction along Carolina Beach Road

## Service Design Approach: Geographic Coverage versus Route Productivity

The map below indicates average weekday ridership by location without showing bus route locations.



Removing the bus routes from the map reveals the geographic areas that drive ridership, regardless of which route or routes serve those locations. The highest concentration of ridership, as indicated by the red and orange dots, is in the areas around UNCW, Forden Station, and the retail and apartment locations located roughly in between UNCW and


Forden Station. Heavy ridership also occurs in Wilmington's downtown area, but is spread out across that area, rather than being concentrated in a few specific locations.

The above map indicates that most ridership activity occurs within a concentrated area in central Wilmington, with ridership being sparse outside of this concentrated area. This suggests that if the goal was to design a transit system more focused on route productivity rather than geographic coverage, then bus service should be concentrated in the high ridership density area revealed in the map.

The issue of geographic coverage versus route productivity is central to the design of a transit system's route network. To ensure that a transit system reflects community priorities, it is important that a community make a conscious decision as to how it wishes to invest its transit dollars. A community could decide to develop a service network that prioritizes geographic coverage, route productivity, or a predetermined combination of the two. A transit system's service profile will reflect its priorities. For example, a transit system that prioritizes geographic coverage will have lower frequency routes that are dispersed throughout the service area, while a transit system that prioritizes route productivity will have higher frequency routes that are concentrated in denser, high-demand areas.

There is no inherently right or wrong answer to the question of whether geographic coverage or route productivity should take precedence when designing a transit service network. It is a matter of which characteristic a community chooses to prioritize. For example, Hillsborough Area Regional Transit (HART) in Tampa, FL, implemented a service redesign in October 2017 that reflected a carefully considered decision to emphasize route productivity. HART redistributed service hours among routes to provide higher-frequency service on high-demand routes. In another example, in 2017 the Board of Directors of Chatham Area Transit (CAT) in Savannah, GA, passed a resolution to redesign CAT's fixed route network to prioritize route productivity. The resolution directed that "the Authority shall dedicate more than one-half of its resources toward high-ridership services to maximize customer demand and less than one-half of its resources toward geographic-coverage-related services to ensure taxpayer value."

The HART and CAT examples reflect transit agencies and communities making conscious service priority decisions. It is recommended that Wave Transit, the City of Wilmington, and New Hanover County spearhead a community conversation to determine the desired balance between geographic coverage and route productivity.

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# Service Subsidy Agreements

Service subsidy agreements are partnerships between a transit agency and an outside entity under which the outside entity provides financial support for a bus route or routes. In such cases, the entity providing financial support is often the primary beneficiary of the service being supported.

Wave Transit has three subsidy agreements supporting specific fixed route services. The routes supported by subsidy agreements are Route 204 (Brunswick Connector), Route 301 (Pleasure Island), and the Seahawk Shuttle routes. Details of the subsidy agreements are provided in the following table.

Route	Description	Subsidy Provider	FY 17 Total Subsidy	% of Cost Covered by Subsidy	Amount Not Covered by Subsidy
204	Brunswick Connector	Brunswick Consortium	\$91,875	33%	\$186,534
301	Pleasure Island	Carolina Beach	\$9,375	7%	\$124,554
701-712	Seahawk Shuttle	UNCW	\$737,000	70%	\$315,857

It is helpful for entities to financially support service for which they primarily benefit. However, any support level that provides less than 100% cost recovery puts a financial burden on Wave Transit. With Route 204, for example, the Brunswick Consortium's contribution covers only 33% of the incremental cost of operating the service. This results in Wave Transit dedicating approximately \$180,000 in annual resources to provide service for Brunswick County. It is to Wave Transit's benefit to seek full cost recovery in its subsidy agreements. This will be discussed further in the Opportunities for Productivity Improvements section.



# **Opportunities for Productivity Improvements**

This route analysis identified efficiencies and inefficiencies of Wave Transit's fixed route system. A number of the inefficiencies result from the structure of the service itself. Wave Transit's route design facilitates geographic coverage rather than route productivity. This is best evidenced by the fact that most of the community routes (Routes 101-301) operate on a 60-minute cycle. Systems designed to facilitate route productivity rather than geographic coverage tend to have more frequent service concentrated in high-yield corridors.

The balance between geographic coverage and route productivity is a community and agency decision. If the goal is to maintain current levels of geographic coverage, knowing that this comes at the expense of route productivity and service frequency, then few structural changes may need to be made. If, however, Wave Transit and the community at large wish to focus more on route productivity, then the following items provide opportunities for improved route productivity.

Opportunity 1: Route 204 – Brunswick Connector

# Overview

Route 204 provides weekday service between Wilmington and points in Brunswick County.

Route 204 Performance Profile			
Weekday Boardings	71		
<b>Customers per Hour</b>	5.9		
Cost Recovery	39%		

Route 204 performs well below the community route average of 202 boardings per day and 13.8 customers per hour. Its above average cost recovery is driven by the Brunswick Consortium's annual subsidy of approximately \$90,000.

# Opportunity

Several approaches can be taken to address Route 204's low productivity.

The first approach is to work to increase the subsidy amount to 100% cost recovery so that Brunswick County is a full partner in this route. After accounting for the Brunswick Consortium's contribution and the revenue generated by customer fares, approximately \$170,000 of the route's operating costs remain uncovered. This essentially means that Wave Transit is subsidizing transit for Brunswick County in the amount of \$170,000 per year.

The second approach is to reallocate the service hours dedicated to this route to other areas of the system if Brunswick County does not fully support the route. These service hours can be used to increase service frequency in areas of higher transit demand.



# Customer Impact

If full cost recovery is attained through increased Brunswick Consortium support and the route continues to operate in its current form, there will be no customer impact.

If the service is reallocated to other areas in the system, then there will be several areas of customer impact:

- Current Route 204 customers will no longer have access to that service
- Since increased service frequency generally results in increased ridership, using the service to increase frequency elsewhere in the system will likely increase overall system ridership

# Financial Impact

Attaining full cost recovery through increased Brunswick Consortium support will free up approximately \$170,000 in annual operating costs for Wave Transit to apply elsewhere.

#### <u>Opportunity 2: Route 107 – College Road</u>

#### **Overview**

Route 107 provides service along South College Road between Forden Station and Monkey Junction.

Route 107 Performance Profile			
Weekday Boardings	69		
Customers per Hour	6.9		
Cost Recovery	9%		

Route 107 performs well below the community route average of 202 boardings per day, 13.8 customers per hour, and 21% cost recovery. It ranks second lowest among community routes in Customers per Hour and is tied for lowest in Cost Recovery.

#### Opportunity

Most of Route 107's ridership activity occurs at and around Forden Station and at Monkey Junction. Few boardings and alightings take place along South College Road in between those two areas. This route appears to be utilized mostly for service between Forden Station and Monkey Junction.

The Monkey Junction area is served by Route 201 in addition to Route 107. Thus, discontinuing operation of Route 107 will have little to no impact on customers' ability to travel to their desired locations. This provides an opportunity to reallocate Route 107's service hours to increase service frequency in areas of higher transit demand.

#### Customer Impact

There will be little to no impact on customers' ability to travel to their desired locations. Customers who currently travel to and from Monkey Junction via Route 107 will be able to do so via Route 201.



Additionally, using the current Route 107 service hours to increase frequency elsewhere in the system will likely increase overall system ridership.

#### Financial Impact

Reallocating Route 107 service hours will free up approximately \$240,000 in annual operating costs for Wave Transit to apply elsewhere.

Opportunity 3: Route 207 – North

#### Overview

Route 207 provides service north of the Wilmington city limit and stops at Wilmington International Airport, the New Hanover County Jail and Sheriff complex, and Cape Fear Community College North Campus.

Route 207 Performance Profile			
Weekday Boardings	114		
Customers per Hour	7.6		
Cost Recovery	9%		

Route 207 performs below the community route average of 202 boardings per weekday, 13.8 customers per hour, and 21% cost recovery. It ranks third lowest among community routes in Customers per Hour and is tied for lowest in Cost Recovery.

#### Opportunity

This route was designed to serve Wilmington International Airport, the New Hanover County Jail and Sheriff complex, and Cape Fear Community College North Campus, as those were considered to be important destinations. However, those locations generate little ridership. Most of Route 207's ridership is dispersed among multiple locations throughout the route, with no location generating significant ridership.

If it is important to the community that the airport, the County Sheriff's complex, and North Campus are served by transit, then it should be recognized that resources are being applied to support relatively low ridership to these specific areas.

If it is more important to deploy service in areas of higher customer demand, then the service hours dedicated to this route can be reallocated to increase service frequency in areas of higher transit demand.

#### Customer Impact

If resources continue to be dedicated to this route and the route continues to operate in its current form, there will be no customer impact.

If the service is reallocated to other areas in the system, then there will be several areas of customer impact:



- Current Route 207 customers will no longer have access to that service
- Since increased service frequency generally results in increased ridership, reallocating the service to increase frequency elsewhere in the system will likely increase overall system ridership

# Financial Impact

Reallocating Route 207 service hours could free up approximately \$300,000 in annual operating costs to apply elsewhere.

# Notes on Route 207 Funding and Analysis

Route 207 (along with Routes 104, 107, 201, and 301) is one of several Wave Transit fixed routes that extend beyond the Wilmington city limits into New Hanover County. New Hanover County provided funding in the amount of \$311, 873 in Fiscal Years 2017 and 2018 to support service that runs through New Hanover County.

The Cost Recovery assessment of Route 207 (as well as on Routes 104, 107, 201, and 301) described above was conducted under the assumption that Route 207 is funded via Wave Transit's general operating funds, with the County providing contributions to Wave's general operating funds to help finance the service. Under this view, Route 207 is a low cost recovery route as described above.

This analysis could also be viewed differently. If the \$311,83 County contribution is viewed as funding specifically for Route 207, then the financial profile of Route 207 changes. Instead of a Cost Recovery of 9%, Route 207 would have a Cost Recovery of 106% (with 92% of Route 207's revenue generated by New Hanover County's contribution and 8% generated by customer fares).

The view that New Hanover County is directly funding Route 207 would make Route 207 a financially strong route from the perspective of Wave Transit financing. It should be noted, however, that Route 207 would still be among Wave's lower performing routes in terms of productivity. Route 207's 7.6 Customers per Hour ranks 5<sup>th</sup> lowest among Wave Transit community routes, and is below the community route average of 13.8 Customers per Hour. Given this low route productivity, Wave Transit and the County should still consider whether Route 207 represents the wisest use of the funding involved.

#### **Opportunity 4: Route 301 – Pleasure Island**

#### **Overview**

Route 301 provides service along Carolina Beach Road between Monkey Junction and Carolina Beach.

Route 301 Performance Profile			
Weekday Boardings	28		
Customers per Hour	5.5		
Cost Recovery	14%		



Route 301 performs well below the community route average of 202 boardings per day, 13.8 customers per hour, and 21% cost recovery. It ranks lowest among community routes in Total Boardings and Customers per Hour. Its cost recovery, while still low, is bolstered by Carolina Beach's annual subsidy of approximately \$9,400.

# Opportunity

Several approaches can be taken to address Route 301's low productivity.

The first approach is to work to increase the subsidy amount to 100% cost recovery so that Carolina Beach and other interested entities are full partners in this route. After accounting for Carolina Beach's contribution and the revenue generated by customer fares, approximately \$100,000 of the route's operating costs remain uncovered.

The second approach is to reallocate the service hours dedicated to this route to other areas of the system if financial support for this route cannot be increased. These service hours can be used to increase service frequency in areas of higher transit demand.

# Customer Impact

If full cost recovery is attained through increased financial support and the route continues to operate in its current form, there will be no customer impact.

If the service is reallocated to other areas in the system, then there will be several areas of customer impact:

- Current Route 301 customers will no longer have access to that service
- Since increased service frequency generally results in increased ridership, using the service to increase frequency elsewhere in the system will likely increase overall system ridership

#### Financial Impact

Attaining full cost recovery through increased financial support or reallocating Route 301 service hours will free up approximately \$100,000 in annual operating costs for Wave Transit to apply elsewhere.

#### **Opportunity 5: Seahawk Shuttle Route 705**

#### Overview

Route 705 is a Loop Shuttle that circulates throughout the main part of the UNCW campus throughout the day.

Route 705 Performance Profile			
Weekday Boardings	66		
Customers per Hour	6.3		
Cost Recovery	73%		



Route 705 performs well below the Seahawk Shuttle route average of 230 boardings per day and 19.3 customers per hour. It ranks lowest among Seahawk Shuttle routes in Total Boardings and Customers per Hour. Its cost recovery is driven by UNCW's annual subsidy of Seahawk Shuttle service.

# Opportunity

It may seem that this route would generate higher ridership since it travels in a loop around the heart of campus. Two factors may impact this.

- The area Route 705 services is compact and easy to walk. In many cases, people can walk point to point more quickly than utilizing Route 705, because the route loops around the central campus, whereas pedestrians can cut through the middle of campus.
- There is an Express Loop Shuttle run by the UNCW that does the same route, with the exception a spur that circulates around student dormitories. That may draw student ridership away from Route 705.

This provides an opportunity to reallocate Route 705.

# Customer Impact

Reallocating Route 705 would have little customer impact. On-campus service would be preserved via UNCW's Express Loop Shuttle. The Route 705 dormitory spur would be impacted. This could be mitigated, however, by UNCW reconfiguring their express shuttle to cover the dormitory spur. UNCW can focus its service on-campus, while Wave Transit can focus on the Seahawk Shuttle routes that connect campus to the surrounding community.

# Financial Impact

Reallocating Route 705 will free up approximately \$100,000 in annual operating expenses that can be used to improve the cost recovery of Seahawk Shuttle service.

# Opportunity 6: Seahawk Shuttle Route 712

#### Overview

Route 712 provides link between the northwest portion of the UNCW campus (the Racine Drive area) and Forden Station, which in turn connects to multiple Wave Transit community routes.

Route 712 Performance Profile			
Weekday Boardings	98		
<b>Customers per Hour</b>	8.5		
Cost Recovery	62%		

Route 712 performs well below the Seahawk Shuttle route average of 230 boardings per day and 19.3 customers per hour. It ranks second lowest among Seahawk Shuttle routes in





Total Boardings and Customers per Hour. Its cost recovery is driven by UNCW's annual subsidy of Seahawk Shuttle service.

# Opportunity

The key characteristic of Route 712 is that it provides a link between the UNCW campus and Forden Station. This same link is provided by Wave Transit community Routes 103 and 104. This provides an opportunity to reallocate Route 712's service hours, as students will still be able to travel between campus and Forden station via Routes 103 and 104. This will preserve student connections between the UNCW campus and Wave Transit's community routes.

# Customer Impact

Reallocating Route 712 would have little customer impact. The link between the UNCW campus and Wave Transit's community routes will be preserved. Service may be less frequent (every 60 minutes versus every 20 minutes under current schedules), but the link will remain.

# Financial Impact

Reallocating Route 712 will free up approximately \$120,000 in annual operating expenses that can be used to improve the cost recovery of Seahawk Shuttle service.

#### **Opportunity 7: Seahawk Shuttle Subsidy Agreement**

#### Overview

Wave Transit operates nine Seahawk Shuttle routes that operate when school is in session. UNCW contributed \$737,000 in Fiscal Year 2017 to help subsidize this service. Applying that subsidy to operating expenses accounts for approximately 70% of the incremental cost of operating the service. This leaves 30% of the cost, approximately \$315,000, to be covered by Wave Transit.

#### Opportunity

By seeking a full cost recovery service subsidy agreement with UNCW, Wave Transit can ensure that Seahawk Shuttle service is fully supported.

#### Customer Impact

A full cost recovery service subsidy agreement would have no customer impact, as it would not on its own impact route structures.

#### Financial Impact

A full cost recovery service subsidy agreement would free up approximately \$315,000 in annual operating expenses that could be used elsewhere.



#### Productivity Improvement Opportunity Summary

The following table summarizes the impact of the route-specific productivity improvement opportunities identified in Opportunities 1-6 on the previous pages. As indicated in the table, the opportunities identify approximately \$1,000,000 worth of service that can potentially be reallocated to areas of higher ridership demand.

	Mookdov	Customore	Cost		Financial
_	weekuay	Customers	COSL		Financial
Route	Boardings	per Hour	Recovery	Customer Impact	Impact
204 - Brunswick Connector	71	5.9	39%	No customer alternative	\$170,000
107 - College Road	69	6.9	9%	Travel to Monkey Junction via Route 201	\$240,000
207 - North	114	7.6	9%	No customer alternative	\$300,000
301 - Pleasure Island	28	5.5	14%	No customer alternative	\$100,000
705 - Loop Shuttle	66	6.3	73%	Parallel service via Express Loop Shuttle	\$100,000
712 - Teal Shuttle	98	8.5	62%	Parallel service via Routes 103 and 104	\$120,000
				Total Potential Financial Impact	\$1,030,000

The financial impact summarized in the above table reflects the annual incremental operating expenses of each route. For Routes 204 and 301, the amount of subsidy revenue provided by outside partners has been subtracted from each route's incremental operating expense, as that route-specific subsidy revenue would no longer apply were those routes to be discontinued. For Routes 705 and 712, subsidy revenue provided by UNCW for Seahawk Shuttle routes has not been subtracted from each route's incremental cost under the assumption that subsidy revenue would be preserved and applied to help defray the operating expenses of the remaining Seahawk Shuttle routes.

If Wave Transit were to take advantage of any of the efficiency opportunities summarized in the table above, realization of the full financial impact listed would depend on how Wave chose to reallocate the service hours associated with the listed routes. Certain forms of state and federal operating assistance are based on the number of service hours deployed by a transit agency. If Wave Transit were to reduce its total service hours by discontinuing a route, it would lose a corresponding amount of state and federal assistance that is tied to service hours. If, however, Wave Transit were to discontinue a route and maintain its total service hours by reallocating the discontinued hours to other areas, then the state and federal funding tied to total service hours would be preserved. For example, if Wave Transit were to discontinue Route 107 and not reallocate that service elsewhere, it would lose a certain amount of state and federal aid and would thus not realize the full potential of the \$240,000 financial opportunity associated with that route. If, however, Wave Transit were to discontinue Route 107 and reallocate all of Route 107's service hours to other areas in the system, then there would be no loss of state and federal aid that is based on total service hours. Wave Transit would therefore have the opportunity to apply Route 107's full \$240,000 worth of service to other areas.

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