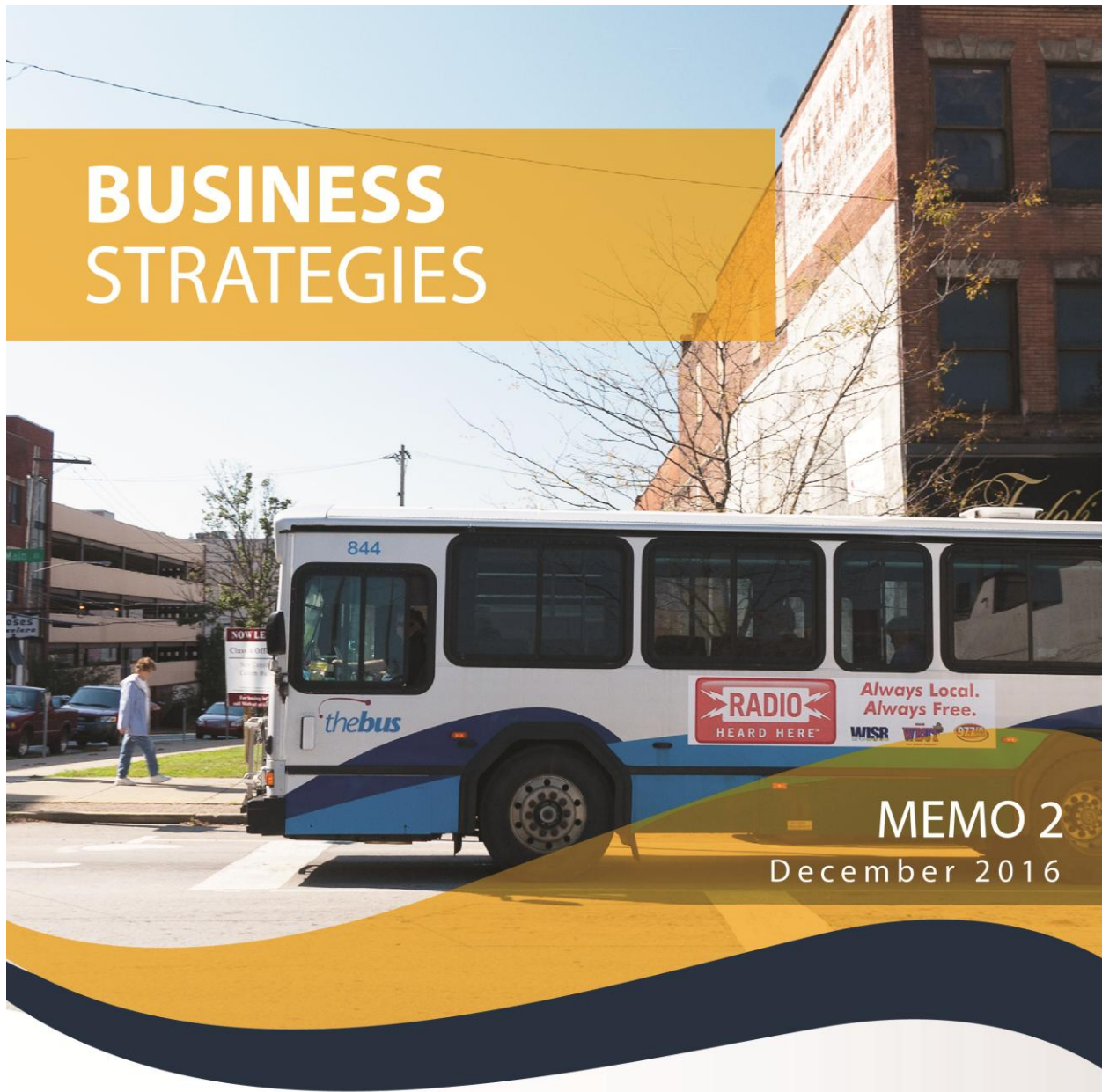


BUSINESS STRATEGIES



MEMO 2
December 2016

Prepared for:



Prepared by:



BUTLER TRANSIT DEVELOPMENT PLAN

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1. Introduction

This document (Memo2) is a companion to Butler Transit Authority's (BTA) Transit Development Plan (TDP), Memo 1. Memo 1 provides an analysis of BTA's current and future fixed route services and presents short-, medium- and long-term service recommendations. Memo 1 contains the following:

- Overview of study area
- Summary of existing transit services in and around Butler County
- Study area demographics
- Summary of relevant studies
- Assessment of transit needs
- Public meeting summaries
- Service scenarios and recommendations

Memo 2 provides strategic goals, performance measures, service guidelines tool kit and business strategies and opportunities. This document and associated recommendations were based primarily on BTA's 2013 Customer Survey; BTA documents such as grants, responses to reviews and audits, Title VI Program, Public Participation Plan (PPP), Service Provider Contract, Policies, Procedures, Metrics, Standards; state and federal transit regulations; Pennsylvania Department of Transportation's (PennDOT) Transit Performance Review Report: BTA System Performance Review, August 25, 2015; best practices; and, transportation research reports.

The information in this document is to be utilized by BTA as a starting point for making strategic fixed route transit service decisions to enhance delivery and performance measures. This report is intended to be reviewed and finalized with BTA's Board of Directors as they see fit in accordance with their goals for the agency. It is recommended that BTA will annually review service, update performance measures as well as implement and revise action plans. As with any transportation decisions, it is expected that BTA actively involve the public and follow its Title VI Program and Public Participation Plan (PPP).

2. Agency Overview

BTA operates fixed route service in the City of Butler, Butler Township and Center Township—municipalities located in Butler County, Pennsylvania. Service is provided weekdays and Saturdays. BTA operates five fixed routes on weekdays that include combining two routes to provide limited evening service. Weekday span of service is 7:00 am to 9:17 pm. Two routes operate on Saturday from 8:34 am to 8:26 pm. All routes begin and end at BTA's terminal located in downtown Butler. The base fare is \$1.25 and passes are offered at discounted rates. Service is provided using 30-foot and 35-foot accessible buses equipped with video surveillance cameras for passenger and driver safety. Paratransit and Americans with Disabilities Act (ADA) complementary services are provided by a separate organization, Butler Area Rural Transit (BART).

The following table illustrates BTA's total passengers, senior citizen passengers, revenue miles and revenue hours for the past six years. This data is utilized by PennDOT to allocate monies to BTA.

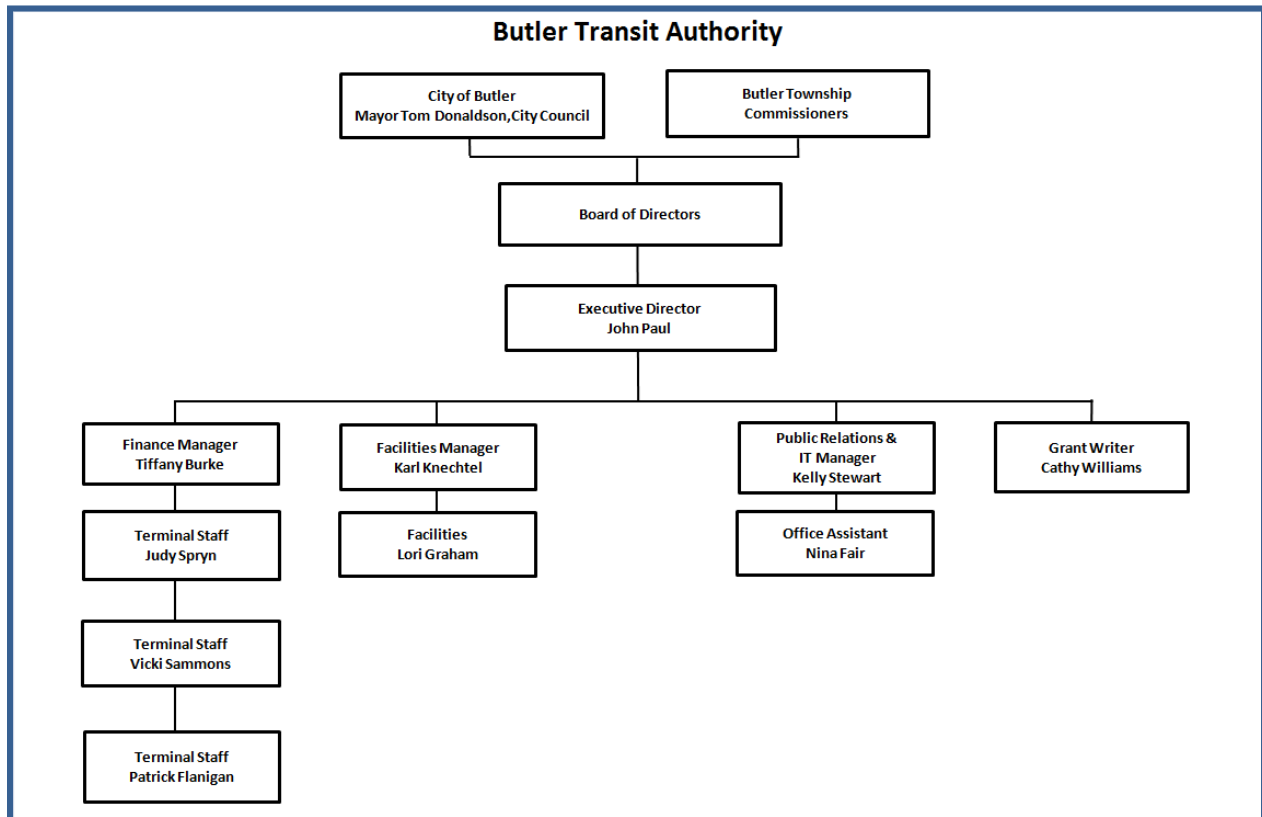
Table 1: BTA Measures FY 2011 to FY 2016

BTA MEASURES FY 2011 TO FY 2016						
	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Total Passengers	219,266	245,986	218,278	222,268	200,293	198,654
Senior Citizen Passengers	49,098	51,140	45,605	39,423	40,170	40,159
Revenue Vehicle Miles	199,824	212,270	219,029	220,369	186,244	181,041
Revenue Vehicle Hours	16,906	18,194	18,021	18,405	14,611	14,981

Source: SPC Regional Transit Profile, <http://www.spcregion.org/pdf/RegionalTransitProfile.pdf>

The following chart illustrates BTA’s organization.

Chart 1: BTA Organization Chart



Source: BTA

3. Vision/Mission/Core Values/Strategic Goals

BTA's vision statement, mission statement, core values and strategic goals service to guide BTA in its day-to-day activities to ensure the agency pursues initiatives that support its primary functions and result in exceptional performance. The strategic goals are supplemented with measureable strategic objectives that enable BTA to achieve its goals and monitor its progress.

Figure 1: Guiding Principles



BTA is guided by the following:

- **Vision:** BTA's vision is to be a great small transit agency in Pennsylvania and the mode of choice for BTA's service area population.
- **Mission:** It is the mission of the Butler Transit Authority, through the efforts of dedicated and well-trained employees and the Authority's subcontractor, to provide safe, reliable, convenient, efficient, effective, sustainable and equitable public transportation to the citizens and visitors of the Butler service area.
- **Core Values:** safety, accountability, customer focus, diversity, innovation, integrity and professionalism.
- **Strategic Goals:**
 1. Provide the highest quality fixed route transit services.
 2. Transportation services shall meet the needs of the community.
 3. Maintain financial stability.
 4. Steward of public funds.
 5. Provide exceptional customer service.
 6. Maintain and utilize the most effective technologies.
 7. Provide a hub of connectivity with flexibility to change and expand for future growth.

4. Challenges and Opportunities

As part of the Transit Development Plan (TDP) process, BTA's strengths, weaknesses, opportunities and threats were identified through: stakeholder meetings, PennDOT's 2015 performance review, previous studies and plans, two TDP public meetings and a public survey. The companion document, Memo 1, provides details of these measures. When reviewing services, implementing new services or changing services, BTA is committed to taking into consideration opportunities and challenges identified during the TDP process and summarized below:

- Active participation and interest in transit services from Butler County's commissioners and other key stakeholders
- Two urbanized areas in Butler County (the City of Butler and Cranberry Township)
- Seven corridors in Butler County identified in Butler County's Comprehensive Plan as areas favorable to future development and economic growth
- Slight growth (1.6 percent) in population 2010 TO 2015 in Butler County
- 17 percent senior citizen population in Butler County
- 9 percent poverty level in Butler County
- Planned compressed natural gas (CNG) fueling station
- Purchase and planned purchases of CNG transit vehicles
- PennDOT performance review resulted in BTA in compliance for seven of the eight key criteria factors. Table 2 shows the performance criteria and PennDOT's determination for BTA's data:

Table 2: PennDOT Performance Criteria

PENNDOT PERFORMANCE CRITERIA		
Performance Criteria	Period	Determination
Passengers per revenue vehicle hour	Fiscal Year 2012	In Compliance
Passengers per revenue vehicle hour	Five-year trend	In Compliance
Operating cost per revenue vehicle hour	Fiscal Year 2012	At Risk
Operating cost per revenue vehicle hour	Five-year trend	In Compliance
Operating revenue per revenue vehicle hour	Fiscal Year 2012	In Compliance
Operating revenue per revenue vehicle hour	Five-year trend	In Compliance
Operating cost per passenger	Fiscal Year 2012	In Compliance
Operating cost per passenger	Five-year trend	In Compliance

Source: Pennsylvania Act 44 of 2014 <http://www.penndot.gov/Doing-Business/Transit/Funding%20and%20Legislation/Documents/PA%20Code%20Title%2067%20Chapter%20427.pdf>

- Usage of vehicle technologies for on-time performance and customer service
- Usage of website and social media
- Coordination and sale of passes to social service agencies
- Public interest and identification of need for transit services
- Need for service guidelines
- PennDOT performance review identified BTA is at risk for one of eight key criteria factors

- Low population densities in Butler County
- Need for incorporating transit into future developments
- Need for coordinating services with area transit providers
- No Sunday service
- Need for additional evening and Saturday service
- Need for transit hub in and around Cranberry Township
- Funding and stakeholder partnerships
- Need to develop action plans to improve performance measures
- Key service destinations including City of Pittsburgh, Cranberry Township, new Veterans Administration (VA) Hospital, Grove City College, Slippery Rock University and Grove City Outlets
- Park-and-ride lots

5. Key Performance Measures/Performance Targets

Key performance measures and service standards should be based on the organization's goals and objectives and take into consideration measures that are being used by funding partners to ascertain BTA's performance. Prior to adopting its measures, BTA should involve the public as outlined in its Public Participation Plan.

BTA receives funding from federal and state governments as well as local jurisdictions. The federal and state governments place requirements on transit agencies and periodically review agency performance based on specific measurements. These recommendations for performance incorporate the key governmental measures.

Recommendations were based on the following:

- BTA goals and objectives
- BTA 2013 Customer Survey
- Pennsylvania Act 44 and Act 89 subsequent oversight by PennDOT, Bureau of Public Transportation (BPT) measures
- Federal Transit Administration (FTA), National Transit Database (NTD) measures
- FTA Title VI and Environmental Justice requirements
- PennDOT's 2015 Performance Review
- Review of transportation research reports
- Review of other transit agencies' measures
- Public and stakeholder outreach conducted on October 17 and December 6, 2016

Table 3 illustrates the recommended performance measures based on BTA's current operation. BTA's board should review this information carefully to determine how to use these performance measures to advance the agency's goals. For example, BTA staff could recommend a prioritized action plan to implement the recommendations in the most effective manner. The table shows each goal, associated objective, and basis of the recommendation, which are described as follows:

- Act 44/Act 89 funding formula: Pennsylvania transit agencies receive baseline funding and additional monies are allocated based on a formula using total ridership, senior citizen ridership, revenue vehicle hour and revenue vehicle miles.
- Best practice: Measures identified by transit research reports and/or other transit agencies.
- PennDOT review: Measures or factors identified in PennDOT's 2015 Performance Review of BTA and/or BTA's responses to the review.
- BTA: Current BTA measures and/or agency goals and objectives.
- BTA customer survey: Every three years BTA conducts a customer survey. The 2013 survey asked customers their satisfaction level with on-time performance, vehicle cleanliness, fare satisfaction, driver courtesy, safety and overall satisfaction. The next survey is scheduled for 2017.

5.1 Mission Statement

It is the mission of the Butler Transit Authority, through the efforts of dedicated and well-trained employees and the Authority's subcontractor, to provide safe, reliable, convenient, efficient, effective, sustainable and equitable public transportation to the citizens and visitors of the Butler service area.

5.2 Strategic Goals and Objectives

The following table illustrates BTA's strategic goals and objectives. The column labeled mission statement shows the parts of the mission statement that the strategic objectives are designed to achieve. Performance measures are included for each objective and are measures that enable BTA to monitor the achievement progress. The basis column identifies the sources of the performance measures. PennDOT reviews transit agencies based on functional areas and the table includes a column that identifies the objective to functional areas.

Table 3: Butler Transit Authority Strategic Goals and Objectives.

STRATEGIC OBJECTIVES	MISSION STATEMENT	PERFORMANCE MEASURE	BASIS	PENNDOT FUNCTIONAL AREA CATEGORY
STRATEGIC GOAL 1: PROVIDE THE HIGHEST QUALITY FIXED-ROUTE TRANSIT SERVICES.				
Ensure services are safe and secure.	Safe, Reliable, Equitable	Preventable accidents per 1,000 miles	Best Practice	Safety & Security
		Passenger incidents per 1,000 miles	Best Practice	Safety & Security
		Percent of vehicles equipped with security cameras	Best Practice	Safety & Security
		Number of customer complaints	Best Practice	Safety & Security
		Require contractor to implement safety and security programs with performance measures for employees, passengers and vehicles consistent with FTA guidelines	Best Practice PennDOT Review	Safety & Security
Maximize ridership.	Convenient, Effective, Sustainable, Equitable	Continue and expand upon BTA's excellent marketing program and include a component to educate the community about the services and how to use the service	BTA Outreach	Marketing and Public Relations
		Total ridership	Act 44/Act 89 Funding Formula	Operations & Scheduling
		Total senior citizen ridership	Act 44/Act 89 Funding Formula	Operations & Scheduling
Ensure service is reliable.	Safe, Reliable, Efficient, Effective	Percent of routes on time (0 to 10minutes)	Title VI/BTA Survey BTA Title VI Standard 85%. Outreach	Operations & Scheduling
		Revenue vehicle miles between road failures	Best Practice	Operations & Scheduling
		Percent of preventative maintenance performed within 10% +/- manufacturers' recommendations	BTA Penn DOT Review	Maintenance
		Breakdowns per 1,000 miles	BTA PennDOT Review	Maintenance
Effectively manage service delivery contract.	Sustainable, Efficient, Effective	Establish contractor performance measures for transportation provider: timely vehicle maintenance, on-time performance, vehicle cleanliness, safety, etc.	PennDOT Review BTA Survey: on-time performance, vehicle cleanliness, safety	Procurement
		Clearly define roles and responsibilities in new provider contract: single price, contractor assumes responsibility for employees	PennDOT Review	Procurement
		Add liquidated damages in new provider contract	Best Practice	Procurement

Ensuring that BTA's services are safe and secure advances the agency's missions of safety, reliability and equity. Performance measures for this strategic objective include accidents and incidents per 1,000 miles, installing security cameras on buses and requiring BTA's contractor to implement safety and security programs including performance measures for employees and vehicles.

STRATEGIC OBJECTIVES	MISSION STATEMENT	PERFORMANCE MEASURE	BASIS	PENNDOT FUNCTIONAL AREA CATEGORY
STRATEGIC GOAL 2: TRANSPORTATION SERVICES SHALL MEET THE NEEDS OF THE COMMUNITY.				
Monitor customer satisfaction.	Effective, Equitable	Customer satisfaction rate (Survey every 3 years)	BTA (95%)	Customer Service
Maintain and improve route performance.	Reliable, Convenient, Efficient , Effective	Ridership by day type	Best Practice	Operations & Scheduling
		Passengers per revenue vehicle hour	Act 44 NTD	Operations & Scheduling
		Passengers per revenue vehicle mile	NTD Best Practice	Operations & Scheduling
Coordinate services with neighboring transit providers.	Efficient, Effective	Number of coordination initiatives	PennDOT Review	Marketing and Public Relations
Ensure service is equitable.	Safe, Convenient, Efficient, Effective, Equitable	Service availability: Percent of service available to minority and percent of service available to low-income populations	Title VI	Operations & Scheduling
		Number of complaints for vehicle cleanliness, safety and vehicle assignment	Best Practice Title VI - Vehicle Assignment BTA Survey-Safety and vehicle cleanliness	Maintenance Safety & Security Operations & Scheduling Customer Service
		Service availability: Percent of service within ¼-mile of all residents in BTA’s service area	BTA’s Title VI Standard 85%	Operations & Scheduling
		Percent of trips that exceed the vehicle load standard (1.2 for regular service and 1.3 for commuter service)	BTA’s Title VI Vehicle Load Standard	Operations & Scheduling
		Percent of vehicles (by vehicle number) assigned to each route (BTA rotates buses among the four routes)	BTA’s Title VI Vehicle Assignment Standard	Operations & Scheduling
Identify new and emerging markets.	Convenient, Efficient, Effective, Equitable	Number of new and emerging markets identified (Senior citizen complexes, commuter service from Butler County destinations to Pittsburgh, out-of-county Connections)	BTA Outreach	Marketing and Public Relations
		Number of stakeholder and outreach meetings	Title VI	Marketing and Public Relations
Ensure service and fare changes are equitable.	Convenient, Effective, Equitable	Number of people contacted with outreach initiatives	Title VI BTA Survey asks about fare satisfaction.	Operations & Scheduling
		Documentation of impact on minority, low income, disabled, LEP and senior citizen populations	Title VI	Operations & Scheduling
		Justification of changes including affordability	Title VI	Operations & Scheduling

In accordance with federal regulations, BTA will ensure that service and fare changes are equitable. This will be measured by looking at the number of people contacted with outreach initiatives, documenting the impact of service and fare changes on minority, low income, disabled, low English proficiency and senior populations and justifying changes, including affordability.

STRATEGIC OBJECTIVES	MISSION STATEMENT	PERFORMANCE MEASURE	BASIS	PENNDOT FUNCTIONAL AREA CATEGORY
STRATEGIC GOAL 3: MAINTAIN FINANCIAL STABILITY.				
Provide cost effective service.	Efficient, Effective, Sustainable	Operating costs per passenger	Act 44 NTD	Operations & Scheduling
		Revenue per revenue vehicle hour	Act 44	Operations & Scheduling
Provide cost efficient services.	Convenient, Efficient, Sustainable, Equitable	Operating cost per revenue vehicle hour (sensitive to labor costs)	Act 44	Operations & Scheduling
		Operating cost per revenue vehicle mile (sensitive to fuel and speed)	NTD Best Practice	Operations & Scheduling
		Operating cost per passenger mile	NTD	Operations & Scheduling
		Fare box ratio	Best Practice PennDOT Review BTA 10%	Finance
Maintain and increase partnerships.	Effective, Sustainable	Maintain local match Number of partnerships	Act 44 Best Practice	Management
Maximize advertising program.	Convenient, Sustainable	Amount of advertising revenues	Best Practice	Marketing and Public Relations
Annually review fares and make changes based on inflation.	Sustainable, Equitable	Document fare review	PennDOT Review Documentation – Title VI	Finance
STRATEGIC GOAL 4: STEWARD OF PUBLIC FUNDS.				
Ensure capital and operating funds are maximized to meet the needs of the community.	Sustainable	Develop plans and implement capital improvement documenting funding that is in place for future sustainability	PennDOT Review	Capital Program
Meet or exceed fixed route performance criteria.	Convenient, Efficient, Effective, Sustainable	Passengers per revenue vehicle hour	Act 44	Operations & Scheduling Management
		Operating cost per revenue vehicle hour	Act 44	Operations & Scheduling Management
		Operating revenue per revenue vehicle hour	Act 44	Operations & Scheduling Management
		Operating cost per passenger	Act 44	Operations & Scheduling Management

To provide convenient, efficient, effective and sustainable service, BTA will meet or exceed fixed route performance criteria.

STRATEGIC OBJECTIVES	MISSION STATEMENT	PERFORMANCE MEASURE	BASIS	PENNDOT FUNCTIONAL AREA CATEGORY
Submit reports to the funding agencies, elected officials, and the Authority Board to ensure that the public funds are being spent wisely.	Sustainable, Equitable	Number of monthly reports submitted and developed	BTA Best Practice	Management
Ensure integrity of numbers.	Sustainable, Equitable	Number of checks to verify accuracy of ridership numbers	Best Practice PennDOT Review	Management
Develop and implement succession plan.	Sustainable, Equitable	Number of succession plan tasks completed	Best Practice	Management
STRATEGIC GOAL 5: PROVIDE EXCEPTIONAL CUSTOMER SERVICE.				
Promote community service.	Convenient, Effective, Equitable	Number of events	BTA	Marketing and Public Relations
Improve customer satisfaction.	Safe, Convenient, Effective, Equitable	Number of customer complaints	Best Practice	Customer Service
		Customer overall satisfaction rate	BTA	Customer Service
		Number of operator courtesy complaints	BTA Survey	Customer Service
		Number of operator contacts and/or training programs to encourage exceptional customer service	Outreach	Customer Service
		Number of customer issues resolved with initial contact	Outreach	Customer Service
STRATEGIC GOAL 6: MAINTAIN AND UTILIZE THE MOST EFFECTIVE TECHNOLOGIES.				
Ensure technology products are functioning properly and maximize product usages.	Safe, Reliable, Efficient, Effective, Equitable	Number of malfunctions	Best Practice	Information Technology
		Number of customer complaints related to technological issues	Best Practice	Information Technology Customer Service
		Number of technology products used	BTA	Information Technology
STRATEGIC GOAL 7: PROVIDE A HUB OF CONNECTIVITY WITH FLEXIBILITY TO CHANGE AND EXPAND FOR FUTURE GROWTH.				
Ensure service changes consider hubs that are flexible and maximize connections.	Reliable, Convenient, Efficient, Effective, Equitable	Identification of connections and flexibility of service changes that include hubs	Outreach	Operations & Scheduling

To achieve the strategic goal of being a good steward of public funds, BTA develop and implement a succession plan, check the accuracy of ridership numbers and measure required performance statistics, such as the operating cost per passenger.

6. Service Guidelines/Tool Kit

6.1 Introduction

Service guidelines provide a framework for provision, design, allocation of resources and evaluation of BTA's fixed route services to ensure the agency achieves its mission and goals. This guideline document is intended to help the Authority's staff to make service decisions that advance BTA's goals; it is not intended to be used as legally binding regulation. In the past, many of the factors outlined below would have involved extensive research. However, new technology, such as the Remix software recently acquired by BTA (see Figure 2 on page 15 for an example of a map created with Remix), makes the level of evaluation recommended in these service guidelines much easier.

Purpose: To provide an objective way for BTA to evaluate its current service as well as change and implement new services.

Objective: To ensure BTA's fixed route services are efficient, effective and equitable by optimizing available resources that meet the needs of the community.

Customer complaints are an essential source of information about a transit system's operations. BTA will collect and track all complaints by category and watch for any increases in complaints relating to safety, convenience and equity, and will also track the number of complaints per 100 passengers. Routes that see unexpected or significant changes in the number or rate of complaints will be examined for potential actions to improve the service.

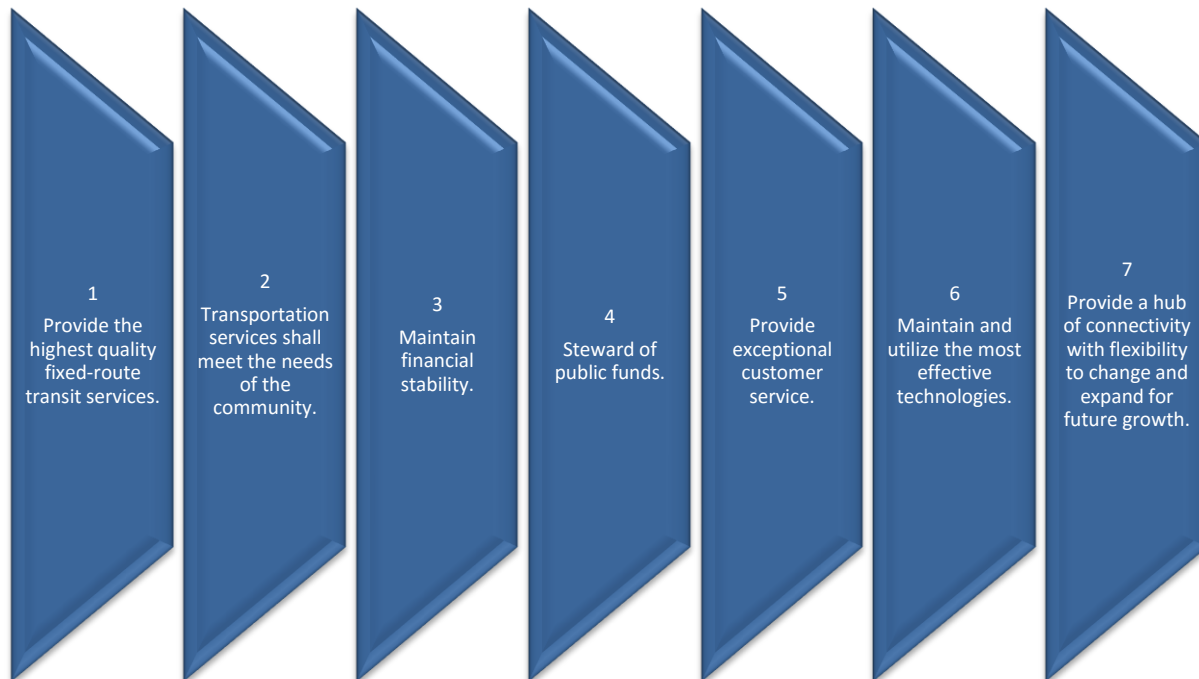
6.2 Mission Statement

It is the mission of the Butler Transit Authority, through the efforts of dedicated and well-trained employees and the Authority's subcontractor, to provide safe, reliable, convenient, efficient, effective, sustainable and equitable public transportation to the citizens and visitors of the Butler service area.

6.3 Agency Strategic Goals

Figure 2 illustrates BTA's strategic goals.

Figure 2: BTA Strategic Goals



6.4 Service Guidelines Overview

BTA's fixed route service design is based on a list of criteria to ensure its service meets the organization's mission and goals. First, operational factors are reviewed to determine customer satisfaction. BTA then specifically evaluates its service from a system standpoint and then route level and service type perspectives. The basic steps BTA follows to design and evaluate its fixed route services are:

- 1) **Evaluate** BTA's service at least annually to identify needs
- 2) Develop **action plans** to improve performance of unsatisfactory measures, based on:
 - a. BTA's service design goals
 - b. Type of service (local, express, peripheral)
 - c. Service design factors, including system and route performance measures
 - d. Operational factors, including customer satisfaction and service delivery
- 3) **Analyze and implement** action plans (return to step 1)

6.5 Evaluate Service and Conditions

The first step in improving mobility in the Butler Study Area is to evaluate and understand the existing service and conditions. Every year, BTA will use these service evaluation tools to determine how well the agency's service is meeting the community's needs, official obligations and customer satisfaction. BTA's service evaluation uses objective criteria to make informed decisions to maximize its transit resources to meet the needs of the community.

Routes that fall below evaluation measures will be reviewed and will initiate an in-depth analysis and action plan to improve performance. Following are examples of initiatives that may be implemented to improve service:

- Change service span
- Add or eliminate trips
- Change routing to serve new trip generators
- Restructure route to eliminate unproductive portions of the route
- Implement marketing and advertising initiatives

If the route does not improve in a 36-month period, the route will be considered for other corrective actions. Prior to any many service changes, BTA will engage the public according to its Public Participation Plan.

This step can also be used to identify potential for new service, for example by conducting market research or demographic analysis of the BTA's service area.

6.6 Evaluation Measures

System Evaluation

From a system perspective, BTA uses PA Act 44 performance measures as an initial high level review. If a measure falls below the baseline performance measures, BTA will initiate an in-depth route level review to identify actions to improve performance. The baseline performance measures are goals that are updated annually. The targets are based on PennDOT's review which included an examination of peer agencies. This document contains the PennDOT review targets for Fiscal Year (FY) 2017.

Table 4: Baseline Performance Measures

FY 2017 BTA PERFORMANCE MEASURES	
Passengers per Revenue Vehicle Hour	13.42
Operating Cost per Revenue Vehicle Hour	\$122.44*
Operating Revenue per Revenue Vehicle Hour	\$13.35
Operating Cost per Passenger	\$9.44
*Assumes that PennDOT approves BTA's request for adjustment in operating cost per revenue vehicle hour.	

Source: PennDOT Act 44 Performance Review

Service/Route Level Evaluation

Individual routes and services are reviewed according to the goals of BTA's mission: safe, reliable, convenient, efficient, effective, sustainable and equitable service. The relevant BTA performance measures are:

Table 5: Service Evaluation Performance Measures

SERVICE EVALUATION MEASURES	
Goal	Performance Measure
Safe	Total number of customer safety related complaints
Reliable	Percent on-time (0 to 10 minutes)
Convenient	Number of residents within 10 minute walk of a bus stop Total number of customer related convenience complaints
Effectiveness	Passengers per revenue vehicle hour Total number of customer complaints
Efficient	Operating cost per revenue vehicle hour Operating cost per passenger
Sustainable	Operating revenue per revenue vehicle hour Total ridership Senior citizen ridership Fare box ratio Advertising revenue
Equitable	Number of equity-related customer complaints Routes are designed to meet BTA's service availability standard*
*(BTA's standard is service within 3/4-mile of 85% of the population categories, minority, low-income, LEP, senior citizens and disabled).	

Safe

BTA utilizes customer complaints to evaluate route safety. Routes that receive an increase in customer safety complaints are reviewed for potential actions to improve service.

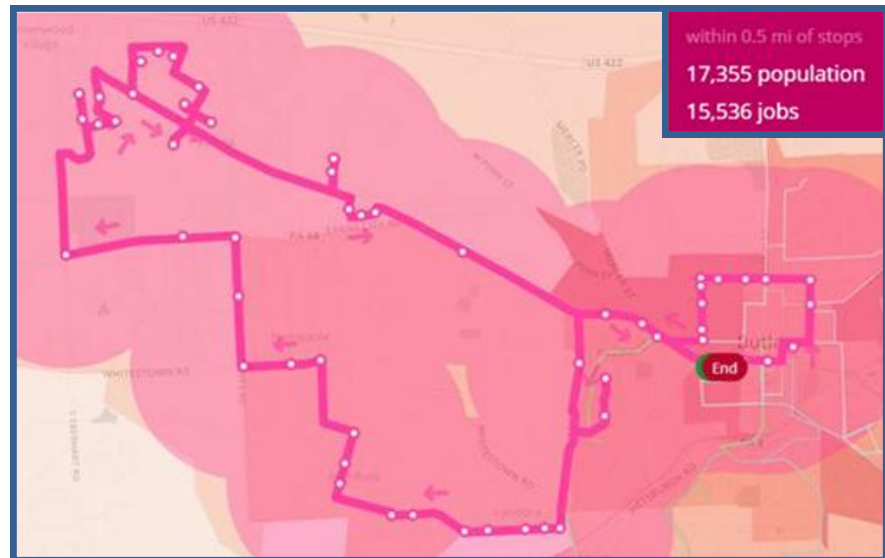
Reliable

Routes are designed to ensure that BTA can achieve its on-time performance standard. The standard for on-time performance is that 85 percent of all service types and trips throughout the day arrives on-time. On-time is defined as zero to 10 minutes late of the scheduled arrival time at a location.

Convenient

Convenient access to the system is crucial to the success of a transit system. This means that customers can get where they want to go, when they want to get there. One measure of convenience is to use mapping software to see how many residents live within a 10-minute walk of a bus stop in BTA's service area. Figure 2 shows an example of a stop service availability measure.

Figure 2: Service Availability Measure Example



Source: Remix

BTA also uses total number of convenience-related customer complaints. Routes that receive an increase in customer convenience complaints are reviewed for potential actions to improve service.

Effective

BTA measures average passengers per hour for high-level route performance by service and day types. BTA evaluates service in three categories: local (around a specific community), express (serving a key out-of-county destination) and peripheral (meeting community needs in low density areas). See section 6.9 for more about types of service. Routes that are below the minimum standard will be analyzed to identify potential modifications to improve performance. Routes that exceed 50 percent of the minimum standard are reviewed for additional services. Table 6 shows the minimum standards.

Table 6: Passengers per Revenue Vehicle Hour

AVERAGE PASSENGERS PER REVENUE VEHICLE HOUR			
Service Days	Local	Express	Peripheral
Weekdays	12	10	8
Saturdays	10	8	6

Another measure of route’s effectiveness is customer complaints. Routes that receive an increase in customer complaints are reviewed for potential actions to improve service.

Efficiency

BTA utilizes two financial measures for efficiency. The measures consist of operating costs per revenue vehicle hour and operating costs per passenger. If costs exceed the current targets (see Table 7), BTA will initiate an in-depth analysis and implement an action plan to improve performance.

Table 7: Operating Costs per Revenue Vehicle Hour & Operating Costs per Passenger

OPERATING COST PER REVENUE VEHICLE HOUR	OPERATING COSTS PER PASSENGER
FY 2017	FY 2017
\$122.44*	\$9.44
*Assumes that PennDOT approves BTA's request for adjustment in operating cost per revenue vehicle hour.	

Sustainable

Routes are measured for long-term sustainability by looking at total ridership, senior citizen ridership, operating revenue per revenue vehicle hour, fare box ratio and advertising revenue. For FY 2017, BTA's target is to increase each metric by 2 percent. Any metric falling below the target will initiate an in-depth analysis and an action plan to improve performance.

Equitable

Routes are designed to meet BTA's service availability standard, which is service within 3/4-mile of 85 percent of the population categories (minority, low income, LEP, senior citizen and disabled). BTA utilizes customer complaints to evaluate route equity. Routes that receive equity related complaints will initiate a detailed analysis and BTA will develop actions to address issues.

6.7 Develop Action Plans and Service Changes

The annual service change process includes a review of the performance measures and developing action plans for measures that fall below the targets. Action plans may be employed to address conditions where existing service is not meeting performance measures or where the performance measures indicate potential for expansion of service to new markets. Examples of service action plans include: change service span; add or eliminate trips; change routing to serve new trip generators; restructure route to eliminate unproductive portions of the route; and implement marketing and advertising initiatives.

The following elements are used to ensure that BTA's fixed route services are efficient, effective and equitable:

- Service Design Goals
- Types of Service
- Service Design Factors
- Operational Factors

6.8 Service Design Goals

The following are objectives that BTA utilizes to design its service.

- Ensure safety
- Maximize resources, ridership and safety
- Efficiently and effectively meet the needs of the community
- Achieve a balance between service coverage and convenience
- Coordinate service with neighboring transit agencies to provide seamless integration while avoiding duplication of services
- Effectively communicate services to the community
- Optimize convenient and seamless travel.
- Ensure service equity
- Design practical, flexible and sustainable routes

6.9 Types of Service

BTA designs and evaluates its fixed route service based on service type. Although BTA currently only offers local service, future needs might be best served with other types of operations. These new services should be considered according to the agency's goals, since design factors and performance measures may vary by service type. Categorizing routes into the type of service ensures that evaluation of current and new services are effective, efficient and equitable. BTA categorizes its routes as follows:

- **Local (Base/Regular) Service:** Service that operates in and around a specific community on arterial streets with frequent stops
- **Express (Commuter) Service:** Service that provides direct routing to a major economic activity centers utilizing freeways (limited access roadways) and with limited stops
- **Peripheral Service:** Service that provides a minimal level of service to low density areas and/or early morning or evening baseline service to meet community needs

6.10 Service Design Factors

BTA employs six baseline factors to design its routes to ensure that its fixed route services are objectively designed and provide a base level of service and amenities. Two factors are based on route type:

1. Service span and frequency
2. Route directness and route deviations

Four factors are applicable to all route types:

3. Service availability
4. Transit stops
5. Transit shelters
6. Transit hubs

Service Span and Frequency

“Frequency and span are the essence of freedom for a transit passenger. High-frequency, long-span service is there whenever you want to use it, even for spontaneous trips,” (Walker, 2012). Table 8 shows the parameters of span of service and frequency by route type. Frequency refers to the time between buses on a given route. Span of service is the earliest and latest time of day for that route. BTA will analyze the span of service and frequency of existing and any proposed new service to look for opportunities to maximize performance, where this would improve ridership, efficiency and effectiveness.

Table 8: Service Span and Frequency

MINIMUM SERVICE SPAN AND FREQUENCY				
	Local		Express	Peripheral
	Weekday	Saturday	Weekdays	Weekdays
Span of Service	8:00 AM to 5:00 PM	8:00 AM to 5:00 PM	6:00 AM to 9:00 AM 3:00 PM to 6:00 PM	9:00 AM to 4:00 PM or early AM or PM
Minimum Headway	75 minutes	4 Trips	3 trips – AM Peak 3trips – PM Peak	Base Service– 4 trips Other – 2 trips

Changes to Route Alignments

Routes are designed to maximize operational efficiency and minimize customer travel time. But, routes can be changed to provide service to major activity centers or to reach limited access areas. Changes to the existing alignment must be balanced between the needs of customers traveling directly and customers using the new portion of the route. A significant increase in travel time might result in a decrease in passengers or an increase in customer complaints. For example, a route change to add two additional passengers but 10 minutes of additional travel time might not be acceptable to the 20 riders already on the bus.

Table 9 illustrates two measures that BTA can use to evaluate a proposed change to a route’s alignment. These measures consider the impact on customers as well as route performance.

Table 9: Guidelines for Changes to Route Alignments

GUIDELINES FOR CHANGES TO ROUTE ALIGNMENTS			
	Local	Express	Peripheral
Minimum number of additional passengers per round trip	6	8	6
Additional time for the deviation will not exceed	10 minutes	5 minutes	10 minutes

Service Availability

Service availability is defined as the distribution of BTA's routes and the accessibility of its service to the community. Service availability measures are utilized to optimize service design. The following are community factors and service availability measures that are used in designing and restructuring BTA's fixed route service:

- Population categories
 - Total
 - Low-income
 - Minority
 - Disabled
 - Senior citizens (65 years of age and over)
 - Limited English Proficient
- Employment density per square mile
- Percent of zero and one vehicle households
- Multi-family housing
- Major destinations (employment centers, retail, medical, education, etc.)

BTA designs its services within 3/4 of a mile of 85 percent of the population categories identified above in BTA's service area.

Transit Stops

- BTA's policy is to equitably place stops
- Placement of transit stops needs to consider: passenger safety; visibility to motorists; traffic flow; roadway surface conditions; safety of buses stopping as well as entering and exiting traffic; jaywalking; passenger access to stop; passenger volume; passenger transfers; and property owner concerns and issues
 - Transit stops are placed in locations that maximize safety and accessibility
 - In general, mid-block stops are not optimal
 - In general, stops located on the far-side of an intersection enhance bus and traffic movements
 - Near-side stops may be required based on the next travel pattern of the bus and/or conditions of the intersection

- Stop Spacing
 - Bus stops are generally placed at major cross-street intersections, transfer points and major trips generators.
 - In general, stops are to be placed 500 to 1,200 feet apart in urban areas, and 600 to 2,500 feet apart in suburban and rural areas.
 - Express routes minimize stops and, as such, stop spacing is not applicable

Transit Shelters

BTA's policy is to equitably distribute transit shelters. The agency's goals are to:

- Have at least one public or private transit shelter on each of BTA's fixed routes
- Place its shelters and other wait area amenities (benches, trash receptacles, service information, etc.) in locations that will be of the greatest benefit to customers

Following are factors that considered in placement of shelters and other wait area amenities:

- Local government requirements
- Location, topography
- Passenger counts
- Passenger wait time
- Transfers and connectivity

Transit Hubs

BTA's policy is to evaluate transit hubs to ensure the hubs maximize connections and foster growth.

6.11 Operational Factors

BTA uses three operational factors—load, on-time performance and vehicle assignment—as a baseline guide for ensuring customer satisfaction of its service design and delivery.

Load Factors

Passenger load factor measures the capacity utilization of bus service by determining how crowded a vehicle is as a percentage of seats that are filled. A load factor of 1.0 means that every seat on a bus is filled.

Table 10: Load Factors

MAXIMUM LOAD FACTORS		
Local Routes	Express Routes	Peripheral Routes
1.2	1.3	1.2

On-Time Performance

Routes are designed to ensure that BTA can achieve its on-time performance standard. The standard for on-time performance is that 85 percent of all service types and trips throughout the day arrives on-time. On time is defined as zero to 10 minutes late of the scheduled arrival time at a location.

Vehicle Assignment

- BTA's policy is to equitably assign its vehicles and, if the factors below do not impact service delivery, vehicle assignments are be rotated among routes
- BTA's goal is to have all vehicles contain the same amenities including fare boxes, radios, automatic vehicle locators, headsigns, internal signage, accessibility features, and other technologies
- Factors that are considered in assigning vehicles include:
 - Average Passenger Load (i.e., low-density routes use smaller vehicles with less passenger seating)
 - Vehicle Maneuverability
 - Terrain
 - Height clearances (bridges, trestles, protruding structures at entrances)
 - Narrow roadways

7. Analyze and Implement Action Plans

It is important to continue to evaluate both BTA's service and conditions throughout the BTA service area to ensure that BTA is providing the highest quality service possible. BTA will use this process annually, or as conditions require, to meet the community's performance expectations.

Involving the public in its transportation decisions is important to BTA; all major service changes include formal public participation. BTA's Public Participation Plan is as follows:

- BTA routinely meets with various agencies.
- BTA will conduct annual meetings with local service agencies in central Butler County to review current services and to request suggestions and improvements to services. BTA will continue to coordinate service with a number of agencies to deliver accessibility to their clientele.
- BTA will conduct public outreach meetings at various sites periodically through the year to promote ridership. Staff will provide personal assistance to individuals to learn how to access the bus system for their use by contacting the Authority's offices. These outreach activities provide opportunities to meet with persons who are low-income, from a minority population, or have disabilities.

- BTA will annually advertise in a newspaper of general circulation the monthly board meetings that meet at BTA's central office located at 130 Hollywood Drive, Butler, PA 16001 to allow access to the general public. Meetings are also posted on BTA's website.
- BTA will solicit public input prior to adoption of the annual plan.
- BTA will periodically survey riders on various issues.
- BTA's service evaluation process is designed for continuous improvement. Figure 3 illustrates the process.

Figure 3: Service Evaluation Process



8. Business Strategies and Opportunities

The following table summarizes business opportunities and strategies that can assist BTA in achieving its mission and strategic goals.

Table 10: Short-, Medium- and Long-Term Opportunities

SHORT-TERM (LESS THAN ONE YEAR)
Adopt strategic planning process and make strategic decisions based on data analysis
Adopt and use service guidelines for service changes and new services
Annually, BTA reviews and updates its services, strategic goals and strategic objectives
Annually, BTA reviews its performance measures and develops and implements action plans to improve measures
Implement strategic goals and objectives, including: <ul style="list-style-type: none"> • Update contract with service provider to include: single price for revenue vehicle hour for operations and routine maintenance; explicit terms defining what is covered under the contract and what is not; place responsibility for all costs attributable to its employees on the contractor; and include performance requirements and penalties for poor performance • Develop and implement a marketing plan • Develop capital improvement plans • Develop and implement succession plan • Identify new and emerging markets • Coordinate services with neighboring transit providers • Annually review fares and make changes based on inflation
Service <ul style="list-style-type: none"> • Restructure current service for reduced costs • Extend evening service for Butler County Community College • Add service to new VA Hospital off North Duffy Road in Center Township
Expand partnership and cooperation with Butler County leaders

MID-TERM (ONE TO FIVE YEARS)	
Service	<ul style="list-style-type: none"> • Pittsburgh commuter service complementing New Castle commuter service at established park-and-ride lots with capacity • Review existing service for possible extension to service Cranberry, Slippery Rock University, Grove City College and/or Grove City Outlets • Service connecting north and south Butler County • Identify senior citizens and affordable housing locations, and evaluate if there are better ways to design BTA service
	Develop partnerships with schools, universities and employers
	Work with stakeholders for additional revenue and local match opportunities
	Coordinate with success of the Cranberry Improvement District by expanding to include public transportation
	Work with neighboring counties to explore the possibility of consolidation and/or shared resources; undertake a study through PennDOT for evaluating consolidation
	Review make-up of BTA's Board. Board representation commensurate with local funding
	Share performance measures with stakeholders and the public to demonstrate the agency's progress and accomplishments
LONG-TERM (5 OR MORE YEARS)	
Service	<ul style="list-style-type: none"> • Create a transit hub in Butler County near Cranberry Township with an innovative way to provide the last mile of service within Cranberry Township
	Establish a Transportation Revitalization Investment District in Cranberry Township
	Develop initiatives to foster transit oriented development
	Work with potential stakeholders (such as, UPMC) for donation of land for transportation hub in Cranberry perhaps near the UPMC Lemieux Sports Complex
	Work with elected officials to incorporate transit into future planning
	Work with PennDOT District for the possibility of using District monies for transportation (strategies similar to those utilized in Moon Township)

9. Bibliography

Walker, Jarrett, *Human Transit*, 2012, p. 85. Island Press.