



**DRAFT**

# “Draft” RFTA Transit Service Standards

## January 2013 Update

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## Purpose

This document formalizes the Roaring Fork Transportation Authority (RFTA) Service Standards, the framework for guiding the decisions on the initiation, modification and evaluation of transit service. RFTA's Service Standards are intended to:

- Assure that service is evaluated and provided in a fair, consistent, and equitable manner
- Assure that requests and proposals generated from the general public, elected officials, and RFTA staff are evaluated in a fair, consistent and equitable manner
- Provide a baseline for service planning of bus routes, headways and other service characteristics
- Improve route productivity while minimizing negative impacts to passengers

This framework is applied to best serve the travel needs of citizens in RFTA's service area, as well as to achieve RFTA's vision of connecting and supporting vibrant communities within RFTA's budgetary resources. Since RFTA's goals and objectives and the resources available to attain them will change over time, service standards will be revised periodically to reflect those changes.

RFTA's standards can be applied to identify routes which are most in need of service changes. Service changes may include restructuring to eliminate lower-productivity segments, or adjusting service frequency to better reflect the demand for service.

These service standards are applied to improve the efficiency of existing routes, to establish new routes and to provide justification for eliminating routes. Routes that fail to meet standards, however, are not automatically eliminated. Suspension of service may occur based on a variety of considerations.

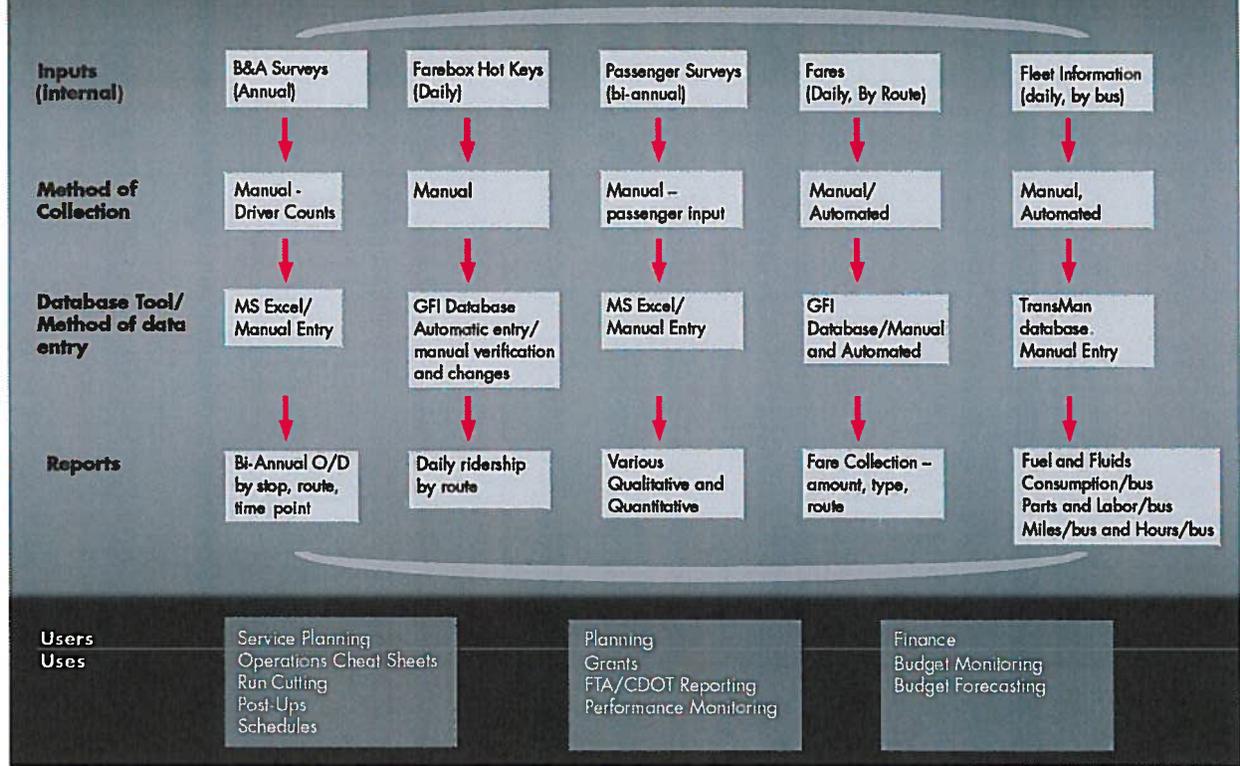
The relationship between RFTA's Service Standards and the agency budget is dynamic. Balancing transit needs, service standards and budget realities is very challenging, and adjustments are required between the costs and benefits of providing transit service.

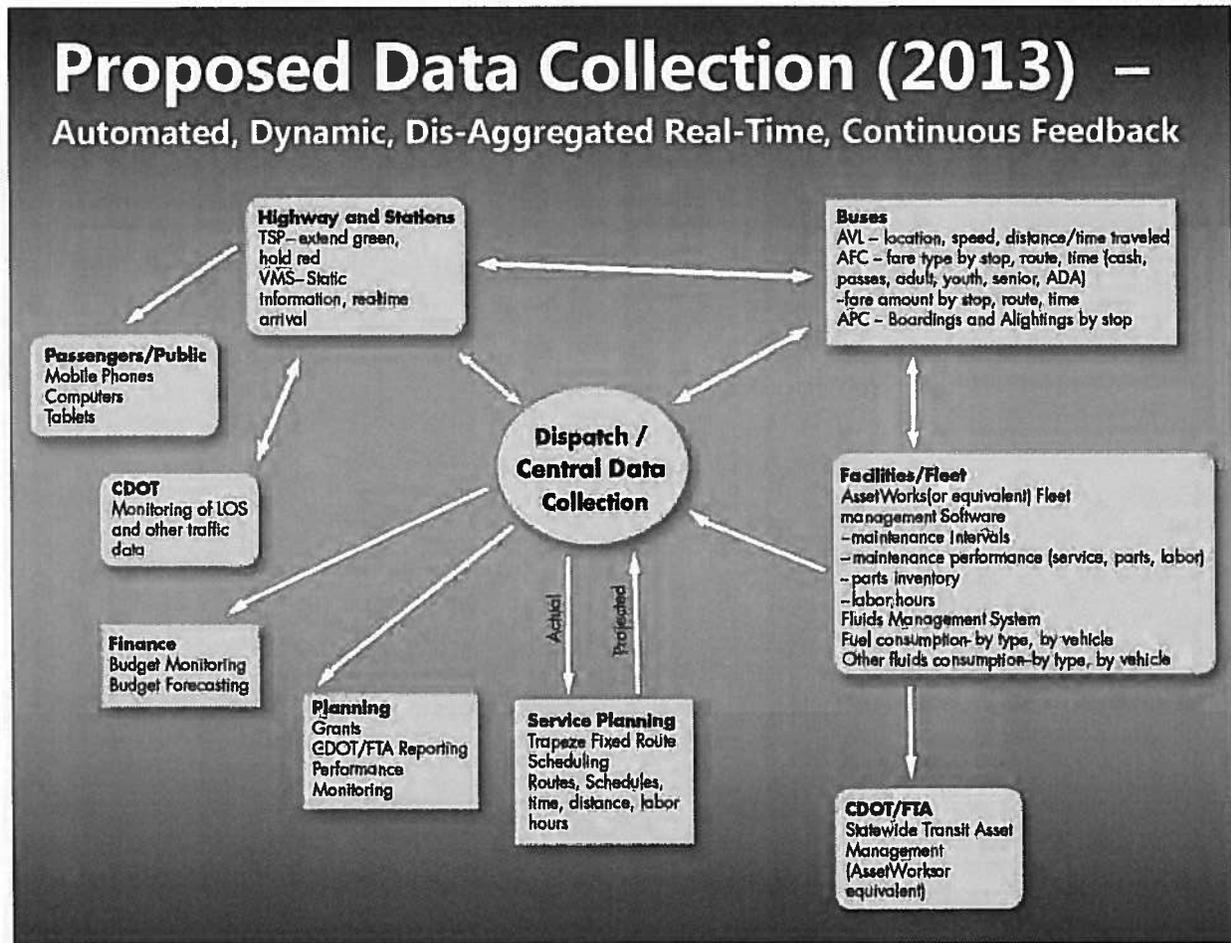
## Data Collection Process

Data is currently collected manually; by the end of 2013, RFTA will implement a variety of automated methods to collect data, including Fixed Route Scheduling Software, Computer Aided Dispatching/Automated Vehicle Location (CAD/AVL), Electronic Fare Collection, and Automatic Passenger Counting (APC). The transition to automated systems will significantly change the process of collecting data, the speed of collection and the volume and variety of information.

Figure 1 and Figure 2 illustrate the current data collection process, and the data collection process that will evolve as the new automated data collection tools are implemented. The data collection process will evolve from a largely manual process with long intervals, to a more automated, real-time system.

# Existing Data Collection Process – Linear, Manual, Long-interval, Aggregated





## Evaluation Interval

Intervals of evaluation depend on the standard. Some standards, like route directness, will be evaluated when the need arises, such as when changes to routes are proposed. By contrast, standards such as passenger loading will be monitored consistently. The annual budgeting process will also have an impact on standards such as span of service and headways; thus many standards will be evaluated annually.

Minor recommended changes to service can be implemented as required, and major service changes are implemented mainly during seasonal schedule changes. Major recommended changes may require approval by the RFTA Board after a public hearing.

By end of 2013, new ITS tools that will automate fixed route scheduling, passenger counting, tracking of vehicles and fare collection will greatly increase the amount of data available and the ease of data collection. This may change the evaluation intervals and the type of data examined. The table below summarizes recommended evaluation intervals.

Standard	Evaluation Interval				
	As-Needed	Continuous	Monthly	Seasonally	Annually
<b>Route Design</b>					
Route Directness	X				
Bus Stop Spacing	X				
<b>Schedule Design</b>					
Span of Service	X			X	
Passenger Loading	X	X			
Headways				X	X
<b>Service Delivery</b>					
On-Time Performance		X			
Missed Trips		X			
<b>Passenger Comfort and Safety</b>					
Passenger Complaints	X	X	X		
Accidents	X	X	X		
<b>Route Performance and Productivity</b>					
Boardings/Revenue Hour			X		X
Net Cost (subsidy)/Passenger					X
Cost Recovery					X
<b>Bus Stop and Station Standards</b>					
Size, Access and Safety, Design, Amenities, Crossings, Other	X				
Bus Stop and Station Removal	X				
Frequency of Boardings and Alightings*					
Location of Next Stop					
Safety					
Design and Amenities					
<b>Service Expansion</b>					
Within RFTA Boundaries	X				
Outside RFTA Boundaries	X				
Contract	X				
<b>Service Reduction</b>					
Within RFTA Boundaries	X				
Outside RFTA Boundaries	X				
Contract	X				

\*Measurement will take place upon completion of a boarding and alighting survey. When APC is implemented, the evaluation interval is proposed to be monthly.

## **Service Planning Process**

RFTA's service planning process starts by using its service standards to evaluate current service. Data collected on RFTA service is compared against the service standards to determine whether or not existing services perform at acceptable levels.

Remedial action plans may be developed to bring substandard service up to acceptable levels. Remedial actions may include:

- Enhance/Reduce per-route service span
- Increase/Decrease headways
- Modify/Eliminate duplicative service
- Modify/Eliminate low ridership route segments
- Modify/Eliminate off-peak, seasonal or weekend service (Saturday, Sunday or both)
- Modify/Eliminate low productivity trips
- Market/Promote low ridership routes
- Consolidate/Eliminate/Add stops or stations

If continued remedial actions cannot bring a service up to RFTA's service standards, resources may be reallocated to higher-priority routes or time periods.

## **Bus Service Type**

RFTA operates several types of services, each with different goals, characteristics, and service standards. They are broadly defined by the following categories:

### ***Local***

RFTA local service operates at 30-minute headways on SH82 nearly 24 hours per day. The route extends from Glenwood Springs to Aspen and stops at nearly every stop. One-way travel time is about 100 minutes, with up to 57 stops. RFTA also operates the Aspen to Snowmass service

### ***Express/Direct***

These routes operate during peak morning and afternoon commute times in the peak direction with limited stops. Direct routes also serve the Town of Snowmass Village.

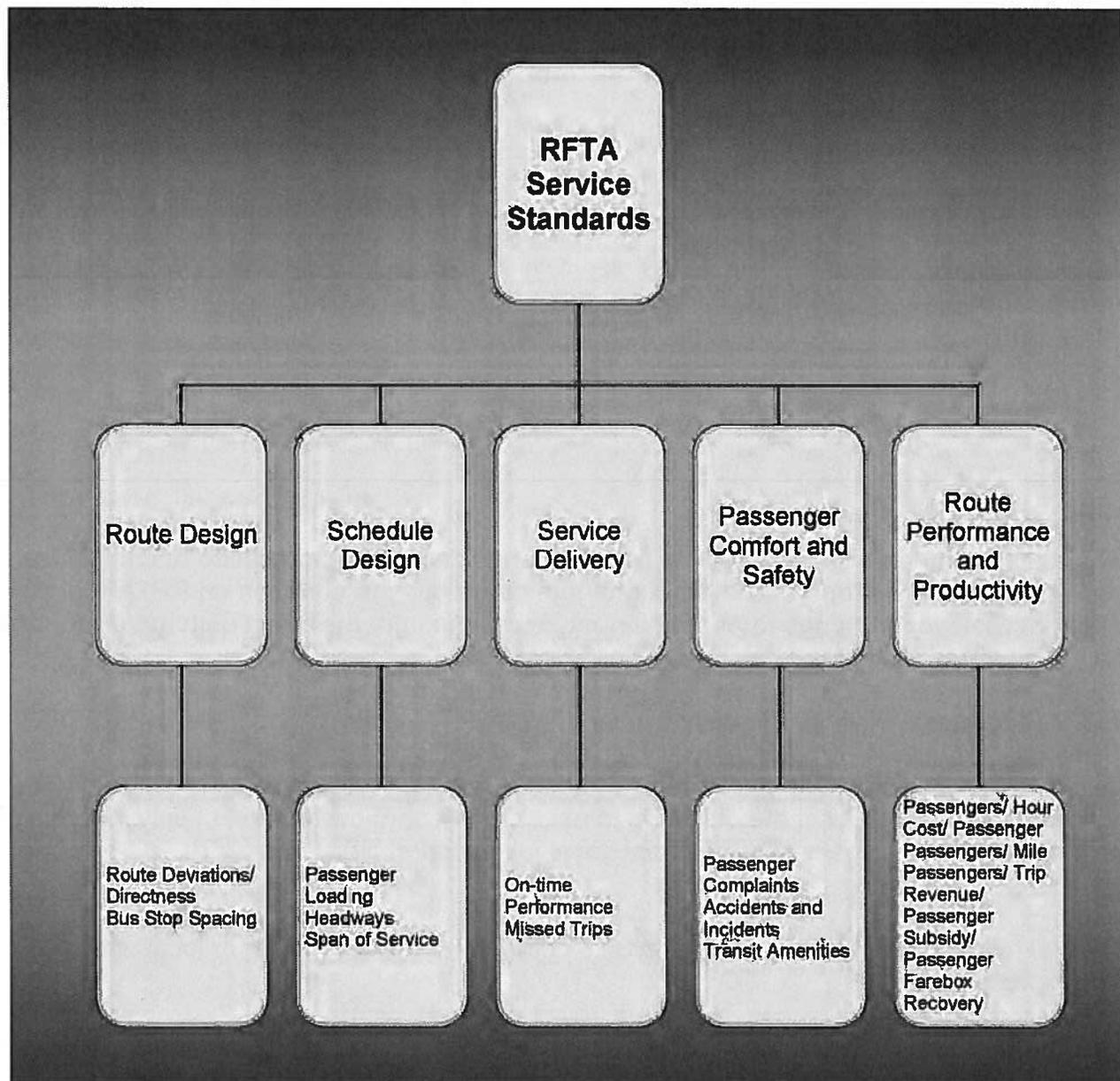
### ***BRT***

Bus Rapid Transit will be implemented in 2013, serving nine major locations between Glenwood Springs as Aspen, with headways as frequent as 10-minutes in peak hours.

### ***Contracted***

RFTA operates local transit systems within the towns of Glenwood Springs and Aspen under an operating contract, and RFTA provides contract service for Aspen Ski Company, and Aspen

Music School. Although RFTA will mandate minimum standards for safety, other service standards are subject to terms of the contract. RFTA also operates the Grand Hogback service on I-70 with limited routes, mostly during peak hours. Funds are provided by a dedicated sales tax from the Town of New Castle and by annual appropriations from Garfield County.



## Route Design

RFTA uses route design standards to design or redesign the path on which a bus route operates. The factors considered in developing or modifying a route include service area

characteristics (population, employment, transit-dependency), route type (local, express, BRT, contracted), travel directness, bus stop spacing, and bus stop amenities.

<b>Performance Measure</b>	<b>Local</b>	<b>Direct/ Express</b>	<b>BRT</b>
<b>Route Deviations / Route Directness</b>	No specific measures – route deviations generally discouraged. The formula: $\frac{P(t) * VTT}{P(d)} < 5 \text{ minutes}$ Will be used as a guideline	No specific measures – route deviations generally discouraged. The formula: $\frac{P(t) * VTT}{P(d)} < 5 \text{ minutes}$ Will be used as a guideline	Highly discouraged: Deviations may be considered if proposer can fund and implement improvements concurrent with changes to BRT, that will verifiably offset travel time impacts of deviation
<b>Bus Stop Spacing</b>	Within the UGB = 5/mile max; Outside the UGB or in low density areas = 2/mile max	Closed door service for at least 50% of total route length	No new stops allowed unless improvements can be made, concurrent with changes to BRT, funded by the proposer, to verifiably decrease BRT route travel time by 2 minutes minimum per added stop

### **Bus Route Directness**

RFTA route alignments are as direct as possible to maximize average speed and minimize travel time and miles of operation. Although route deviations are common on RFTA's local route from Glenwood Springs to Aspen, further deviations from the direct path are discouraged on all RFTA regional routes, and are prohibited on BRT.

Under certain circumstances, on routes other than BRT, it may be reasonable that RFTA deviate a route to a trip generator location, such as a significant affordable housing area or employer site, where there is no alternative transit service to that location. The decision to deviate weighs the impact of the deviation to existing on-board customers, mainly in terms of additional travel time, against the potential gains in new ridership.

RFTA will follow Miami-Dade County Transit's policy on route deviations for local and direct/express routes:

When a deviation is evaluated, the total additional travel time for all through passengers shall not exceed five minutes for each rider boarding or alighting along the deviation.

Deviations from a direct path from start to end of a route shall not exceed 125% of the direct start to end travel time of a route. Route deviations are evaluated to determine if the total additional travel time for all through passengers does not exceed five minutes for each rider boarding or alighting along the deviation.

$$\frac{P(t) * VTT}{P(d)} < 5 \text{ minutes}$$

where:  $P(t)$  = number of through passengers  
VTT = additional vehicle one-way travel time,  
 $P(d)$  = number of passengers served by the deviation

RFTA will use this formula to analyze future route deviations. While this formula may be used to justify changes in current routes, it should not be the sole decision-making criterion.

RFTA has made a commitment throughout the BRT planning and development process to maintain the streamlined regional travel time of BRT. Addition of stops or route deviations may only be decided by the RFTA Board. If the board considers additional stops or route deviations, staff will recommend that the entity proposing the change commits to funding, constructing and implementing infrastructure that will verifiably offset the travel time penalty or improve travel time on BRT, concurrent with the changes to the BRT system. These infrastructure improvements may include, but are not limited to, queue bypasses, transit signal priority, or bus-only lanes, or combinations of such improvements.

### **Bus Route Directness Measurement**

Bus route directness will be measured when:

- There is a proposal for a route deviation
- There is a request from the RFTA Board or RFTA staff, or from the general public to evaluate a current or proposed route deviation

The measurement process will be:

1. RFTA will conduct a passenger count of all through passengers documenting the number of through passengers at the nearest points to the deviation for a one-day period
2. RFTA will document the number of boardings at the two nearest stops to the proposed location for one day
3. RFTA will estimate the number of daily passengers that will be served by the deviation based on the land use within ¼-mile of the proposed stop and by the nearby boardings
4. RFTA will calculate the additional vehicle travel time to determine if the deviation falls within the 5-minute threshold and if the deviation exceeds the direct start to end route travel time by 125%.

### **Bus Stop Spacing**

The spacing of bus stops has a major impact on the performance of RFTA. Bus stop spacing affects the riders' overall travel time and, as a result, the demand for transit service. In general, RFTA analyses the trade-off between closer, more frequent stops with shorter walking distances (resulting in longer bus trips for riders), and less frequent stops placed further apart with longer walking distances (resulting in shorter bus trips). In general, it is important to strike a balance among passenger convenience, effect on average speed, and safety. The spacing of stops is determined by the nature of the adjacent development and by the type of transit service (express/direct, BRT, local and contracted). Locations of critical need, such as

locations with a high population or the elderly or persons with disabilities or workforce housing, may have an impact on spacing standards allow for better accessibility to these patrons.

## Bus Stop Spacing Measurement

Bus Stop Spacing will be measured when:

- There is a request to add or remove a stop
- Upon request from the RFTA Board, RFTA staff or the public

For bus stop spacing on the local route and on Direct/Express routes, RFTA staff will use Google Earth to measure distance between stops. Requests for new BRT stops will require a study funded by the proposer for review and verification by RFTA, and other jurisdictions as appropriate.

## Schedule Design

RFTA uses criteria for schedule design to establish or re-establish the scheduled interval between buses, and the hours during which a route operates.

<b>Performance Measure</b>	<b>Regional Local</b>	<b>Direct/ Express</b>	<b>BRT</b>	<b>Contracted Service</b>
<b>Span of Service</b>	24 hours (goal)	Peak Hours <sup>1</sup>	See chart below	No standard; determined by contract
<b>Passenger Loading<sup>2</sup></b>	120% max	120% max	120% max	
<b>Headways</b>	See Following Table			

<sup>1</sup>Direct/Express buses may be added to routes throughout the day, but RFTA's commitment will be to operate them during peak-period, peak direction

<sup>2</sup>When MCIs are used, maximum passenger loading will be 100%.

### **Span of Service**

The time between the first and last trip operated on a route defines the span of service. In addition, service span specifies the minimum period of time service will operate at any point in the system. This gives customers confidence that direct and connecting service will be provided during the span hours. The minimum hours of operation vary by type of service, day of week, season, and peak period.

Express routes generally operate during the peak a.m. and p.m. periods of weekday service in peak directions.

## Measurement of Span of Service

Span of Service will be verified each season before the schedule is published. Service span is a guideline, and should be followed as budget allows.

## Passenger Loading

The intent of loading standards is to balance safety, passenger comfort, and operating efficiency. RFTA's vehicle load standards define acceptable passenger loads at different times of the day to help ensure acceptable levels of passenger comfort and operating efficiency. Loading standards are applied and the service is adjusted through continuous monitoring. Service should be adjusted when there is a consistent trend of passenger loads exceeding standards, and when resources are available to do so. Random fluctuations and one-time events such as X-Games that result in exceedences to loading standards should be expected.

The maximum passenger load factor for a single trip will not exceed 120% of the seated capacity at any point in the trip for 80% of trips. When MCIs are used, the maximum passenger load shall be 100% of seated capacity for 90% of trips. In general, this means that there should be no more than 8 standees on a 40-foot bus and zero standees on an MCI. If this occurs more than once for every five trips (or once for every 10 trips for the MCIs), the standard is exceeded.

## Measurement of Passenger Loading

Drivers will report when passenger loading exceeds 120%.

## Headway

Headway is the interval of time between two vehicles running in the same direction on the same route.

## Measurement of Headways

Headways will be verified each season before the schedule is published. Headway is a guideline for all types of service except BRT, and should be followed as budget allows. For BRT service, headways should be considered a requirement.

Headways – Winter (minutes) Approximately mid-November to mid-April					
BRT Headways	Period	Span	Weekday	Saturday	Sunday
	Early AM	5 am – 6 am	10	15	15
	AM Peak	6 am – 9 am	10	15	15
	Midday	9 am – 3 pm	15	15	15
	PM Peak	3 pm – 6 pm	10	15	15
	Evening	6 pm – 8 pm	15	15	15

Local Headways	Period	Span	Weekday	Saturday	Sunday
	Night	8 pm – 12 am	60	60	60
	Early AM	4 am – 6 am	30	30	30
	AM Peak	6 am – 9 am	30	30	30
	Midday	9 am – 3 pm	30	30	30
	PM Peak	3 pm – 6 pm	30	30	30
	Evening	6 pm – 8 pm	30	30	30
	Night	8 pm – 2 am	30	30	30
Express Trips	Period	Span	Weekday	Saturday	Sunday
	Early AM	4 am – 6 am	1	1	1
	AM Peak	6 am – 9 am	11	11	9
	Midday	9 am – 3 pm	0	0	0
	PM Peak	3 pm – 6 pm	9	9	7
	Evening	6 pm – 9 pm	0	0	0
	Night	9 pm – 1 am	0	0	0

Headways – Summer (minutes) Approximately early June to end of September					
BRT Headways	Period	Span	Weekday	Saturday	Sunday
	Early AM	5 am – 5:30 am	10	15	15
	AM Peak	5:30 am – 8 am	10	15	15
	Midday	8 am – 3 pm	15	15	15
	PM Peak	3 pm – 6 pm	10	15	15
	Evening	6 pm – 8 pm	15	15	15
	Night	8 pm – 12 am	60	60	60
Local Headways	Period	Span	Weekday	Saturday	Sunday
	Early AM	4 am – 6 am	30	30	30
	AM Peak	6 am – 9 am	30	30	30
	Midday	9 am – 3 pm	30	30	30
	PM Peak	3 pm – 6 pm	30	30	30
	Evening	6 pm – 8 pm	30	30	30
	Night	8 pm – 2 am	30	30	30
Express Trips	Period	Span	Weekday	Saturday	Sunday
	Early AM	4 am – 6 am	0	0	0
	AM Peak	6 am – 9 am	6	4	4
	Midday	9 am – 3 pm	0	0	0
	PM Peak	3 pm – 6 pm	5	3	3
	Evening	6 pm – 9 pm	0	0	0
	Night	9 pm – 1 am	0	0	0

Headways – Off-Season (minutes) Approximately early October to mid-November Approximately mid-April to early June					
BRT Headways	Period	Span	Weekday	Saturday	Sunday
	Early AM	5 am – 6 am	12	0	0
	AM Peak	6 am – 8 am	12	0	0
	Midday	8 am – 3 pm	30	0	0
	PM Peak	3 pm – 6 pm	12	0	0

	Evening	6 pm – 8 pm	30	0	0
	Night	8 pm – 5 am	0	0	0
Local Headways	Period	Span	Weekday	Saturday	Sunday
	Early AM	4 am – 6 am	30	60	0
	AM Peak	6 am – 9 am	30	60	60
	Midday	9 am – 3 pm	30	60	60
	PM Peak	3 pm – 6 pm	30	60	60
	Evening	6 pm – 8 pm	60	60	60
	Night	8 pm – 2 am	60	60	0
	Express Trips	Period	Span	Weekday	Saturday
Early AM		4 am – 6 am	0	0	0
AM Peak		6 am – 9 am	2	3	3
Midday		9 am – 3 pm	0	5	5
PM Peak		3 pm – 6 pm	2	6	6
Evening		6 pm – 9 pm	0	1	0
Night		9 pm – 1 am	0	0	0

## Service Delivery

Performance Measure	Regional Local	Direct/ Express	BRT	Contract Service
On-time Performance	Arrives within time window (T+ 3:59 min) 75% of the time	Arrives within time window (T+ 3:59 min) 80% of the time	Arrives within time window (T+ 3:59 min) 80% of the time when headways are 15 minutes or longer	Arrives within time window (T+ 3:59 min) 75% of the time
Missed Trips	5% of total daily trips max.	2% of total daily trips max.	5% of total daily trips max.	5% of total daily trips max.

### On-Time Performance

On-time performance is the time deviation of actual operating time from the published schedule. RFTA buses are considered on-time if the actual departure time is no more than 3 minutes and 59 seconds (the on-time window) past the scheduled time of departure. Currently, on-time performance is measured by road supervisors comparing the actual departure times at time points. When the Automatic Vehicle Locator System (AVL) is fully operational in 2013, AVL will compare actual departure times with the corresponding scheduled departure times, excluding first and last time points for each trip.

### Measurement of On-Time Performance

On-time performance is currently measured and documented by road supervisors on a regular and a random basis.

<i>Location</i>	<i>Day/Time</i>	<i>Measurement</i>
El Jebel	Monday – Friday a.m. peak	Document departure times of regional commuter runs
Rubey Park	Monday – Friday p.m. peak	Document departure times of all runs
Glenwood area	Random	Document departure times on a random basis in random locations
Random	Random	Day and night road supervisors document departure times on a random basis

If on-time performance does not meet the standards, the Road Supervisors will alert the Directors of Operations and discuss potential solutions.

**Missed Trips**

Missed Trips are defined as trips that are removed from the daily schedule, other than for routine schedule changes, due to mechanical failure, accidents, and weather-related delays. RFTA will not allow missed trips to exceed 5% of total trips on each route, daily.

**Measurement of Missed Trips**

Missed trips are documented in daily dispatch logs. If missed trips exceed the standard. The dispatch supervisor will alert the Operations Directors and discuss solutions.

**Passenger Comfort and Safety**

Passenger comfort and safety needs are inherent in many standards. For RFTA’s purposes, the main measures of passenger safety and comfort are passenger complaints and incidents and accidents.

<i>Performance Measure</i>	<i>Regional Local</i>	<i>Direct/ Express</i>	<i>BRT</i>	<i>Contract Service</i>
Passenger Complaints	Maximum 11 service-related complaints / 100,000 passengers	Maximum 11 service-related complaints / 100,000 passengers	Maximum 6 service-related complaints / 100,000 passengers	Maximum 11 service-related complaints / 100,000 passengers, unless otherwise defined in the service contract

<b>Accidents</b>	Maximum 6 accidents /100,000 vehicle miles			
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***Passenger Complaints***

RFTA has created a database to track passenger complaints. The “acceptable” number of complaints ranges from 6-11 per 100,000 trips, depending on the type of service, and must be related to the service, such as a missed trip, late departure, or other quality or safety issue. The variation in acceptable number of complaints relates to the type of service. Direct and express service are more premium services and are not as likely to generate complaints as local service. Once RFTA implements improved ITS tools to disaggregate and measure passenger trips, the standard for directs and expresses will change to 6/100,000 trips. Similarly, BRT is anticipated to be a premium service and expected to generate even less complaints.

**Measurement of Passenger Complaints**

Measurement will occur monthly. Operations will:

- 1) Assemble the complaints for the month
- 2) Divide the complaints by local route, by direct/express, and by BRT (measurement of contract routes are determined by contractee)
- 3) Set aside complaints that are not directly related to quality of service, passenger comfort or safety
- 4) Calculate the total number of complaints for each type of service for the month
- 5) Divide the total number of complaints by total monthly boardings

The results will be provided to the Directors of Operations, who will assess the rate of complaints. If the rate exceeds the standard, the Directors of Operations will study the nature of the complaints and determine a course of action to return to standard. If there is a sudden, unusually high rate of complaints, the Directors of Operations may choose to investigate and take action immediately.

**Accidents**

RFTA maintains detailed data on accidents. An accident is defined as any abnormal contact between the bus or a bus component and another object. The standard is not to exceed six accidents per 100,000 vehicle miles.

**Measurement of Accidents**

In the context of service standards, accidents are measured and analyzed monthly. If the rate of accidents on a monthly basis exceeds the standards, the Directors of Operation will assess the rate and determine a course of action to bring the rate to within the standard. If there is a sudden change in the accident rate, the Directors of Operations may choose to investigate and take corrective action immediately.

**Route Performance and Productivity**

Transit service must be balanced between public service function and fiscal responsibility. VelociRFTA Bus Rapid Transit (BRT) service, targeted to start service in late 2013, will be the highest quality of service offered and will require coordination with all bus routes. RFTA's evaluation of routes is based on the following measures of productivity; the values are estimates based on current performance and future expectations. In the future, RFTA will consider modifying standards with the implementation of applicable ITS tools, for peak and off-peak time periods, seasons, and direction of travel

<b>Performance Measure</b>	<b>Regional Local</b>	<b>Direct/ Express</b>	<b>BRT</b>	<b>Contract</b>
<b>Minimum Boardings/ hour<sup>1</sup></b>	15/hour	30/trip	20/hour	As defined in contract
<b>Minimum Cost Recovery<sup>2</sup></b>	30%	30%	30%	As defined in contract
<b>Net cost (subsidy) per passenger*</b>	\$4.40	\$4.40	\$4.40	

<sup>1</sup>Hours include time en route, deadhead hours, and pre-trips and post-trips.

<sup>2</sup>Fare-free services and contract services are exempt from farebox recovery standards. Maroon Bells service should be higher, but that rate will be determined later

**Boardings per Hour**

This denotes the number of passenger boardings in one hour of service. This measure is a very strong indicator of the effectiveness of service consumption.

### **Measurement of Boardings/Hour**

Boarding per hour will be measured by the Planning Department monthly, upon completion of the monthly ATC-15 report. Currently, the boardings/hour of the local and the direct/express service will be combined and averaged to 15/hour until new ITS tools are deployed that allow these services to be better disaggregated.

### ***Minimum Cost Recovery:***

Cost recovery ratio is the ratio of fare box revenue received to the total operating cost. System-wide, RFTA cost recovery ratio for regional service has historically ranged about 30%. Fare free service is exempt from minimum cost recovery standards.

### **Measurement of Cost Recovery**

Cost recovery will be calculated at three different intervals:

- During the budget process, cost recovery will be estimated
- At the end of the calendar year, when final adjustments are made to reconcile projected and actual service hours and miles.
- When the budget is audited, another calculation will be made

This process will change with the implementation of automated fare collection and automated passenger counting.

### ***Net Cost (subsidy) Per Passenger***

The net cost (subsidy) per passenger is the route's total operating costs less farebox revenues, divided by the route's number of passenger trips. This reflects both the efficiency with which service is delivered, and the market demands for the service.

### ***Measurement of Net Cost (subsidy) Per Passenger***

Net Cost/Passenger will be calculated at three different intervals:

- During the budget process, cost recovery will be estimated
- At the end of the calendar year, when final adjustments are made to reconcile projected and actual service hours and miles.
- When the budget is audited, another calculation will be made

This process will change with the implementation of automated fare collection and automated passenger counting.

### **Bus Stop and Station Standards**

The addition of bus stops and characteristics of those stops have an impact on the performance of the bus route, the safety and comfort of passengers, and the image of the transit system. The following tables outline the requirements for location and design

**Safety, Amenities and Design of Stops and Stations**

<b>Measure</b>	<b>Local and Express/Direct BRT</b>	<b>Contracted Service</b>
<b>Size of shelter and platform</b>	Designed to meet current and long-term passenger demand and bus staging	Must meet current passenger demand and bus staging
<b>Access and Safety</b>	Meets Federal (ADA), State and local access and safety requirements	
<b>Design</b>	Meets RFTA and local jurisdiction requirements for design	Consistent with existing BRT branding and design concepts for stations and platforms
<b>Amenities</b>	Bench – all stops without a shelter and with sufficient ROW Shelter – All stops with greater than 100 Boardings/day with sufficient ROW Litter Bins – All stops with benches or bus shelters	Consistent with existing BRT branding and design concepts for stations and platforms
<b>Crossings</b>	Safe pedestrian and bicycle crossings provided on SH82 and on surrounding roadways. Grade separated crossings of SH82 preferred  A station serving the opposite travel direction is provided, with safe bicycle and pedestrian connections	Safe pedestrian and bicycle crossings provided on SH82 and on surrounding roadways. Grade separated crossings of SH82 preferred  A station serving the opposite travel direction is provided, with safe bicycle and pedestrian connections

**Other Bus Stop Safety and Design Considerations**

<b>Description</b>	<b>Local, Direct/ Express, BRT</b>	<b>Contract Service</b>
<b>Meets CDOT clear zone requirements</b>	Yes	Yes
<b>Ease for bus re-entering traffic stream in low-speed areas; provides proper acceleration and deceleration tapers and safe bus staging</b>	Yes	Yes
<b>Proximity to and density of residential, employment and other trip generators</b>	Yes	Encouraged
<b>Quality of surrounding pedestrian and bicycle connections</b>	Yes	Encouraged

Protected crossings at signalized or stop controlled intersections, or at crosswalks	Yes	Yes
Convenient passenger transfers to other routes	Yes	Yes
Effect on adjacent property owners	Yes	Encouraged
Conflict between buses, traffic, and pedestrians	Yes	Yes
Open and visible spaces for personal security and passenger visibility	Yes	Yes
Street illumination	Yes	Encouraged
Ability to restrict parking if needed, or feasibility to move or provide parking	Yes	Encouraged
Volumes, speed and turning movements of traffic	Yes	Encouraged
Proximity and traffic volumes of nearby intersection	Yes	Encouraged
Street and sidewalk grade	Yes	Encouraged
Proximity to rail crossings or emergency driveways	Yes	Encouraged
Sight Distance and Design Speeds	Yes	Yes

**Measurement of Safety, Amenities and Design of Stops and Stations**

Measurement or assessment will occur under the following situations:

- When a new stop or station is proposed
- When an existing stop or station is proposed to be modified
- Upon request from a RFTA Board member, RFTA staff, or the general public

**Bus Stop/Station Removal Policies**

In some cases, it may be advantageous to remove bus stops to enhance the safety, image and performance of the transit system. Bus stop and station removal assessments will be made upon request by the RFTA Board, by a local government, or by RFTA staff. The following four considerations will drive the decision to remove a bus stop:

***Frequency of Boardings and Alightings***

If the frequency of boardings and alightings is within the lowest 10 percentile of frequency per bus stop, the location should be considered for removal. The lowest-usage stops are shown below.

<b>Stop</b>	<b>Boardings</b>	<b>Alightings</b>	<b>Percentile - Average Boardings and Alightings</b>	<b>Number</b>
<b>GW Rec Center</b>	2	2	0.03%	1
<b>Gerbazdale</b>	2	2	0.03%	2
<b>Twinning</b>	2	4	0.04%	3

<b>Flats<sup>1</sup></b>				
<b>Aspen Glen</b>	4	4	0.05%	4
<b>CL/82<sup>2</sup></b>	11	0	0.07%	5
<b>Wingo Junction</b>	7	5	0.08%	6
<b>Woody Creek</b>	15	4	0.13%	7
<b>Acl<sup>3</sup></b>	9	22	0.21%	8
<b>Ranch at Roaring Fork</b>	12	20	0.22%	9
<b>Catherine's Store</b>	27	25	0.35%	10
<b>Holland Hills</b>	40	30	0.47%	11
<b>7th &amp; Colorado</b>	45	35	0.54%	12

Source: July 2008 Boarding and Alighting Survey

<sup>1</sup>next stop downvalley of Woody Creek

<sup>2</sup>next stop downvalley of 8<sup>th</sup>/Main

<sup>3</sup>Between Buttermilk and Trustcott

### **Measurement of Frequency of Boardings and Alightings**

This measurement will occur after each bi-annual boarding and alighting survey. When APC is implemented, this measurement is proposed to occur monthly. There is no standard for boardings and alightings, but the information may be used to assess bus stop/station removal

### ***Location of the Next Nearest Stop***

If the location is not well utilized, and there is a safe, accessible location within ¼-mile in an urban growth boundary, the stops should be consolidated.

### ***Safety***

Safety issues, and the cost to address them should be a high priority in the consideration to remove a bus stop.

### ***Design and Amenities***

The cost to upgrade the design and amenities to meet standards is the final factor in consideration to remove a bus stop.

### **Service Expansion Standards**

According to Board Policy 2.10: With respect to the expansion of Transit Services, the CEO shall not: Approve the expansion of RFTA transit services, within or outside of RFTA jurisdictional boundaries, without prior authorization by the Board.

RFTA must address three types of service expansion:

**Expansion within RFTA Boundaries:** General public, regional service expansion within RFTA's existing service area and within RFTA member jurisdictions

**Expansion Outside of RFTA Boundaries:** General public, regional service expansion outside of RFTA's member jurisdictions

**Contract Service Expansion:** Agreements between RFTA and other government agencies to provide local transit service, charter service, or other service that does not meet the characteristics of general public, regional service within RFTA member jurisdictions. The cost is fully allocated and paid to RFTA, regardless of boundary.

### ***Expansion of General Public Regional Service - within RFTA Member Jurisdictions***

RFTA has received dedicated sales tax funding from its member counties and municipalities. When considering expansion of general public, regional service within RFTA's member jurisdictions, the Board must consider the following issues:

1. Is long-term funding committed and available for capital, operations and maintenance?
2. Can the service be accommodated by existing facilities?
3. Are proposed stops, shelters and routes safe and secure?
4. Can the new or expanded service be integrated with other RFTA routes, schedules and headways for optimal connectivity?
5. Will the proposed routes and schedules accommodate needs for driver breaks?
6. Will the proposed service conform to RFTA's service standards?
7. Will the service address local and regional goals?

### ***Expansion of General Public Regional Service – Outside of RFTA Member Jurisdictions***

Non-member jurisdictions do not provide dedicated sales tax funding. When considering expansion of general public, regional service outside of RFTA's member jurisdictions, the RFTA Board must consider the following issues:

1. Is long-term funding committed and available for capital, operations and maintenance?
2. Can the service be accommodated by existing facilities?
3. ***Will the proposed service do no harm to existing service within RFTA's Service Boundaries?***

4. Are proposed stops, shelters and routes safe and secure?
5. Can the new or expanded service be integrated with other RFTA routes, schedules and headways for optimal connectivity?
6. Will the proposed routes and schedules accommodate needs for driver breaks?
7. Will the proposed service conform to RFTA's service standards?
8. Will the service address local and regional goals?

## **Expansion of Contract Service**

RFTA may engage in service contracts with government agencies to provide general public local transit service, charter service, or other service that does not meet the characteristics of general public, regional service. The cost is allocated and paid to RFTA, regardless of boundary.

The Board must consider the following

1. Is public or private funding committed and available for capital, operations and maintenance, for the duration of the contract?
2. Is the cost of the service fully allocated for initial capital costs, operations and maintenance, and replacement of rolling stock and facilities?
3. Can the service be accommodated by existing facilities?
4. **Will the proposed service do no harm to RFTA's existing service and facilities?**
5. Are proposed stops, shelters and routes safe and secure?
6. Can the new or expanded service be integrated with other RFTA routes, schedules and headways for optimal connectivity?
7. Will the proposed routes and schedules accommodate needs for driver breaks?
8. Will the proposed service conform to RFTA's and to the contract-defined service standards?
9. Will the service address local and regional goals?
10. **If the service meets the definition of charter service, can FTA requirements for initiating and operating charter service be followed?**

## **Service Reduction Standards**

Service reduction is not merely initiated for failing to meet standards. RFTA must address three types of service reduction:

1. Reduction within RFTA Boundaries
2. Reduction Outside of RFTA Boundaries
3. Contract Service Reduction

***Reduction of General Public Regional Service - within RFTA Member Jurisdictions***

When considering reduction of general public, regional service within RFTA's member jurisdictions, the Board must consider the following issues:

- 1) Is the service reduction targeting a low-performing trip, route or time period?
- 2) Is there a safety issue that cannot be addressed?
- 3) Can service outside of RFTA boundaries be reduced or adjusted to prevent the reduction?
- 4) Is funding unavailable?
- 5) Can other aspects of RFTA service be adjusted to compensate for the performance, safety or funding issue, without doing harm to existing RFTA service?
- 6) Are transportation-dependent populations disproportionately impacted by the change?
- 7) Will RFTA service improve overall by making the reduction?
- 8) If the performance, safety and funding conditions that prompted the reduction change, can the service reduction be re-evaluated?

***Reduction of General Public Regional Service – Outside of RFTA Member Jurisdictions***

When considering reduction of general public, regional service outside of RFTA's member jurisdictions, the Board must consider the following issues:

- 1) Is the service reduction targeting a low-performing trip, route or time period?
- 2) Is there a safety issue that cannot be addressed?
- 3) Can service outside of RFTA boundaries be reduced or adjusted to prevent the reduction?
- 4) Can other aspects of RFTA service be adjusted to compensate for the performance, safety or funding issue, without doing harm to existing RFTA service?
- 5) Can funding be made available from another entity?
- 6) Are transportation-dependent populations disproportionately impacted by the change?
- 7) Will RFTA service improve overall by making the reduction?
- 8) If the performance, safety and funding conditions that prompted the reduction change, can the service reduction be re-evaluated?

***Reduction of Contract Service***

The terms and standards of contract service are primarily the responsibility of the local government contractee.

## Completion Assessment

The following table shows the progress of completion on these service standards.

Standard	Complete?	Comments
<b>Route Design</b>		
Route Directness	Y	
Bus Stop Spacing	Y	
<b>Schedule Design</b>		
Span of Service	Y	
Passenger Loading	Y	
Headways	Y	
<b>Service Delivery</b>		
On-Time Performance	Y	
Missed Trips	Y	
<b>Passenger Comfort and Safety</b>		
Passenger Complaints	Y	
Accidents	Y	
<b>Route Performance and Productivity</b>		
Boardings/Revenue Hour	Y	
Net Cost (subsidy)/Passenger Boardings/ Trip	N	Will not be used until Automated Passenger Counting is implemented
Cost Recovery	Y	
<b>Bus Stop and Station Standards</b>		
Size, Access and Safety, Design, Amenities, Crossings, Other	Y	
<b>Bus Stop and Station Removal</b>		
Frequency of Boardings and Alightings*	Y	
Location of Next Stop	Y	
Safety	Y	
Design and Amenities	Y	
<b>Service Expansion</b>		
<b>Within RFTA Boundaries</b>		
Outside RFTA Boundaries	Y	
Contract	Y	
<b>Service Reduction</b>		
<b>Within RFTA Boundaries</b>	Y	
Outside RFTA Boundaries	Y	
Contract	Y	

## Impact Assessment

The following table shows the impacts of these service standards on agency resources

Standard	Impact	Comments
<b>Route Design</b>		
<b>Route Directness</b>	Varies	The assessment could be the burden of the proposer, whether it's a local government or developer
<b>Bus Stop Spacing</b>	Minimal	
<b>Schedule Design</b>		
<b>Span of Service</b>	Minimal	
<b>Passenger Loading</b>	Moderate	Will require that drivers report incidences where passenger loads exceed certain thresholds, and that operations document and report to Directors when standards are exceeded
<b>Headways</b>	Minimal	
<b>Service Delivery</b>		
<b>On-Time Performance</b>	Moderate	Already being recorded. Road Supervisors will have the additional responsibility to report to Operations Directors when standards are exceeded
<b>Missed Trips</b>	Moderate	Already being recorded. Dispatch or Supervisors will have the additional responsibility to report to Operations Directors when standards are exceeded
<b>Passenger Comfort and Safety</b>		
<b>Passenger Complaints</b>	Minimal	Already being recorded. Operations personnel will have the additional responsibility to report to Operations Directors when standards are exceeded
<b>Accidents</b>	Minimal	Already being recorded. Safety Manager or other personnel will have the additional responsibility to report to Operations Directors when standards are exceeded
<b>Route Performance and Productivity</b>		

<b>Boardings/Revenue Hour</b>	Minimal	Data readily available through ATC-15 reports
<b>Net Cost (subsidy)/Passenger</b>	Minimal	Measurement will be consistent with processes currently in place
<b>Boardings/ Trip</b>	Unknown	Measurement will begin when Automated Passenger Counting is implemented
<b>Cost Recovery</b>	Unknown	Measurement will be consistent with processes currently in place
<b>Bus Stop and Station Standards</b>		
<b>Size, Access and Safety, Design, Amenities, Crossings, Other</b>	Varies	Assessment is on an as-needed basis, but when it is needed, the burden may be significant.
<b>Bus Stop and Station Removal</b>		
<b>Frequency of Boardings and Alightings*</b>	Minimal	Measured in conjunction with the boarding and alighting survey. Measurement process and interval will change with the implementation of APC.
<b>Location of Next Stop</b>	Minimal	
<b>Safety</b>	Varies	See comments regarding <i>Size, Access and Safety, Design, Amenities, Crossings, Other</i>
<b>Design and Amenities</b>	Varies	See comments regarding <i>Size, Access and Safety, Design, Amenities, Crossings, Other</i>
<b>Service Expansion</b>		
<b>Within RFTA Boundaries</b>	Varies	Assessment could be significant, but the assessment would need to be done regardless of an official standard
<b>Outside RFTA Boundaries</b>	Varies	Assessment could be significant, but the assessment would need to be done regardless of an official standard
<b>Contract</b>	Varies	Assessment could be significant, but the assessment would need to be done regardless of an official standard
<b>Service Reduction</b>		
<b>Within RFTA Boundaries</b>	Varies	Assessment could be significant, but the assessment would need to be done regardless of an official standard

<b>Outside RFTA Boundaries</b>	Varies	Assessment could be significant, but the assessment would need to be done regardless of an official standard
<b>Contract</b>	Varies	Assessment could be significant, but the assessment would need to be done regardless of an official standard

