Fixed Route Service Standards & Guidelines

Adopted March 23, 2021

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1. Introduction

1.1 Overview

The New Orleans Regional Transit Authority (RTA) uses service standards to evaluate, design and modify transit services to meet changing needs and to deliver efficient, high-quality service. The standards help us make sure that our decision-making and recommendations to policy makers are objective, transparent, and aligned with the region's goals for public transportation.

The service standards establish criteria and processes the RTA uses to analyze and plan changes to the transit system. They provide direction in the following areas:

Evaluating and Reporting on the Existing Network

Establishing Service Demand

Defines a process for assessing the market potential of corridors in the RTA's service area using factors of transit propensity and social equity.

Evaluating System Performance

Establish measures for evaluating route productivity and efficiency, passenger loads, ridership, schedule reliability, and safety performance for every route in the RTA system to identify where changes may be needed to improve the system and achieve RTA's goals and objectives.

Planning and Designing Service and Service Changes

Designing Service

Provide qualitative and quantitative guidelines for designing specific transit routes and the overall transit network. This includes operational characteristics like service span and frequency, geometric characteristics like route paths and stop spacing, and the recommended placement of rider amenities like shelters and benches.

Adding, Reducing and Changing Service

Establish the priority order in which the standards will be considered as RTA makes recommendations about adding, reducing, or adjusting service and describe how the RTA will report on the performance of individual, fixed route services.

1.2 How the guidelines are used

Every year, RTA uses the service standards to analyze the corridors and transit routes in the system. The results are published in an annual Service Standards Report that is made available to the public. The RTA uses the results of this analysis, as well as guidelines concerning service design, to develop service change proposals. The standards for evaluation of existing routes are not intended to preclude changes to routes that meet these minimum standards. In many cases, it may be possible

to improve the productivity of routes that meet the minimum standards by making changes to headways or trip times. Since the overall mission of the RTA is to provide “safe, dependable, efficient transit service,” these standards should not be used to prevent changes to improve existing routes, as long as changes meet the route design guidelines.

1.3 Updating of Service Standards

The service standards are intended to support the goals and objectives of the RTA. Since these objectives, and the resources available to attain them can be expected to change over time, the standards will be revised periodically to reflect those changes. The service standards will be reviewed on a bi-annual basis. At that time, experience with the service standards over the previous time period, as well as changes in the RTA’s goals and objectives, will be used to determine whether any standards should be added or revised.

The numerical values of productivity standards will be updated each year, using ridership, revenue and cost figures for the most recent twelve-month period for which data are available. The rankings are based only on those routes that existed for the entire year. Routes which were eliminated during the year are excluded because they cannot be identified as candidates for revisions. Routes that were introduced during the year will be excluded when determining the new standards since they are not required to meet the productivity standards until they have been in operation for at least six months. However, these routes will be evaluated separately, using the service standards contained in this document.

The method used for updating service standards will compare the values of the productivity standards with those in effect for the previous year. Operating cost data for the previous year will be revised to account for system-wide increases or decreases in operating cost.

1.4 Emergency Service

In the event of an emergency the RTA may temporarily suspend some or all of the standards in this policy in accordance with established safety plans and emergency procedures adopted by the RTA, City of New Orleans, or any other relevant agency or public entity, if necessary to ensure the safety of agency staff and community at large. After an emergency has passed, the RTA will work to restore normal service as soon as reasonably possible.

2. Evaluating and Reporting on Existing Network

2.1 Establishing Service Demand

A major function of these service standards is to assess transit propensity for corridors that make up the RTA's fixed route network and use that analysis to determine appropriate types and levels of transit service to meet expected ridership demand.
For the RTA's guidance, corridors are defined as major transit pathways that connect employment centers, residential neighborhoods, transit hubs, important institutions, and other major destinations throughout the RTA service area. Routes are the actual transit services provided. Assessments of transit propensity are set by corridor rather than by route because a corridor could be served by a single route or by multiple routes.

2.1.1 Corridor Analysis

The RTA establishes expected transit demand for the corridors in the service area by analyzing residential and employment density and the socioeconomic factors that impact transit usage. These factors are combined into a single score and used to calculate the likelihood of transit use, or transit propensity, of an area or corridor.

Transit Propensity Index

The RTA's Strategic Mobility Plan (SMP), published in 2018, developed a Transit Propensity Index (TPI), which was refined and expanded upon for the New Links Network Redesign project to create a quantitatively functional planning tool. The TPI is based on a weighted calculation of race and ethnicity, income, disability, vehicle ownership, and employment data within walking distance of a particular corridor.

Each socioeconomic characteristic is assigned a factor, which indexes the likelihood of transit use relative to the average rate of transit use for the United States. Index factors are based on the methodology laid out in the Transit Cooperative Research Programs Repot 28: Transit Markets of the Future (TCRP 28) and refined using recent data from the New Orleans metropolitan region . Groups with an index factor greater than one are considered more likely than average to use transit, while those with a factor less than one are less likely to use transit. The final result is a single number that represents the likelihood for transit to be used on a particular corridor or given area.

These factors illustrate the general regional trends. People of color have higher transit propensity than the general population. Residents without a vehicle are close to 10 times more likely to use transit than the general population. People with a disability are slightly more likely than the general population to use transit. Annual income is inversely related to transit propensity.

Table 1: Transit Propensity Index: Demographic Weights

Category	Factor	Weight
Demographic Factors		
Race and Ethnicity	White (not Hispanic or Latino)	0.29
	Black or African-American (Not Hispanic or Latino)	2.31
	Hispanic or Latino	1.33
	Asian (Not Hispanic or Latino)	0.57
	Multiracial or other (Not Hispanic or Latino)	1.38
Vehicle Ownership	No Car	9.95
	One or More Cars	0.55
Disability	With a Disability	1.27
	Without a Disability	0.98
Annual Income	Less than $10,000	2.37
	$10,000 - $15,000	1.69
	$15,000 - $25,000	1.59
	$25,000 - $35,000	0.78
	$35,000 - $50,000	0.55
	$50,000 or Higher	0.30
Employment Factors		
Jobs (salary)	<$1250 per month	3.87
	$1250 - $3333 per month	2.00
	> $3333 per month	0.72

Area representations of transit propensity (for a given Census Block Group or neighborhood, for example) are very useful. However, they do not fully capture the physical requirements of operating transit service, or the realities of who can access that service. Transit service is restricted to the use of certain roadways, rail infrastructure, or waterways. For the purposes of planning, it is therefore more useful to represent transit propensity in the form of road segments along which transit vehicles could be routed. As such, roadways with physical or legal restrictions to transit operations are excluded from any corridor analysis.

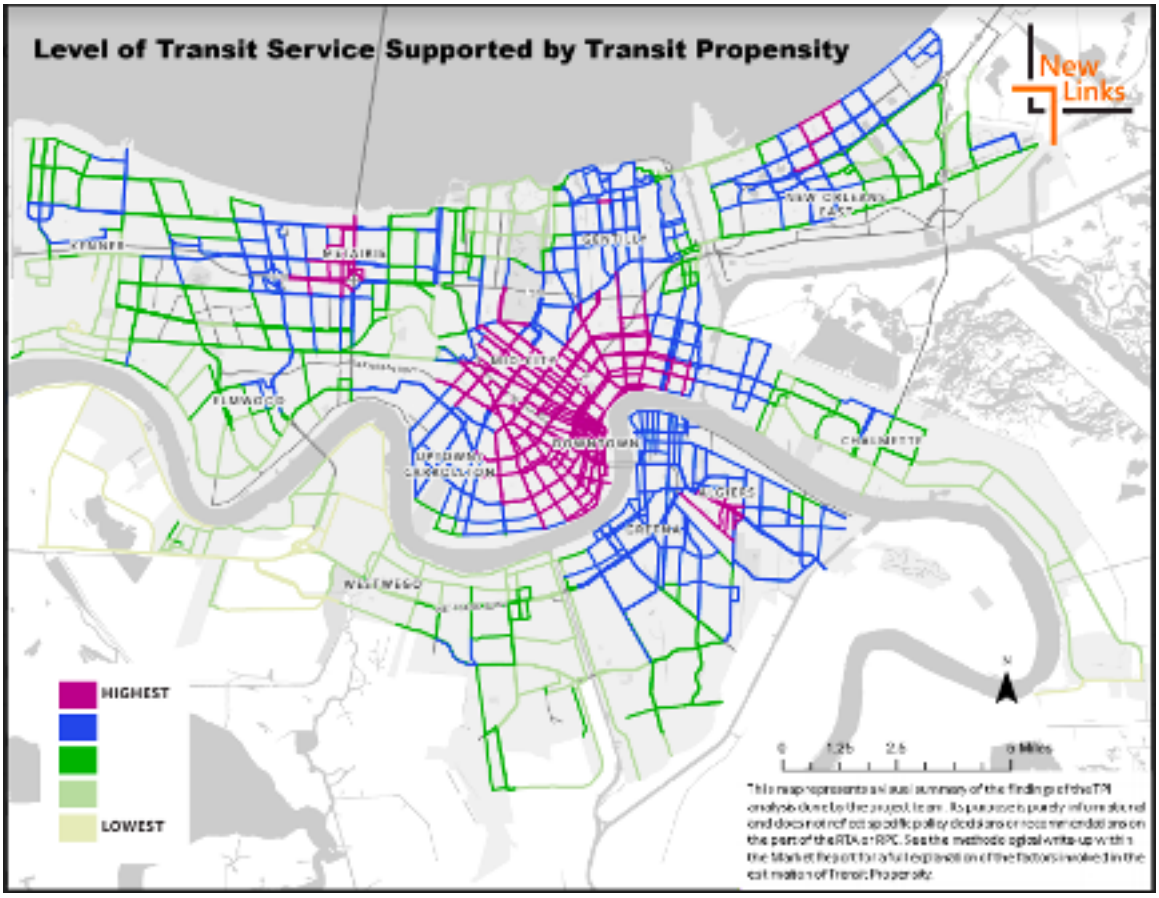
The transit propensity for a given corridor is calculated by summing the TPI-adjusted population and employment within each census block that could be reached in a ¼, ½, ¾, and 1-mile walk. A discount rate is applied to the propensity scores for each block based on which walkshed distance the area was located within.

Table 2: TPI Discount Rates by walkshed distance

Walkshed Distance (within)	% of TPI Used
¼ Mile	100%
½ Mile	50%
¾ Mile	25%
1 - Mile	12.5%

The result of these calculations is applied to the potential transit corridors. A corridor that has a higher Transit Propensity Index can support a higher level of transit service.

Figure 1: TPI Results from the New Links Process



2.2 Evaluating and Managing System Performance

The RTA manages the performance of transit routes to improve the efficiency, effectiveness, and quality of the transit system. Performance management guidelines are applied to individual routes to identify high and low performance, areas where investment is needed, and areas where resources are not being used efficiently and effectively.

2.2.1 Route Productivity and Efficiency

The performance management analysis uses route productivity and efficiency measures to identify fixed-route service where performance is strong or weak or efficiency is high or low as candidates for addition, reduction, or modification of service.

Route Productivity

The measures for evaluating fixed-route service productivity are passengers per platform hour, passenger miles per platform mile, and passengers per trip.

Passengers per platform hour (Pass/Hr) is a measure of the number of riders who board a transit vehicle relative to the total number of hours that vehicle operates (from leaving the garage until it returns). Routes with higher numbers of riders getting on and off relative to the time in operation perform well on the Pass/Hr measure; an example is a route that goes through a dense neighborhood with lots of riders taking short trips. Additionally, by counting platform hours the RTA will be able to isolate services suffering from inefficient use of deadheads and layovers.

Passenger miles traveled per platform mile (PMT/Mile) is a measure of the total miles riders travel on a route relative to the total miles that a vehicle operates (from leaving the garage until it returns). Routes with full and even loading perform well on the PMT/Mile measure; an example is a route that provides regional connections between neighborhoods and/or major destinations.

Passengers per Trip (Pass/Trip) is a metric will be used primarily to help evaluate the effectiveness of ferry service due to the unique operating nature of ferry services.

Route Efficiency

Route efficiency is measured by **cost per passenger** and **subsidy per passenger**.

> **Cost per passenger (Cost/Pass)** is a measure of the average total cost of operating a transit route on a per passenger basis. This total cost is calculated for each operational service day. Routes with high passenger volumes relative to the total cost of service perform well on the Cost/Pass measure; an example is a short route with high ridership.
>
> **Subsidy per passenger (Sub/Pass)** is a measure of the average cost of operating a transit route on a per passenger basis *after subtracting fare revenue collected*. Routes with high numbers of passengers paying full fares tend to perform well in this measure.

Low Performance Routes

Low performance is defined as route productivity or efficiency that ranks in the bottom 25 percent of all routes within a time period; high performance is defined as a route productivity in the top 25 percent. Fixed-route services in the bottom 25 percent on both route productivity measures are identified as the first candidates for potential restructuring or reduction of service.

Fixed route services in the bottom 25 percent of both efficiency measures are identified as candidates for increased evaluation and assessment and will be recommended for potential restructuring or reduction of service if the evaluation concludes it to be necessary. This is because a route with high subsidies per passenger may be indicative of a route that provides important equity based service where many transit riders utilize lower cost monthly passes, senior passes, or ADA passes.

2.2.2 Evaluating Route Segments and Corridors

Performance of a given route may be evaluated at the segment level to isolate portions of routes that may be underperforming. Routes or route segments that provide overlapping service on a given corridor may be evaluated in conjunction with each other to properly assess the corridor level performance of the transit service being provided.

2.2.3 Passenger Loads

Passenger loads are measured to identify overcrowded services as candidates for increased investment. Overcrowding is a problem because vehicles may pass up riders waiting at stops if the vehicle has reached its passenger capacity, riders may choose not to ride if other transportation options are available, and overcrowded vehicles often run late because it takes longer for riders to board and get off at stops.

Passenger loads are measured by computing the load factor, which is the number of passengers onboard a vehicle divided by the seated capacity of the vehicle. For example, a transit vehicle carrying a full seated load with no standees has a load factor of 100%. The vehicle load standard is calculated as an average for both the peak and off-peak periods, at the busiest point on the route during the busiest hour. For instance, if a service operates at a 15-minute frequency, then 4 vehicles would pass the busiest point in an hour. The average number of passengers for these 4 vehicles must fall within the service standards, even though any one vehicle may be more crowded than the average. If the standard is consistently exceeded, RTA should evaluate options to alleviate over-crowding. However, the standards are designed to allow standees during peak periods on a regular basis.

If these guidelines are consistently exceeded for a route, two different techniques are used to increase capacity and keep passenger loads within acceptable levels:

The first is assign a larger vehicle to the trip, if one is available. The second method is to provide more frequent service to better match demand. (In limited cases, capacity can also be added by operating some vehicles in tandem, which is referred to as “double-heading.”)

Table 3: Passenger Load Guidelines

	Express	Rapid	Select	Local	Circulator	Flex	Ferry
Average Passenger Load Maximum (percent of seated capacity)							
Daily Peak:	100%	125%	125%	125%	125%	125%	150%
Daily Off-Peak:	100%	100%	100%	100%	100%	100%	125%

As with the other guidelines in this document, the guidelines as shown in Table 3 are general guidelines, not strict standards. These guidelines will be used for developing service levels that best meet the needs of RTA's current and future riders and to ensure that riders are not discouraged by overcrowding. These guidelines are based on RTA vehicle capacities and transit industry standards, and are designed to balance safety, passenger comfort, and operating efficiency.

2.2.4 Schedule Reliability

The RTA measures schedule reliability, also known as on-time-performance (OTP), to identify routes that are candidates for investment because they provide poor quality service. Service should deviate as little as possible from the published timetables. Early departures from time points that risk leaving on-time passengers and late arrivals to time points are considered deviations from on-time performance. This standard applies to every stop on a route that could reasonably be considered a timing point based on published customer information.

On time is defined as a departure at a designated time-point along a route that is no more than five minutes late or one minute early relative to the scheduled departure time. When identifying candidates for remedial action, the RTA focuses on routes that are regularly running late.

To do this, the RTA identifies trips that exceed the lateness thresholds (shown below). If a trip regularly experiences lateness that exceeds the thresholds, it can be identified for investment.

Table 4: Schedule Reliability – Lateness Thresholds

Time Period	Lateness Threshold
Weekday average, off-peak	> 10%
Weekday AM/PM peak average	> 20%
Weekend average	> 10%

The time period of a particular trip is determined by the scheduled start time for said trip, not the actual start time.

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The RTA allows for a higher lateness threshold during peak hours to account for increased passenger demand and higher levels of roadway congestion experienced during these time periods.

To account for the seasonal variability of ridership demand and roadway congestion, a route must exceed the lateness thresholds for two consecutive months to be considered a candidate for action. If considered a candidate for action, the following actions will be considered first:

- Adjustment of schedules / running times
- Adjustment of routing
- Investment in speed and reliability improvements.

Additional actions may be considered based on an assessment of the route in question. The RTA will work with partner agencies to address external factors affecting reliability, such as construction delays and roadway design.

2.2.5 Trip Completion

In addition to schedule reliability, the RTA measures the percentage of scheduled trips that are completed. This measurement is intended to help identify persistent issues that may be preventing the completion of trips on a given route. This measure is particularly important when assessing the reliability of ferry services.

2.2.6 Safe Transit Operations

The RTA will regularly assess transit routes and corridors for safety issues and concerns on an ongoing basis, through its Safety Risk Management (SRM) process, as outlined in its Agency Safety Plan (ASP). This assessment of hazards and risks includes an analysis of data collected through a variety of Safety and Operations activities, including but not limited to: accident and incident reports and investigations, internal and external safety audits, rule compliance checks or “blitzes,” and safety assurance checks. If persistent safety concerns are found on any route or corridor, the Safety Department will develop and implement a Corrective Action Plan (CAP) to address and/or mitigate the issue. Mitigations and corrective actions are continually monitored by Safety to determine whether they are effective at reducing the level of safety risk. If the safety assessment shows that the level of safety risk is significant enough, the Safety Department and the appropriate point-of-contact(s) in Operations may jointly recommend a service adjustment to one or more individual transit routes or to another element of the system that is causing the unsafe condition.

Safety concerns include, but are not limited to, physical hazards or vulnerabilities that can cause harm to RTA staff, transit passengers, and/or the community, as well as organizational hazards such as allocation of resources, inadequate training, lacking communication, and lacking oversight.

Safety performance measures are discussed monthly in RTA’s internal executive-level safety committee, the Operations Safety & Security Review Committee (OSSRC). This meeting provides an

additional opportunity for departments to share information on emerging safety trends or concerns, and work collaboratively to address them. If the OSSRC recommends service adjustments or other mitigations that have a direct impact on RTA's delivery of transit service, the actions will be coordinated by the Chief Safety Officer or designee and the appropriate Director or Manager in Operations.

2.3 Reporting Schedule

RTA will provide regular, public reports and dashboards on the above mentioned performance measures. These reports and dashboards will be available to the public via the RTA website and will be presented to the RTA Board of Commissioners on a regular basis.

Table 5: Performance and Evaluation Reporting Schedule

Performance Measure	Monthly (Dashboard only)	Quarterly	Annually
Route Productivity	X	X	X
Schedule Reliability	X	X	X
Passenger Loads	X	X	X
Ridership	X	X	X
Route Efficiency		X	X
Safety Statistics	X		
Safety Report			X
Routes flagged for adjustment		X	X

The monthly performance report will be in the form of an updated dashboard presenting the information on a route-by-route basis. A summary report of monthly performance dashboards, with a preliminary analysis of trends will be presented on a quarterly basis. Route efficiency measures will be reported on a quarterly basis to account for the seasonal variability of transit usage and revenue.

In addition to the reporting of performance measures the RTA will provide a quarterly report of routes that have been identified for potential adjustments and an assessment of the effectiveness of adjustments recently implemented.

All performance measures for a given calendar year will be summarized in an annual, year-in-review report presented to the Board and public in February of the following calendar year.

Apart from, but related to, this annual report, an annual safety report is provided to the Board and public, typically in December of each year, and includes a review of CAPs, accidents and incidents, and identified system hazards and concerns.

3. Fixed Route Service Design

The RTA uses the following service design guidelines to develop transit routes and the overall transit network. Based on industry best practices for designing service, these guidelines help us enhance transit operations and improve the rider experience. The guidelines include both qualitative considerations and quantitative standards for comparing and measuring specific factors.

3.1 Types of Fixed Route Service

The RTA operates several types of fixed route transit services throughout the region. The lines range from Express Service with very few stops, to Local and Circulator services with frequent stops.

The RTA operates the following classes of fixed route transit services:

- Express Service: These routes are regionally servicing lines that connect major destinations throughout the metropolitan area. They are designed to provide fast service between regions within the service area with stops only at key destinations.

- Rapid Service: Routes serving major corridors with limited stops, usually evenly spaced along the route. Stop spacing is greater than that of select and local service.

- Select Service: These routes will be frequent and feature some of the characteristics Rapid Service but will not quite meet the criteria of Rapid Transit in terms of frequency or hours of operation (service span). Stops will be more frequent than Rapid Service.

- Local Service: Routes operating major and minor corridors with frequent, locally serving stops that provide neighborhood level service.

- Circulator Service: Provide circulation within a neighborhood. Usually operated with smaller vehicles instead of full-size vehicles.

- Flex Service: A hybrid of fixed-route and demand-response transit service. Flex routes serve specific stops via a designated schedule but may be scheduled as demand response service within a designated zone provided the ability to adhere to fixed time points. Flexible service is appropriate only in low demand areas.

- Ferry Service: Ferry service operates across waterways, connecting designated terminals. Ferry service can provide passenger service and/or carry vehicles.

With the exception of ferry service, a single route may operate as more than one service type throughout the course of service. For example, the transit needs along a corridor may vary, requiring local service on one segment and select or rapid service on another.

3.2 Designing Service

The RTA uses the following service design guidelines to develop transit routes and the overall transit network. Based on industry best practices for designing service, these guidelines help us enhance

transit operations and improve the rider experience. The guidelines include both qualitative considerations and quantitative standards for comparing and measuring specific factors.

3.2.1 Safe Operations

The RTA seeks to ensure all routes provide for the safe operation of transit service. Routes should be designed to minimize risk to RTA staff and passengers, and to the community as a whole. All new and proposed routes will be assessed for safety concerns and risks through the SRM process. Potential routes or route segments deemed unsafe—in other words, those determined to have an unacceptable level of safety risk associated—will be added to the Hazard Log and evaluated to determine interventions to improve safety. To the extent possible, interventions will begin with focused adjustments in order to minimize any unintended impact to the whole line or route. If no such interventions can be made to reduce safety risk to an acceptable level, the RTA may consider changing the route entirely to a path that reduces or eliminates risk.

3.2.2 Network Connections

Routes should be designed in the context of the entire transportation system, which includes local and regional bus routes, light-rail lines, commuter rail lines and other modes. When designing a network of services, the RTA should consider locations where transfer opportunities could be provided for the convenience of customers and to improve the efficiency of the transit network. Where many transfers are expected to occur between services of different frequencies, timed transfers should be maintained to reduce customer wait times.

3.2.3 Multiple Purposes and Destinations

Routes are more efficient when designed to serve multiple purposes and destinations rather than specialized travel demands. Routes that serve many rider groups rather than a single group appeal to more potential riders and are more likely to be successful. Specialized service should be considered when there is sizable and demonstrated demand that cannot be adequately met by more generalized service.

3.2.4 Easy to Understand, Appropriate Service

A simple transit network is easier for riders to understand and use than a complex network. Routes should have predictable and direct routings, and the frequency and span of service should be appropriate to the market served. As budget allows, routes should be targeted for a minimum service level of at least every 60 minutes. If a route cannot support this frequency level, it should be a candidate for alternative services as funding allows and the service meets the allocation criteria. Routes should serve connection points where riders can transfer to frequent services, opening up the widest possible range of travel options.

3.2.5 Span of Service and Service Periods

A route's start and end time, or span of service, and the days of week that it operates are directly related to its usefulness to potential riders. Passenger demand and RTA's financial capacity are key considerations in setting the span of service and days of service for individual lines. RTA's service types provide a consistent structure to establish minimum service spans.

The minimum span of service guidelines defines the minimum period of time that routes in the different service types should operate (see Table 6). However, service can start earlier or end later if demand warrants.

Table 6: Service Span Guidelines

	Express	Rapid	Select	Local	Circulator	Flex	Ferry
Weekdays Begin no later than:	5:00 AM	5:00 AM	5:00 AM	5:00 AM	5:00 AM	*As demand warrants*	6:00 AM
End no earlier than:	12:00 AM	12:00 AM	12:00 AM	1:00 AM	12:00 AM		9:00 PM
Saturdays Begin no later than:	5:00 AM	5:00 AM	5:00 AM	5:00 AM	*Saturday service where appropriate*	*As demand warrants*	6:00 AM
End no earlier than:	12:00 AM	12:00 AM	12:00 AM	1:00 AM			11:00 PM
Sundays Begin no later than:	5:00 AM	5:00 AM	5:00 AM	5:00 AM	*Sunday service where appropriate*	*As demand warrants*	6:00 AM
End no earlier than:	12:00 AM	12:00 AM	12:00 AM	1:00 AM			9:00 PM

Service periods are identified as peak and off-peak as follows:

AM Peak: 6:00 AM – 9:00 AM
Midday: 9:00 AM – 3:00 PM
PM Peak: 3:00 PM – 6:00 PM
Evening: 6:00 PM – 10:00 PM
Late Night: 10:00 PM – 1:00 AM
Overnight: 1:00 AM – 6:00AM

3.2.6 Service Frequency

Service frequency, or headways, refers to the time interval between two vehicles traveling in the same direction on the same route. Frequency has a major influence on transit usefulness and its ridership; high frequency service is a fundamental requirement for attractive service. At the same time, frequency has a significant impact on operating costs, and service resource requirements increase with improvements in service frequency.

The frequency on a route is determined by demand and policy. Routes serving corridors with higher ridership demand warrant higher frequency service (more vehicles per hour, where vehicles come more often), while routes serving corridors with lower ridership demand warrant lower frequency service (fewer vehicles per hour, where vehicles come less often).

Also, the delineation of minimum service frequencies is a policy decision that gives long-term consistency to the system and helps riders better understand and use the system. The service frequency minimums are used to balance passenger convenience, resources, and costs (see Table 7).

- Minimum headway guidelines are often used to specify a minimum level of service that should be operated on low ridership lines or during off-peak periods. Service frequency could be higher on heavy ridership lines where the level of service operated is more a function of passenger demand and vehicle loading guidelines.

- No route should operate at a lower frequency than every 60 minutes at any time (i.e. transit vehicles should come at least once every hour).

- Lines with frequencies between 10 and 60 minutes should operate on clockface headways whenever practicable. A clockface headway is any frequency that is evenly divisible into 60 minutes, such as 12, 15, 20, 30, or 60 minutes. Non-clockface headways are permissible when operational and scheduling constraints and concerns make clockface headways too costly. If headways are less than 10 minutes, the route is frequent enough that there is no benefit gained from clockface vs non-clockface headways.

- For routes with mixed service levels, the service frequency guidelines apply to the route's predominant segment with the higher service level, though ideally all segments have consistent service levels for simplicity.

Table 7: Service Frequency Guidelines – Minimum Headways in minutes

	Express	Rapid	Select	Local	Circulator	Flex	Ferry
Weekdays Peak: Off-Peak:	30 minutes 30 minutes	20 minutes 30 minutes	30 minutes 30 minutes	60 minutes 60 minutes	60 minutes 60 minutes	60 minutes 60 minutes	60 minutes 60 minutes
Saturdays Peak: Off-Peak:	30 minutes 30 minutes	30 minutes 30 minutes	30 minutes 30 minutes	60 minutes 60 minutes	60 minutes 60 minutes	60 minutes 60 minutes	60 minutes 60 minutes
Sundays Peak: Off-Peak:	60 minutes 60 minutes	40 minutes 60 minutes	60 minutes 60 minutes	60 minutes 60 minutes	60 minutes 60 minutes	60 minutes 60 minutes	60 minutes 60 minutes

Adjusting Service Frequency

Service frequency on a route may be adjusted based on the actual ridership and passenger loads experienced. High passenger loads may result in an increase in service frequency. Low passenger loads may result in a reduction in frequency. The adjustment of service will be based on an assessment of ridership and passenger loads for a route.

3.2.7 Vehicle Assignment Targets

Equipment shall be assigned to specific routes and trips according to the following guidelines. These guidelines may be modified if operations and scheduling needs require.

- Small 27' - 35' bus: Appropriate for lower volume routes where ridership does not require a standard bus, or for routes where specific operating concerns preclude use of a standard buses. May also be used for Flex services.
- Standard 40' Transit Bus: The standard equipment for local, select, rapid, and express services.
- Articulated 60' Bus: Appropriate for higher volume routes.
- Intercity Coach: Appropriate for regional express and commuter routes.
- Ferries: Appropriate for the nature of the service and capacity of available ferries.

3.2.8 Directness of Route

A route that operates directly between two locations is faster and more attractive to riders than one that takes a long, circuitous path. Circulators or looping routes do not have competitive travel times compared to walking or other modes of travel, so they tend to have low ridership and poor performance. Some small loops may be necessary to turn the vehicle around at the end of routes and to provide supplemental coverage, but such extensions should not diminish the overall effectiveness of the route. Directness should be considered in relation to the market for the service. Route deviations are places where a route travels away from its major path to serve a specific destination. For individual route deviations, the delay to riders on board the vehicle should be considered in relation to the ridership gained on a deviation. The total additional travel time for all through passengers should not exceed five (5) minutes for each rider boarding or alighting along the deviation.

In mathematical terms, this means:

$$\frac{\textit{Riders traveling through x Minutes of deviation}}{\textit{Boardings and alightings along deviation}} \leq 5 \textit{ minutes}$$

3.2.9 Service Duplication

Routes should be designed to avoid competing for the same riders. Studies indicate that people are willing to walk 1/4 mile on average to access transit, so in general routes should be no closer together than 1/2 mile. Services may overlap where urban and physical geography makes it necessary, where services in a common segment serve different destinations, or where routes converge to serve regional centers. Where services do overlap, they should be scheduled together, if possible, to provide effective service along the common routing.

Routes are defined as duplicative in the following circumstances:

- Two or more parallel routes operate less than one-half (1/2) mile apart for at least one mile, excluding operations within the New Orleans Central Business District or approaching a transit center where pathways are limited.

- A rider can choose between multiple modes or routes connecting the same origin and destination at the same time of day.

- Routes heading to a common destination are not spaced evenly, except for operations within the New Orleans Central Business District.

3.2.10 Route Length and Neighborhood Connections

A transit route should be long enough to provide useful connections for riders and to be more attractive than other travel modes. A route that is too short will not attract many riders, since travel times combined with the wait for the transit vehicle is not competitive comparted to the time it would take to walk. Longer routes offer the opportunity to make more trips without a transfer, resulting in increased ridership and efficiency. However, longer routes may also have poor reliability because travel time can vary significantly from day to day over a long distance. Where many routes converge, such as a major transit hub, they may be through-routed to increase efficiency, reduce the number of vehicles providing overlapping service, and reduce the need for layover space in congested areas. In some places, routes extend beyond regional centers and transit hubs to serve less dense residential neighborhoods. Where routes operate beyond centers, ridership should be weighed against the time spent serving neighborhood segments, to ensure that the service level is appropriate to the level of demand.

The percent of time spend serving a neighborhood segment, which is defined as ≤ 20% of the total mileage length of a route, should be considered in relation to the percent of ridership boarding and alighting on that segment.

$$\frac{\textit{Percent of time spent serving neighborhood segment}}{\textit{Percent of riders boarding or alighting on neighborhood segment}} \leq 1.2^2$$

3.2.11 Route Terminals

The location where a route ends and the vehicles wait before starting the next trip (layover space) must be carefully selected. Priority should be given to maintaining existing layover spaces at route terminals to support continued and future service. The safety and security of transit operators is also paramount. People who live or work next to a route end may regard parked vehicles as undesirable, so new route terminals should be placed where parked vehicles have the least impact on adjoining properties, if possible. Routes that terminate at a destination, such as a school, hospital, or jobs center, can accommodate demand for travel in two directions, resulting in increased ridership and efficiency. Terminals should be located in areas where restroom facilities are available for operators, taking into account the times of day when the service operates and facilities would be needed. Off-street transit centers should be designed to incorporate layover space.

3.2.12 Fixed and Variable routing

Routes should operate as fixed routes in order to provide a predictable and reliable service for a wide range of potential riders. However, in low-density areas where demand is dispersed, demand-responsive service may be used to provide more effective service over a larger area than could be provided with a fixed route. Demand-responsive service may be considered where fixed-route service is unlikely to be successful or where unique conditions exist that can be met more effectively through flexible service.

3.2.13 Transit Stops: Placement, Design, Spacing

<u>Stop Placement and Design</u>

The placement, configuration, and design of a transit stop should be determined relative to the conditions of the proposed location. The ideal transit stop should allow passengers to board and alight safely, while minimizing conflicts between transit vehicles, other traffic, and pedestrians.

Placement of a transit stop is determined by its relationship to the nearest intersection. Stops may be placed at any of the following general locations:

- Farside stops are located just after the vehicular travel lane crosses an intersection.
- Nearside stops are located just before the vehicular travel lane crosses an intersection.
- Mid-block stops are located in the middle of the block between intersections.

Configuration of a transit stop is determined by its relationship to the public right-of-way (ROW). Stops may be configured in the following manner:

- Curb Extension
- Parking Lane
- Vehicle Turnout

Design of a transit stop is determined by the available area for a transit stop within the ROW. Stops may be designed with a pole and waiting pad, bench, or shelter as space permits.
Primary goals for placing a stop relative to the nearest intersection are as follows:

- Stop placement should maximize the connections between the walkway system, the roadway system, and transit routes.
- Stops should be located in an area where typical improvements, such as a bench or shelter, can be placed in the public ROW.

Major considerations for determining the placement of a transit stop:

- Traffic and rider safety
- Transit operations - Minimize vehicle dwell time at each stop

Table 8: Stop Placement Situations and Preferred Placement

Situation	Preferred Placement
Any signalized intersection where vehicle can stop out of the travel lane	Farside
If vehicle turns left at intersection	Farside
Intersection with many right turns	Farside
Complex intersections with multi-phase signals or dual turn lanes	Farside
If vehicle turns right at intersection	Nearside
Vehicle accumulation exceeds farside vehicle zone	Nearside
If two stops are located at consecutive signalized intersections	Alternate nearside and farside to maximize advantage from timed signals
High volume of riders transferring vehicles at an intersection	Pair a nearside stop for one route with a farside stop for a crossing route at a shared corner of the intersection.
Major transit generators not served by stops at intersections	Mid-block
Transit Center	Off-street

Stop Design Guidelines

Current stop design guidelines are located in the RTA's 2015 Transit Facility Design Guidelines.

Stop Spacing

Vehicle stops should be spaced to balance the benefit of increased access to a route against the delay that an additional stop would create for all other riders. While close stop-spacing reduces walk

time, it may increase total travel time and reduce reliability, since vehicles must slow down and stop more frequently.

The different types of transit service are tailored towards serving different types of trips and needs. In general, services that emphasize ridership and speed (Express and Rapid routes) should have fewer stops, while services that emphasize coverage (Local, Circulators, Flex) should have more stops. Guidelines for stop spacing are shown in Table 9.

Table 9: Ideal Stop Spacing by Route Type

	Express	Rapid	Select	Local	Circulator	Flex*	Ferry
Typical Spacing	Varies based on transit demand	1-2 stops per mile	2-4 stops per mile	4-5 stops per mile	4-8 stops per mile	1-2 stops per mile	Varies based on terminal locations
Minimum Spacing Distance	N/A	2,640 feet (1/2 mile)	1,320 feet (1/4 mile)	1,056 feet (1/5 mile)	660 feet (1/8 mile)	2,640 feet (1/2 mile)	N/A

*Stop Spacing on Flex routes should be sufficient to permit the vehicle to deviate as requested. Typical spacing for Flex service is based on scheduled stops only.

Though stop spacing guidelines provide a general target for stop spacing along transit routes, the placement of transit stops will necessarily vary due to localized conditions along the transit corridor. Conditions that may impact the placement of transit stops and justify more or fewer stops per mile include:

- Ridership Demand. Transit stops should maintain sufficient ridership activity in order to justify the stop.
- Major Trip Generators. Certain places of interest generate significant demand for transit and warrant a stop nearby. These places can include shopping centers, libraries, grocery stores, schools, and social service centers.
- Places of Community Interest. Although they may not generate high ridership, some places of interest warrant a nearby stop because they are important destinations for certain populations and the community interest. Such places can include medical offices, senior centers, and veteran's facilities.
- Street Grid. The street grid along a transit corridor will impact the placement of transit stops. For example, a street with long distances between intersections will necessarily have fewer stops, as stops are ideally placed at intersections.

• Pedestrian Environment. Because transit users are pedestrians, the street environment around a transit stop must be amenable to pedestrians, accessible for all users, and free of barriers. Intersections that are more walkable and oriented towards the pedestrian are more appropriate for transit stops than intersections that focus on auto traffic.

• Land Use Density. The density of development surrounding a transit stop is a major driver of ridership demand at the stop. Areas with insufficient land use density would have fewer stops, whereas areas with higher land use density would have more stops.

• Passengers Onboard Transit Vehicle. The typical number of riders onboard transit vehicles through an area will impact the tradeoff between more stops for coverage and fewer stops for faster transit. More priority should be given to limiting transit stops in areas where transit vehicles are more full, in order to provide faster service for the greatest number of people.

3.2.14 Roadway Design Goal

New transit routes should not be operated along streets that do not meet minimum standards, such as for vehicle turning radius, pavement strength/loading, lane width, roadway grade, shoulder width on rural road and highways (for pedestrian waiting and safety) and overhead clearance. Refer to the RTA's Transit Facilities Design Guidelines for specific details.

3.3 Shelters and Stop Amenities

3.3.1 Placement and Design: Stop Amenities and Transit Shelters

<u>Transit Shelter and Amenities Placement</u>

Transit stop amenities should be installed based on ridership in order to benefit the largest number of riders. Transit stop amenities include such things as transit shelters, seating, waste receptacles, lighting, information signs, maps, and schedules. In addition to ridership, special consideration may be given to locations with high connections to other lines or the presence of community facilities.

Eligibility Scoring Criteria

The RTA uses a comprehensive scoring system to determine which transit stops are eligible to be considered for a transit shelter or bench. The scoring system considers how many people wait at a stop, how long they are likely to wait, and who is likely to be waiting.

Measured by the following criteria, transit stops must score a minimum of 30 points to be eligible for a new shelter, 15 points for a new bench:

• How many people are waiting?

  o Boardings – 1 point per average weekday boarding

• How long are people waiting? (up to 10 points)

- Transfers – 7 points if the stop is located at a location with transfer opportunities between at least four different transit lines.

- Frequency – 3 points if the stop is served by fewer than two vehicles per hour during the weekday AM peak, midday, and PM peak periods.

- Who is waiting? (up to 10 points)

  - Transit Propensity – 5 points if the stop is in an area in which the households within a quarter-mile (1/4) walkshed have a higher transit propensity than the service area average. Transit propensity is determined as part of the Transit Propensity Index (TPI)

  - Human services facilities – 5 points if one or more of the following are within 750 feet of the stop: assisted living facility, dialysis center, hospital, pharmacy/clinic, public library, public school, recreation center, senior center, or grocery store.

  Installation priority is given based on total score. Regardless of other factors, a transit stop must have at least 15 daily riders to be considered for a shelter and 8 daily riders to be con sidered for a bench. This is to protect against

Circumstances that may preclude installation of transit stop amenities are as follows:

- Plans are in place to relocate or close the stops.

- Amenities would compromise pedestrian or operational safety.

- Adequate right-of-way is not available

- Environmental factors.

Transit Shelter Design

The design and placement of a shelter at a specific stop will be dictated by the RTA's Transit Facility Design Guidelines, in accordance with City, State, and Federal rules in relation to historic preservation and accessibility.

Geographic Equity

To ensure riders throughout the RTA's service areas are provided substantially similar amenities, potential shelter locations will be evaluated for geographic disparity with a goal of not more than a 7% disparity between neighborhoods based on the ratio of transit stops within a given neighborhood to the number of residents.

Shelter Requests

Riders and community members may request the placement of a shelter by contacting the RTA's

Ride Line at 504-248-3900 or emailing comments@norta.com. The request information is used by the RTA to better understand unique conditions that may classify the transit stop as a priority location. Unfortunately, the RTA is unable to place shelters at all locations for which requests are received.

3.3.2 Guidelines for Private and Custom Shelters and Amenities

Private parties may install their own transit shelter on their private property at their own cost and subject to their ongoing maintenance, and in compliance with City, State, and Federal regulations. Depending on the shelter's design and the number of customers served, RTA may maintain transit information in the shelter, if requested.

3.3.3 Shelter Removal

The RTA will evaluate ridership data semi-annually and any transit stop at which average daily boardings have dropped to less than 15 passengers per day for two consecutive evaluation periods will be subject to removal and redeployment. Shelters may also be removed if site conditions change in such a way that accessibility, pedestrian clearance, and/or traffic safety is impacted. Notice of not less than 30 days will be provided on the transit shelter to alert riders of the pending action.

Transit shelters may be temporarily removed from a location if required for a public or private construction project. If a shelter is removed for such a project, all effort will be made to provide similar accommodations within a reasonable distance from the impacted transit stop.

4. Service Guidelines for Special Events and Special Services

New Orleans is a city rich with festivals, parades, and other events that may impact or disrupt transit service. During special events the RTA will seek to maintain quality service during special events by increasing service frequency on routes that are likely to experience overcrowding due to event induced increases in ridership.

If a special event, such as a parade, requires the agency to detour service the RTA will provide detoured service on the nearest corridor that can accommodate safe transit operations. The RTA may also increase service on existing routes operating parallel to the impacted corridors.
The RTA will make every effort possible to communicate changes to service due to special events in advance.

5. Adding, Reducing, and Changing Service

The RTA uses the following guidelines when adding or reducing service as well as in the ongoing development and management of transit service.

Table 10: Guidelines for Adding and Removing Service

Guideline	Measures
Passenger Loads	Passenger Load Threshold
Schedule Reliability (OTP)	On-Time Performance
Transit Propensity	Predicted ridership demand
Route Productivity	Passengers per hour, PMT/mile

5.1 Adding Service: Investment Priorities

The RTA invests in service by using the guidelines in the following order:

1. Passenger Loads
2. Schedule Reliability
3. Transit Propensity
4. Route Productivity

5.1.1 Passenger Loads and Schedule Reliability

The RTA's first investments are based on the passenger load and schedule reliability guidelines used to assess service quality. Routes that do not meet the standards are considered to have low-quality service that has a negative impact on riders and could discourage them from using transit. These routes are the highest priority candidates for investment. Routes that are through-routed but suffer from poor reliability may be candidates for investment, but because of the size and complexity of changes to through-routes, they would not be automatically given top priority.

5.1.2 Transit Propensity

The RTA uses transit propensity to identify corridors with high likelihood of transit usage. This forecasting of transit demand, or propensity is primarily impacted by changes in population demographics and job centers. As housing and employment patterns change, the RTA will continually reevaluate corridors to determine if transit service should be adjusted based on likely propensity.

5.1.3 Route Productivity

The final guideline the RTA uses to determine if additional service is needed is the route productivity rank. Routes with productivity in the top 25 percent perform well in relation to other routes; investment in these services would improve service where it is most efficient.

5.2 Reducing Service

When the RTA must reduce service, these guidelines help identify the services to be reduced. While the guidelines form the basis for identifying services for reduction, RTA also considers other factors. These include community input, opportunities to achieve system efficiencies and to simplify the network through restructures, and the potential for offering alternative services. As the agency's long-range plan is developed and updated, we will also consider the long-range service network and priorities, particularly when reducing service through restructures. The use of these other factors means that some routes may not be reduced in the priority order stated below. Some factors that RTA considers when reducing service include:

The relative impacts to all areas in the region in order to minimize or mitigate significant impacts in any one neighborhood or area. RTA seeks to balance reductions throughout the region so that no one area experiences significant negative impacts beyond what other areas experience.

Ways to minimize impacts through the type of reduction, particularly through restructuring service. Reduction of service can range from deleting a single trip to eliminating an entire route. The RTA will also consider restructuring service in an area to make it more efficient or will consider alternative services. By consolidating service to eliminate duplication, and by closely matching service with demand, RTA may be able to provide needed trips at reduced cost and minimize impacts on riders. Service consolidation may lead to increased frequency of service on some routes to accommodate projected loads, even though the overall result of the restructure is a reduction in service hours.

The identified investment need on corridors. While no route or area would be exempt from change during a large-scale system reduction, RTA will try to maintain the target level of service on corridors with very high transit propensity, and will seek to avoid reducing service on corridors that are already below their target service levels.

Applicability of alternative services. In many areas of New Orleans, and especially in less dense areas, RTA may provide cost-effective alternatives to fixed-route transit service. These alternatives could avoid a significant reduction in the coverage RTA provides while better meeting community needs. During service reductions RTA will consider the use of alternative services that can reduce costs on corridors with routes that are in the bottom 25 percent in one or both productivity measures. Alternative services will be evaluated differently than the fixed-route system, according to the measures and performance thresholds developed through the Alternative Services Program.

5.2.1 Reduction Priorities

Priorities for reduction are listed below. Within all of the priorities, RTA ensures that social equity is a primary consideration in any reduction proposal, complying with all state and federal regulations.

1. Reduce service on routes that are below the 25 percent productivity threshold for a given time period. Routes that are below the 25 percent productivity threshold on both measures are considered for reduction before routes that are below the 25 percent productivity threshold for only one measure in the following order:

a. Routes that duplicate or overlap with other routes on corridors.

b. Peak-only routes that do not have a travel time or ridership advantage.

c. Routes that operate on corridors that are above their target service levels.

d. Routes that operate on corridors that are at their target service levels. Reductions or deletions of these routes would worsen the deficiency between existing service levels and target service levels.

2. Restructure service to improve efficiency of service.

3. Reduce service on routes that are above the 25 percent productivity threshold for a given time period. Routes that are between 25 and 50 percent productivity threshold on both measures care considered for reduction before routes that are above the 50 percent productivity threshold for either measure, in the following order:

a. Routes that duplicate or overlap with other routes on corridors.

b. Any other peak-only route that was not considered as part of priority 1.a (above).

c. Routes that operate on corridors that are above their target service levels.

d. Routes that operate on corridors that are at their target service levels. Reductions or deletions of these routes would worsen the deficiency between existing service levels and target service levels.

5.3 Implementation

RTA revises service three times a year—in the winter, spring and fall. In rare cases of emergency or time-critical construction projects, RTA may make changes at times other than the three regularly scheduled service changes. However, such situations are kept to a minimum because of the high level of disruption and difficulty they create. Some alternative service projects may be implemented at any time and do not need to follow the same schedule as fixed-route service.
Each year, RTA publishes a Service Guidelines report that outlines the analysis of target service levels and route performance management. The annual report will include a comprehensive list of the prior years' service changes and will identify and discuss service changes that address performance-related issues. RTA works to provide transparency in RTA's process and help jurisdictions plan for the future by conducting regular outreach throughout the region about the results of the Service Guidelines Report.

6. Title VI and Environmental Justice Compliance

The RTA follows FTA Circular 4072.1B “Title VI Requirements and Guidelines for Federal Transit Administration Recipients,” Chapter 4.4, and the RTA’s own “Environmental Justice and Social Equity Policy (2013).” Both policies require that transit decisions do no result in a disparate impact to classes – race, color, and national origin - protected under Title VI.

All changes to transit service are subject to review and public comment as per the RTA’s Environmental Justice and Social Equity Policy.