

# Niagara Frontier Transportation Authority Metro Bus & Rail Service Delivery and Evaluation Guidelines

**June 2012**

**Adopted, July 23, 2012**



# Niagara Frontier Transportation Authority

## Metro Bus & Rail

### Service Delivery and Evaluation Guidelines

#### Introduction

Transit service delivery and evaluation guidelines provide an objective basis for assessing the performance of existing transit service, identifying unmet transit service needs, designing and evaluating new service proposals and recommending changes and/or improvements to existing service. The NFTA Board of Commissioners initially approved service standards in 1992 and reaffirmed them in 1995. These revised/new service guidelines and standards were developed based on current industry practices and the service framework and guiding principles for change recommended in the recently completed Erie County Transit Service Restructuring and Fare Study-Strategic Assessment. The service framework and principles are summarized as follows. Metro should:

- Serve key markets and focus on high demand areas and corridors to achieve greater ridership and productivity.
- Design service and fare structures to be easy to understand and to use.
- Encourage spontaneous use with regular and frequent service.
- Provide for a positive customer experience.
- Maximize network cost effectiveness and efficiency.
- Design highly efficient service in terms of routes and schedules.
- Design and plan a financially sustainable system and provide a platform for future transit investment.

Metro will regularly monitor and update transit service statistics and metrics quarterly and will review the performance of each route annually. That review will provide the basis for developing service adjustments to best meet local needs within the framework of the service guidelines and standards and the funding and resources available.

#### Route Types

It is important to distinguish among the various types of routes operated by Metro. These routes types are defined below. A number of service guideline categories have different requirements depending on route type.

- **Primary/Core** routes generally operate along major travel corridors mostly in Buffalo and the first ring suburbs and provide a high level of service. These routes also generally exhibit above average ridership (e.g. more than 2,000 average weekday boardings) and financial performance. Metro Rail is included in this category.

- **Secondary routes** generally operate along secondary corridors including crosstown service in Buffalo and service oriented to suburban areas. In most cases they are designed to connect with and support the primary routes.
- **Limited Express** routes provide commuter type service between suburban areas and outlying municipalities and downtown Buffalo during peak periods. They operate in both Erie and Niagara Counties and mostly over Expressways. They provide regional service with fewer stops to provide a more direct experience.
- **Local Collector Express** routes provide commuter type service between suburban areas or outlying municipalities and downtown Buffalo during peak periods. They operate in both Erie and Niagara Counties over both local roads and Expressways.
- **Community Circulator** routes provide localized service in specific communities. They operated in both Erie and Niagara Counties.
- **School Day Only** routes operate primarily within the City of Buffalo and are designed and adjusted annually based on high school enrollment and student travel patterns to supplement regular fixed route service during peak periods.

## Guidelines & Standards for Design and Delivery of Service

### Service Coverage:

Coverage refers to the geographic extent of fixed route transit service within Metro's service area. Transit systems are not able to provide transit service to every potential rider who needs or wants service as such universal service would be prohibitively expensive. Metro's service coverage guidelines prescribe transit availability based on transit demand potential along with development patterns and significant activity centers. Transit demand potential is measured by a transit orientation composite index that summarizes five key transit supportive demographic characteristics including population density, financially disadvantaged (in poverty) population, zero vehicle households, youth population and senior population for each census tract/traffic analysis zone in Metro's service area. Each census tract/traffic analysis zone is ranked as having very high, high, moderate, low or very low transit demand potential. Based on these rankings the following guidelines for service coverage should apply.

- Metro fixed route service should be available within:
  - ¼ mile of areas with high or very high transit demand potential.
  - ½ mile of areas with moderate transit demand potential.
- Areas with low or very low transit demand potential do not warrant regular fixed route service; however, limited fixed route or alternative services will be evaluated based on a demonstrated demand, the cost of providing service and the availability of resources.
- Metro will also strive to provide service within ¼ mile of significant activity centers, such as employers, health care facilities, regional retail centers, educational institutions and social service facilities.

## Route Design –Directness

Metro routes shall be designed to operate as directly as possible to and/or from a major destination in order to minimize passenger travel time.

- Routes should operate on major arterial streets as much as possible.
- To the extent possible, two-way service should be provided on the same street.
- Express service should be routed in the most direct manner with the least number of stops possible.
- Deviations from the basic route alignment to serve activity center or high potential demand neighborhoods should only be made when they have the potential to attract a significant number of new riders equal to or exceeding the riders per hour standard for the corresponding route category.
- Additional time to operate route deviations should not exceed five minutes (one-way) or ten percent of the one-way run time, whichever is less.

## Route Design – Variations

It is sometimes more efficient to provide service to a certain area with one route having several branches than to operate several different routes. In addition, some bus trips on a route may not go to the end of the line due to very low ridership in that area at certain times during the day (i.e. turn back/short turn). To provide a user-friendly service and to encourage maximum use of the system by all current and potential riders, the following guidelines shall apply:

- A route should have no more than two distinct branches/variations.
- A route should have no more than one turn back/short turn.

## Span of Service/Hours of Operation

Span of service refers to the hours that service is available and is measured as the time between the first trip and last trip operated on a route. A wider span allows for more flexibility for passengers who work second shifts or use transit for non-work trips, but requires more service and higher operating costs. The table below displays the span of service guidelines by route type. Ridership levels on individual routes and funding levels may determine a shorter or longer span of service than the guideline listed.

Span of Service		
Weekday		
Primary/Core	6:00 am to 12:00 am	18 Hours
Secondary	6:00 am to 9:00 pm	15 Hours
Limited Express	AM and PM peaks	
Collector Express	AM and PM peaks	
Community Circulator	Will vary by route based on demand	
School Day Only	AM and PM peaks	

<b>Span of Service</b>		
<b>Saturday</b>		
<b>Primary/Core</b>	7:00 am to 11:00 pm	16 Hours
<b>Secondary</b>	7:00 am to 7:00 pm	12 Hours
<b>Limited Express</b>	No Service Operated	
<b>Collector Express</b>	No Service Operated	
<b>Community Circulator</b>	Will vary by route based on demand	
<b>School Day Only</b>	No Service Operated	

<b>Span of Service</b>		
<b>Sunday</b>		
<b>Primary/Core</b>	7:00 am to 10:00 pm	15 Hours
<b>Secondary</b>	9:00 am to 7:00 pm	10 Hours
<b>Limited Express</b>	No Service Operated	
<b>Collector Express</b>	No Service Operated	
<b>Community Circulator</b>	Will vary by route based on demand	
<b>School Day Only</b>	No Service Operated	

### Service Frequency

Service frequency can have a major influence on transit ridership and attracting new riders, but at the same time frequency has a significant impact on transit operating costs and vehicle requirements. Therefore it is important to balance service frequency with existing ridership, the potential to attract new riders and available resources. The frequency of service on a particular route (i.e. headway of time interval between scheduled trips) will be based on the existing and/or projected ridership. Service will operate more frequently on high-demand routes and during peak periods. Guidelines for service frequency are listed below and will be applied to assure that a reliable and attractive, but appropriate level of service is available throughout the day. Clock face headways (e.g. every 15, 20, 30 or 60 minutes) should be maintained whenever possible. This helps make the service easier to understand, more predictable to the rider and can help facilitate better transfer connections.

Service Frequency					
	Weekday			Saturday	Sunday
Route Type	Peak	Base	Evening	Base	Base
Primary/Core	10 min.	30 min.	60 min.	60 min	60 min
Secondary	15 min.	40 min.	120 min.	120 min.	120 min.
Limited Express	As needed during peak periods			No Service Operated	
Collector Express	As needed during peak periods			No Service Operated	
Community Circulator	As needed will vary by route				
School Day Only	As needed during peak periods			No Service Operated	

## Passenger Load Guidelines

The intent of load guidelines is to balance passenger comfort and safety with operating costs and efficiencies. Most passengers should be able to obtain a seat on a Metro vehicle for at least a major portion of the trip. During peak travel periods, some patrons may be required to stand. There is an acceptable number of standees before the bus is considered overcrowded. Also, the maximum time that an individual passenger should be expected to stand on a given trip is 15 minutes. The load guidelines shown below represent the total number of riders as a percent of the number of seats on the vehicle.

Passenger Load Guidelines		
Route Type	Peak Hours	Off-Peak Hours and Weekends
Primary/Core	140%	120%
Secondary	120%	100%
Limited Express	100%	No Service Operated
Collector Express	100%	No Service Operated
Community Circulator	120%	100%
School Day Only	140%	No Service Operated

If routes or trips exceed the maximum load factor on a regular basis or over a sustained period of time, Metro will evaluate the potential for improving the service frequency or adjusting schedule times.

## Service Reliability

It is critical that Metro customers have confidence and a reasonable guarantee that Metro service will operate reliably and in accordance with published timetables. No Metro vehicles should arrive before the scheduled time; however, vehicles may operate late for a variety of reasons including varying traffic and weather conditions, construction activity, mechanical breakdowns, detours and accidents. Every effort will be made to ensure that all Metro vehicles operate on-time and the following on-time performance standard shall apply for all types of service.

- 84% of all vehicles should arrive at scheduled time points on-time.

If a route or individual trip is consistently running late, then a review of the schedule will be conducted to determine the cause and modifications to the schedule or running times will be initiated at the earliest opportunity.

Metro, like all other transit agencies, occasionally misses scheduled trips due to mechanical problems, accidents or shortage of drivers or vehicles. Every effort is made to operate 100 % of scheduled trips; however, the following annual guidelines for missed trips shall apply for all types of service.

- A minimum of 99% of annual scheduled trips shall be operated.

## Bus Stop Placement and Spacing

Bus stop location and spacing are important to existing and potential passengers in terms of the accessibility of transit. Bus stop placement requires a balance between maximizing customer access and minimizing service delays as well as a sensitivity to adjacent land uses. With an inadequate number of stops, passengers may be discouraged from accessing the system. With too many stops, the service is slowed and can become less attractive to customers. In addition, customers must feel comfortable waiting at a stop and the impacts on adjacent property owners should be minimized to the extent possible. The following factors are considered by Metro in the placement of bus stops.

- Walking access distance for passengers traveling to and from stops.
- Operational safety for buses and bus operators.
- Providing a relatively safe and comfortable waiting area for passengers.
- Minimizing operating delays in terms of the proximity of adjacent stops.
- Impacts on adjacent properties.

Generally, bus stop spacing should be closer together in urbanized areas and further apart in suburban and outlying areas. In rural areas “flag stops” may be offered. Metro’s current bus stop spacing guidelines are related to residential density along a route as listed below.

<b>Bus Stop Placement and Spacing</b>	
<b>Persons per Sq. Mile</b>	<b>Stop Spacing</b>
Over 5,000	Every Other Block
2,000 – 5,000	5 to 7 per mile
Under 2,000	Flag Stop

## Productivity and Economic Performance Guidelines

Metro uses ridership productivity and economic performance as its primary measures of transit performance. Ridership productivity is measured in terms of the number of passengers carried for each hour of service provided and economic performance is measured in terms of farebox recovery or the ratio of farebox revenue to operating costs. A target performance guideline for each of these measures is calculated for each route type as the average of all routes in the route type. Routes that fall below the productivity and economic performance guideline will be targeted for review and a range of actions will be recommended to improve ridership and productivity.

### Ridership Productivity

Passenger boardings per revenue hour are calculated by dividing the number of average weekday boardings per route (reported by Metro’s Automatic Passenger Counter (APC) data) by the weekday number of revenue hours of service. This measure is calculated and monitored quarterly. The passenger per revenue hour guideline is based on existing

conditions, historical trends, vehicle capacity, comparison with peer agencies, and nature of route type.

<b>Passengers per Hour Guideline</b>			
<b>Route Type</b>	<b>Weekday</b>	<b>Saturday</b>	<b>Sunday</b>
<b>Primary/Core</b>	37	37	26
<b>Secondary</b>	24	21	15
<b>Limited Express</b>	18	No Service Operated	
<b>Collector Express</b>	20	No Service Operated	
<b>Community Circulator</b>	8	8	8
<b>School Day Only</b>	28	No Service Operated	

### **Farebox Recovery**

The ratio of farebox revenue to operating costs is an important measure of the economic effectiveness of Metro's service. System wide farebox recovery is calculated and monitored monthly. Route level farebox recovery is calculated and monitored quarterly. The farebox recovery for each route type as shown below is based on existing conditions, historical data, comparison with other peer agencies' recovery, productivity and efficiency of operational resource utilization.

<b>Farebox Recovery Guideline</b>			
<b>Route Type</b>	<b>Weekday</b>	<b>Saturday</b>	<b>Sunday</b>
<b>Primary/Core</b>	40%	39%	27%
<b>Secondary</b>	25%	22%	16%
<b>Limited Express</b>	19%	No Service Operated	
<b>Collector Express</b>	21%	No Service Operated	
<b>Community Circulator</b>	7%	8%	8%
<b>School Day Only</b>	26%	No Service Operated	

### **Service Evaluation Process**

The objectives of the service evaluation process are to determine that the service being operated represents the most cost-effective use of available resources and to improve service design and productivity. The application of the productivity and economic standards described in the previous section is a flexible process and other factors may be considered in the evaluation process. An annual report detailing the performance evaluation and recommendations for addressing poorly performing service will be prepared and reviewed with the NFTA Board.



## Evaluation of Existing Service

Route performance will be evaluated on an annual basis or as necessary based on funding considerations using the following measures:

- **Average number of weekday riders** and the trend over a 3-year time period.
- **Riders per revenue hour** compared to the established standard.
- **Farebox recovery** compared to the established standard.
- **Community service needs**, such as the existence of medical facilities, locations that service seniors, people with disabilities or low income populations that depend on public transportation.
- **Business arrangements**, either existing or proposed with employees, colleges/universities or other institutions will be considered.

## Actions to Improve Ridership and Productivity

Routes that are identified as underperforming based on the above noted target guidelines will be evaluated in an appropriate level of detail to determine the causes of the below average performance. In addition, employee, customer and stakeholder input may be considered.

Following are a series of potential actions to be recommended to improve a route's performance:

- **Routing adjustments** such as realigning or discontinuing unproductive segments of a route or reorganizing a group of routes.
- **Marketing and promotional strategies.**
- **Operational adjustments**, including adjusting headways or frequency of service, adjusting the span of service, eliminating service at specific time periods or deleting specific trips.

If service productivity cannot be improved through any of the above actions or if budgetary considerations require it, then a poor performing route should be considered for elimination.

In addition, the evaluation of existing routes is not intended to preclude changes to routes that meet minimum target guidelines and are performing adequately. It may be possible to improve the productivity of these routes by making minor changes to service frequency, span of service or trip times. There will always be a need for minor changes and operational adjustments on a regular basis based on performance monitoring, customer comments and employee feedback.

## Evaluation of New Service Proposals

New service proposals or requests will be evaluated in terms of market potential, community or business support, public/private partnership opportunities, vehicle and operator availability and cost to determine the likelihood of meeting or exceeding performance standards. New or significantly modified routes require at least a year to mature and build ridership and will only be subject to the annual service performance evaluation after operating for a year.

## **Cost Recovery Model**

In addition to the traditional service guidelines, new service requests will be initially evaluated based on the possibility to seek 100% cost recovery for service requests. Upon a formal request for service the following application process will be followed:

- Planners develop customer needs assessment for applicant
- Evaluate options based on company location & existing service
- Present service options to applicant
- Develop contract
- Implement service
- Develop customized marketing plan – Company Branded Schedule
- Monitor and evaluate service

## **Service Monitoring & Evaluation Timeline**

Transit service evaluation is ongoing and continuous. The following evaluation process timeline is designed to provide direction to service planning and coordinate the process with other organizational planning, such as the budget process.

Data collection and monitoring - Continuous

June –August - Performance Evaluation

October - Annual Performance Report

## NFTA Existing Fixed Routes

<i>Route #</i>	<i>Name</i>	<i>Existing Service Type</i>	<i>Proposed Service Type</i>
1	WILLIAM	Secondary Route	No Change
2	CLINTON	Secondary Route	No Change
3	GRANT	Primary Route	No Change
4	BROADWAY	Primary Route	No Change
5	NIAGARA-KENMORE	Primary Route	No Change
6	SYCAMORE	Primary Route	No Change
7	BAYNES-RICHMOND	Secondary Route	No Change
8	MAIN	Secondary Route	No Change
11	COLVIN	Secondary Route	No Change
12	UTICA	Primary Route	No Change
13	KENSINGTON	Primary Route	No Change
14	ABBOTT	Secondary Route	No Change
15	SENECA	Secondary Route	No Change
16	SOUTH PARK	Secondary Route	No Change
18	JEFFERSON	Secondary Route	No Change
19	BAILEY	Primary Route	No Change
20	ELMWOOD	Primary Route	No Change
22	PORTER-BEST	Secondary Route	No Change
23	FILLMORE-HERTEL	Primary Route	No Change
24	GENESEE	Primary Route	No Change
25	DELAWARE	Primary Route	No Change
26	DELAVAN	Primary Route	No Change
27	ERIE COUNTY HOME	Secondary Route	No Change
29	WOHLERS	Secondary Route	No Change
32	AMHERST	Primary Route	No Change
34	NIAGARA FALLS BLVD	Secondary Route	No Change
35	SHERIDAN	Secondary Route	No Change
36	HAMBURG	Secondary Route	No Change
40	GRAND ISLAND	Niagara	Collector Express
42	LACKAWANNA	Secondary Route	No Change
44	LOCKPORT	Secondary Route	No Change
46	LANCASTER	Secondary Route	No Change
47	YOUNGS ROAD	Secondary Route	No Change
48	WILLIAMSVILLE	Secondary Route	No Change
49	MILLARD SUBURBAN	Secondary Route	No Change
50	MAIN-NIAGARA	Niagara	Secondary
52	HYDE PARK	Niagara	Secondary
54	MILITARY	Niagara	Secondary
55	PINE AVENUE	Niagara	Primary
55 T	Trolley	Niagara	Community Circulator
57	TONAWANDAS	Niagara	Community Circulator
60	NIAGARA FALLS	Express	Limited Express
61	DELAWARE	Express	Collector Express
64	LOCKPORT	Express	Limited Express
66	WILLIAMSVILLE	Express	Collector Express
67	CLEVELAND HILL	Express	Collector Express
68	GEORGE URBAN	Express	Collector Express
69	ALDEN	Express	Collector Express
69E	ALDEN	Express	Limited Express
70	EAST AURORA	Express	Collector Express
72	ORCHARD PARK	Express	Collector Express
72E	ORCHARD PARK	Express	Limited Express
74	HAMBURG	Express	Collector Express
75	WEST SENECA	Express	Collector Express
76	LOTUS BAY	Express	Collector Express
79	TONAWANDA	Express	Collector Express
81	EAST SIDE	Express	Collector Express
101	NORTH	School Days Only	No Change
102	BAILEY	School Days Only	No Change
103	EAST SUBURBAN	School Days Only	No Change
104	SOUTH CENTRAL	School Days Only	No Change
106	SOUTH SUBURBAN	School Days Only	No Change
110	WEST NORTH	School Days Only	No Change
111	SOUTH MICHIGAN	School Days Only	No Change
112	GRANT NORTH	School Days Only	No Change
114	NORTH CENTRAL	School Days Only	No Change
118	OGDEN	School Days Only	No Change
201	LOCKPORT	Metrolink	Community Circulator (Metrolink)
204	AIRPORT-DOWNTOWN EXPRESS	Metrolink	Limited Express (Metrolink)
206	BUFFALO STATE	Metrolink	Community Circulator (Metrolink)
211	ECC CIRCULATOR	Metrolink	Community Circulator (Metrolink)