

Miami-Dade Transit Service Standards

Presentation to RTC
November 10, 2005
Roosevelt Bradley



MDT
Service
Standards

Primer

Background

Standards:
Old & New

Best
Practices:
Comparison

Denver RTD

ChicagoCTA

San Antonio

Impacts



Presentation Outline

- Background
- Service standards defined
- “Old” MDT Service Planning Guidelines compared to “New” Service Standards
- “New” MDT standards compared to Denver, Chicago & San Antonio

Miami-Dade Transit Service Standards

Background

- Current guidelines established 1998
- RTC requested “Standards”
- MDT developed new standards
- CUTR reviewed and compared
 - Guidelines vs. Standards, and
 - Standards vs. other transit agencies



Service Standards Defined

Two Categories

1st - Design Standards

- **Route Design**
 - Spacing
 - Coverage
 - Stop Requirements
- **Schedule Design**
 - Service Span
 - Frequency / Headway



Service Standards Defined

Two Categories

2nd - Performance Standards

- **Productivity**
 - Passengers per Revenue Mile
 - Passengers per Trip
 - Farebox Recovery Ratio
- **Service Delivery**
 - On-Time Rate
- **Passenger Comfort**
 - Passenger Loads
- **Safety**
 - Accidents / Incidents per 100k-miles



Service Standards Defined

Route-level Standards differ by Service Class

- Express
- MAX
- Regular
- Circulator



Service Standards Defined

Enforcing & Adopting Standards

- Adopted by board as policy
- Enforced
 - Management Level
 - and Department Level
- Monthly and annual review
- Service Adjustments (with line-ups)
- Annual budget adjustments



Old Guidelines vs. New Standards

Current Service Guidelines

- 1998
 - Prepared by CUTR for MDT, January 1998
 - Developed for use by agency
 - For planning new service
 - Monitoring existing service
 - All 3 Divisions included
 - Metrobus
 - Metrorail
 - Metromover



Old Guidelines vs. New Standards

Current Service Guidelines

Basis

- **TCRP 10**
 - Transportation Cooperative Research Program of the Transportation Research Board, *Synthesis of Transit Practice #10*, 1995
 - Nationally recognized source
 - Sponsored by FTA
- **Best practices review of other agencies**
 - Denver RTD
 - Chicago CTA
 - San Antonio VIA



Old Guidelines vs. New Standards

Current Service Guidelines

Guidelines not Standards

- **Not formally adopted as policy**
- **Guidance only**
 - No performance thresholds to require/ justify service changes
- **Used internally by the agency to**
 - Monitor existing service
 - Plan new service
 - Adjust schedules
 - Motivate service reductions for system efficiency
 - Used as inputs to the CBOA recommendations



Old Guidelines vs. New Standards

Proposed New Standards

2005

- Prepared by MDT staff
- Reviewed by CUTR
- For Adoption as policy-level Standards
- All 3 Divisions
 - Metrobus
 - Metrorail
 - Metromover



1.1 Service Coverage

Old

Within UDB

- areas >10,000 population + workforce, or
- 1 mile route spacing at 60 minute headway

New

Within UDB

- areas >10,000 population + workforce, or
- 1 mile route spacing at 60 minute headway

Areas high concentration of transit dependants

- areas >5,000 population + workforce, or
- 1 mile route spacing at 60 minute headway

In expansion area

- if population + workforce >4,000, or
- then provide minimum service



1.1 Service Coverage

Change

- Creates new standard and criteria for determining areas with concentrations of transit dependent populations
- Establishes standards and criteria for providing service in Expansion Areas



1.2 Bus Route Spacing

Old

- Along Major Arterials at spacing of 1 mile
- In the urban core at spacing of ½ mile

New

- Along Major Arterials at spacing of 1 mile
- In the urban core at spacing of ½ mile
 - Urban core defined as area bounded by:
 - NE/NW 79th Street
 - Coral Way
 - NW/SW 42nd Avenue (LeJuene Road)
 - Biscayne Bay



1.2 Bus Route Spacing

Change

- No change to the standards
- Defines the urban core



1.2 Bus Route Spacing/ Coverage

Service Coverage/ Route Spacing

Denver RTD Standard	Criteria	Miami-Dade Transit
CBD	Not defined	½ - mile
Outside CBD		1 mile
3-12 residents+employees/acre	½ mile corridors	-
>12 residents+employees/acre	1 mile corridors	-
Chicago CTA Standard	Criteria	Miami-Dade Transit
Weekday core	½ - mile	½ - mile
Weekday outside core	1 mile	1 mile
Midday evening	1 mile	1 mile
Sundays, holidays	1 mile	MDT is ½ mile in core
Overnight service	2 miles	MDT by demand data
San Antonio VIA Standard	Criteria	Miami-Dade Transit
Weekday core	To major destinations, employers, and by	½ - mile
Weekday outside core	household density	1 mile
Weekends	If >50% weekday	MDT is ½ mile in core



1.3 Bus Route Directness

Old

- New routes aligned as directly as possible
- Deviations to be consistent with functional and operational characteristics of route

Deviations criteria:
$$\frac{P_T \times VTT}{P_D} < 5 \text{ min.}$$

New

- New routes aligned as directly as possible
- Deviations to be consistent with functional and operational characteristics of route
 - Route deviations sum to less than 125% of route
 - Deviations criteria:
$$\frac{P_T \times VTT}{P_D} < 5 \text{ min.}$$
- If no service alternative: deviation must be less than 8 min. for each deviation boarding or alighting



1.3 Bus Route Directness

Change

- Limits total amount of deviation on a route
 - To 125% of length of route
- New Deviation Standard for areas of need not otherwise served by transit



1.3 Bus Route Directness

Route Directness		
Denver RTD Standard	Criteria	Miami-Dade Transit
Total of Deviations	< 25% trip travel time	< 125% trip length
Deviation Justification	$\frac{P_T \times VTT}{P_D} < 3 \text{ min}$	$\frac{P_T \times VTT}{P_D} < 5 \text{ min}$
	P_D	P_D
Chicago CTA Standard	Criteria	Miami-Dade Transit
NA	NA	
San Antonio VIA Standard	Criteria	Miami-Dade Transit
NA	NA	



1.4 Bus Stop Spacing

OLD

- Local Service Routes
Balance convenience, bus travel speed, & safety
- Limited Service Routes (MAX)
Approximately every ½ mile
- Express Service Routes
Not less than 1 mile
- Circulators
Not addressed

NEW

- Local Service Routes
6 to 8 stops per mile (880 to 660 ft.)
- Limited Service Routes (MAX)
1 to 2 stops per mile
- Express Service Routes
Closed-door service for at least 50% of route
- Circulators
Local or as needed



1.4 Bus Stop Spacing

Change

- Local Service Routes have a standard
- Limited Service Routes have more flexible standard with possibly greater spacing
- Express Service Routes have more flexibility to concentrate stops at ends
- Circulators addressed, but no quantitative standard



1.4 Bus Stop Spacing

Bus Stop Spacing		
Denver RTD Standard	Criteria	Miami-Dade Transit
Local & Express		6 to 8 Stops / mile
Residential Areas	4 to 8 Stops / mile	-
Commercial Areas	4 to 10 Stops / mile	-
Limited Service	.67 to 2 Stops / mile	1 to 2 Stops / mile
Chicago CTA Standard	Criteria	Miami-Dade Transit
NA	NA	
San Antonio VIA Standard	Criteria	Miami-Dade Transit
NA	NA	



1.5 Bus Stop Amenities

OLD

- Based on requests, utilization, and NTD guidelines table
 - Suggested standard and optional features
 - Based on daily boardings from stop

NEW

- Placement of specific amenities determined by:
 - Location
 - Passenger Activity
 - Advertisement Potential
- Defers to municipalities for enhancements and amenities



1.5 Bus Stop Amenities

Changes

- Neither 1998 nor 2005 standards have specific minimum requirements
- Changes include linking advertising potential to amenities
- Municipalities are recognized to provide enhanced levels of amenity



2.1 Maximum Bus Headway

OLD

Headway Maximum	Express	Core Area Local	Other Area Local	Combined Busway
Peak	30	30	60	10
Base	-	60	60	20
Evening / Night	-	60	60	60
Saturday / Sunday	-	60	60	30

Clock-face headways where possible

NEW

Headway Maximum	Express	Limited	Local	Circulator
Peak	20	20	30	30
Base	-	30	45	45
Evening	-	-	60	60
Overnight	-	-	60	60
Saturday / Sunday	-	-	30	30



2.1 Maximum Bus Headway

PTP

Headway Maximum	Express	Limited	Local	Circulator
Peak	15	15	15	15
Base	30	30	30	30
Evening	-	-	-	30
Overnight	-	-	-	60
Saturday / Sunday	-	-	-	30



2.1 Maximum Bus Headway

Changes

- Standards for Local Service simplified
- Standards for Limited service added
- Standards for Circulator service added
- Headways are generally shorter than 1998 guidelines but longer than PTP headways



2.1 Metrorail Headway

OLD

- | | |
|---------------------|------------|
| • Peak | 10 minutes |
| • Base | 20 minutes |
| • Evening / Night | 30 minutes |
| • Saturday / Sunday | 20 minutes |

NEW

- | | |
|---------------------|------------|
| • Peak | 6 minutes |
| • Base | 10 minutes |
| • Early Evening | 15 minutes |
| • Late Evening | 30 minutes |
| • Saturday / Sunday | 15 minutes |



2.1 Metrorail Headway

Changes

- **Headways decreased**
 - Peak 40% less
 - Base 50% less
 - Early Evening 50% less
 - Late Evening same
 - Saturday / Sunday 25% less
- **Provides increased service**
 - Less waiting time for passengers



2.1 Bus & Rail Headway

Frequency of Service

Denver RTD Standard	Criteria	Miami-Dade Transit
Peak period (local)	30 minutes	30 minutes
Off-peak	30-60 minutes	30-45 minutes
Evenings	60 minutes	60 minutes
Weekends	60 minutes	30 minutes
Express (peak)	3 peak trips	20 minutes
Chicago CTA Standard	Criteria	Miami-Dade Transit
Basis	Passenger Flow	Service Type
Bus	5 to 30 minutes	20 to 60 minutes
Rail	4 to 60 minutes	6 to 30 minutes
San Antonio VIA Standard	Criteria	Miami-Dade Transit
Peak Period Frequency		
Local Bus	15 to 30 minutes	30 minutes
Limited Stop Bus	30 minutes	20 minutes
Express Bus	15 to 30 minutes	20 minutes
Circulator	30 to 60 minutes	30 minutes



2.2 Bus Passenger Loading

OLD

Headway	Peak	Midday / Weekend	Night	Limited / Express
1 – 10	145%	125%	110%	120%
11 - 20	140%	110%	100%	100%
21- 30	125%	100%	100%	100%
31 - 60	100%	100%	100%	100%

- Maximum on any single trip = 175%
- Elderly ridership greater than 18.7%, - consider a lower loading standard for route
- Short duration trips consider a higher standard for route



2.2 Bus Passenger Loading

NEW

Headway	Peak	Midday / Weekend	Night	Limited / Express
1 - 15	145%	125%	110%	120%
16- 30	130%	110%	100%	100%
31 - 60	110%	100%	100%	-

- Maximum on any single trip = 160%
- Elderly ridership greater than 20%, then
 - Peak standard is 110%
 - Off-peak standard is 100%
- Short duration trips:
 - Criteria is standing time < 10 minutes
 - Maximum single trip load is 175%
- When crowding exceeds loading standards:
 - Remedy first by large capacity vehicles
 - Remedy second by adding service (frequency)



2.2 Bus Passenger Loading

Changes

- Maximum Load decreased
- 30-minute loads generally increased
- Elderly ridership standard quantified
- Short duration standard quantified
- Remedy for overcrowding defined



2.3 Rail Passenger Loading

OLD

Headway	Peak	Midday / Weekend	Night
1 – 10	145%	125%	110%
11 -20	140%	110%	100%

- Maximum Single Trip Load = 200%
- Maximum 30-minute Interval Load



2.3 Rail Passenger Loading

NEW

Headway	Peak	Midday / Weekend	Night
1 – 10	145%	125%	100%
11 -20	130%	110%	100%

- Maximum 30-minute Interval Load
- When crowding exceeds loading standards:
 - Remedy first by large additional cars
 - Remedy second by adding service (frequency)



2.3 Rail Passenger Loading

Changes

- Maximum Load decreased
 - Peak period over 10 minute headways, and
 - Night service over 10 minute headways
- Remedy for overcrowding defined



2.3 Bus & Rail Passenger Loading

Maximum Peak Period Load		
Denver RTD Standard	Criteria	Miami-Dade Transit
Maximum Peak Period Load		
Local & Limited	125% w/ max stand = 15	110% - 145%
Express & Regional	100%	120%
Sky Ride	100%	-
Light Rail	125%	130% - 145%
Chicago CTA Standard	Criteria	Miami-Dade Transit
NA	NA	
San Antonio VIA Standard	Criteria	Miami-Dade Transit
Maximum Load		
60-minute interval	125%	100% - 145%
Any individual bus	150%	160%



2.4 Bus Service Span

OLD

- Minimum Spans In Urban Core
 - Weekdays, Saturdays - 15 hours
 - Sundays, Holidays - 12 hours
- Night service
 - in urban core and for proven ridership areas
- At start or end of span
 - Earlier or later trip criteria is if productivity of first or last trip is at least 50% of system average

NEW

- Minimum Spans In Urban Core = 15 hours
- Premium routes
 - Extend to midday or early evening if above average productivity
- Weekend Service
 - On all viable routes
 - Meeting weekday productivity standards
- Overnight Service
 - On all major routes
 - Expansion based on productivity, and facilities



2.4 Bus Service Span

Changes

- Sunday and holiday service span increased
- Premium routes criteria added
- Weekend service criteria added
- Overnight service criteria added



2.4 Bus Service Span

Service Span

Denver RTD Standard	Criteria	Miami-Dade Transit
Bus Routes	Varies	15 hours
Chicago CTA Standard	Criteria	Miami-Dade Transit
Major Routes	16 hours	15 hours
Support Routes	Market driven	Market driven
San Antonio VIA Standard	Criteria	Miami-Dade Transit
NA	NA	



2.5 Rail & Mover Service Span

OLD

- Metrorail Service Span = 19.5 hours
- Metromover Service Span = 19.5 hours
- At start or end of span
 - Earlier or later trip criteria is if productivity of first or last trip is at least 50% of system average

NEW

- Metrorail Service Span = 19 hours
- Metromover Service Span = 19 hours
- Expansion to 24 hours dependent on:
 - Continued ridership growth
 - Ridership levels after 9:00 pm
 - Ridership on Bus Route 500



2.5 Rail & Mover Service Span

Changes

- Metrorail service span decreased ½ hour
- Metromover service span decreased ½ hour
- Criteria for expansion to 24 hours operations added



2.5 Rail & Mover Service Span

Service Span		
Denver RTD Standard Rail Line	Criteria 24 hours	Miami-Dade Transit 19 hours
San Antonio VIA Standard NA	Criteria NA	Miami-Dade Transit



3.1 Bus System-wide Productivity

OLD

- No Productivity Standards
- Guidelines for corrective action to low productivity routes

NEW

- Minimum System-wide average boardings per hour
 - Weekday 30
 - Saturday 25
 - Sunday 25
- Corrective action is to implement an action plan that includes a thorough evaluation of all routes



3.1 Bus System-wide Productivity

Changes

- Minimum System-wide average boardings per hour standards defined
- Corrective action to be more comprehensive



3.2 Bus Route Productivity

OLD

- No Productivity Standards
- Guidelines for corrective action to low productivity routes
- New service in the lowest quartile:
 - To be continuously monitored
 - Analyzed after 2 years
 - Corrective action taken

NEW

- Minimum boardings per revenue hour
 - 50% of average for service type, or
 - 40% of day-of-week for service type
- Net cost per passenger not more than 200% of system average
 - If above 200%, evaluate if high proportion of Golden Passport or Patriot Pass riders
 - Failing both standards
 - productivity, and cost/passenger -corrective action including removal
- New service:
 - Monitor for 24 months
 - If after 12 months it is not at 50% of criteria – take corrective action



3.2 Bus Route Productivity

Changes

- Productivity Standards added
- Cost / Passenger Standards added
- Criteria for corrective action defined
- New route performance criteria provide for earlier action or removal (12 versus 24 mo.)



3.2 Bus Route Productivity

Bus Productivity		
Denver RTD Standard	Criteria	Miami-Dade Transit
Bus Productivity	By Class	
Local	Target lowest 10 - 25%	-
Limited	Target lowest 10 - 25%	-
Express (peak service)	Target lowest 50%	-
Regional (peak service)	Target lowest 50%	-
	Demand-Based	
30 - 60 minute headway	-	Weekday: 30 Pass / hour
15 minute headway	25 - 39	Saturday: 25 Pass / hour
10 minute headway	40+	Sunday: 25 Pass / hour
Chicago CTA Standard	Criteria	Miami-Dade Transit
Bus Productivity		
30 Minute headway	30 Boardings / hour	Weekday: 30 Pass / hour
		Saturday: 25 Pass / hour
		Sunday: 25 Pass / hour
San Antonio VIA Standard	Criteria	Miami-Dade Transit
NA	NA	



3.3 Bus Passengers per Trip

OLD

- No standard

NEW

- Standards for minimum boardings per 1-way trip, classified by 1-way trip time:
 - over 1 hour trip - 8 boardings
 - less than 1 hour trip - 5 boardings/hour
- Substandard trips to be considered for elimination
 - Unless modification would result in an inefficient schedule



3.3 Bus Passengers per Trip

Changes

- Standards for minimum boardings per 1-way trip provided
- Substandard trip corrective action defined



3.4 STS Productivity

OLD

- No standard

NEW

- Increase trips per service hour to 1.8 by 2005 *(goal)*

CHANGES

- STS Productivity Goal is provided



4.0 On-Time Performance

OLD

- No standard

NEW

- System-wide On-Time performance standards by division
 - Metrobus 80%
 - Metrorail 98%
 - STS 85%
- On-time Criteria
 - Metrobus - departs time point 0 - 5 min. late
 - Metrorail - departs station 0 - 2 min. late
 - STS - pick-up no more than 30 min. late - Increase trips per service hour to 1.8 by 2005 *(goal)*

CHANGES

- On-Time Performance Standards are provided



4.0 On-Time Performance

On-Time Performance		
Denver RTD Standard NA	Criteria NA	Miami-Dade Transit
Chicago CTA Standard NA	Criteria NA	Miami-Dade Transit
San Antonio VIA Standard	Criteria	Miami-Dade Transit
Bus:		80%
End of Line	95%	
Transfer Points	90%	
Other Time Points	85%	
On-Time Criterion	0 - 5 Minutes late	0 - 5 Minutes late



Impacts

Impacts of New Service Standards

- Impacts of each standard are qualitatively defined in terms of:
 - Operational resource requirements
 - Passenger service level



Impacts of New Service Standards

Service Standard	Change	Impact to Passenger Service	Impact to System Efficiency
1.1 - Service Coverage	Service to elderly and expansion areas	↑	↓
1.2 - Bus Route Spacing	No change	-	-
1.3 - Bus Route Directness	Limits deviations of new routes	↓	↑
1.4 - Bus Stop Spacing	More flexible std for Limited and Express	↑	↑
1.5 - Bus Stop Amenities	No qualitative standard	-	-



Impacts of New Service Standards

Service Standard	Change	Impact to Passenger Service	Impact to System Efficiency
2.1 - Bus Headways	Shorter than 98 Std. Longer than PTP	↓	↑
2.1 - Rail Headways	Shorter	↑	↓
2.2 - Bus Passenger Load	Maximum reduced, generally increased	↓	↑
2.3 - Rail Passenger Load	Maximum reduced	↑	↓
2.4 - Bus Service Span	Sundays and Holidays increased	↑	↓
2.5 - Rail Service Span	Reduced by ½ hour	↓	↑



Impacts of New Service Standards

Service Standard	Change	Impact to Passenger Service	Impact to System Efficiency
3.1 - Bus System Productivity	Provide criteria for service reduction	↓	↑
3.2 - Bus Route Productivity	Provide criteria for service reduction	↓	↑
3.3 - Bus Passengers / Trip	Provide criteria for service reduction	↓	↑
3.4 - STS Productivity	New goal for utilization	—	↑
4.0 - On-Time Performance	Provides criteria for added service	↑	↓

