

JUNE 3, 2014



# BEST PRACTICES IN EVALUATING TRANSIT PERFORMANCE

FOR URBAN FIXED ROUTE SYSTEMS

Florida Department of Transportation, Freight Logistics and Passenger Operations, Transit Office



# PRESENTATION AGENDA

- **Purpose of the Study**
- **MAP-21 Requirements**
- **Study Tasks**
  - National Best Practices
  - Florida Case Studies
- **Findings**
- **Toolbox**
- **Discussion**



# PURPOSE OF STUDY

- **Best Practices in Evaluating Transit Performance**

- To assist Florida transit agencies in understanding useful and common performance measures
- Develop an inventory of what is collected at FL transit agencies, to whom, and how often data are reported
- Develop a toolbox of performance measures, useful for monitoring agency performance
- Identify specific measures that may meet the requirements of MAP-21



# MAP-21 NEW REQUIREMENTS



- **US DOT** – establish performance measures & formal definition for ‘state of good repair’
- **State and MPO** - transportation plans must include transit-related performance measures and performance targets; both urban & rural
- **Transit Agency**
  - Develop Asset Management Plan, Measures & Targets
    - Capital asset inventory, condition assessment, decision support tools, investment prioritization, etc.
  - Safety Plan, Measures and Targets
    - Method to identify/evaluate risks, strategies to minimize exposure, timeline for annual review of SP, performance targets, assigned safety officer, etc.
  - Transit Services for Seniors and Individuals with Disabilities (FTA 5310)
    - Qualitative and quantitative information – quality of service, ridership, accessibility improvements and other measures

# STUDY TASKS

- Literature review of Previously Conducted Studies – National Case Studies identifying best practices and overview of MAP-21 requirements
- Survey FL transit agencies to understand existing best practices for collection and use of performance measures specific to Florida
- Identify 4 Florida Case Studies that have unique and successful methods
- Develop Toolbox for transit agencies



# NATIONAL BEST PRACTICES

- **Literature Review:**

- TCRP Report 88, 141
- NCHRP Report 446, 708, Digest 361

- **Findings:**

- Agencies must have clear goals & objectives **FIRST**
  - Develop performance measure system to achieve goals & objectives
  - Reports provide several examples of goals & appropriate measures



# NATIONAL BEST PRACTICES

In order to help state DOTs select appropriate performance measures, **NCHRP RRD 361** provides a list of characteristics of good performance measures. These characteristics appear to have been derived from the state DOT interviews and are as follows:

- **Trackable over Time** – Measures can be consistently used over many years.
- **Storytelling Potential** – Measures should be meaningful and convincing, particularly over the long term. They should "help weave a storyline around public transportation performance in the state."
- **Meaningful for Types of Service Measured** – The set of performance measures should include non-traditional measures (e.g., community measures) so as to represent social values and quality of life concerns.
- **Relation to Statewide Public Transportation Goals** – Measures should allow the DOT to track progress towards achieving goals.
- **Available Data** – Measures should be calculable from data that are reliably available statewide.

# NATIONAL CASE STUDIES

- **Six Case Studies:**
  - Large, Medium, Small transit agencies
- Washington Area Metropolitan Transit Authority (WMATA)
- Denver Regional Transportation District (RTD)
- Capital Metro, Austin, TX
- Lane Transit District (LTD), Eugene, OR
- Transfort, Fort Collins, CO
- Merced County Transit, Merced, CA





# NATIONAL CASE STUDIES - WMATA

## Goals and Indicators- Metro's Strategic Business Plan

Goals	Performance Indicators
Build and maintain a premier safety culture and system	<ul style="list-style-type: none"><li>• Customer and employee injury rates</li><li>• On-time performance</li><li>• Customer satisfaction</li><li>• Operating expense on budget</li><li>• Connecting communities</li><li>• Crime rates</li><li>• Escalator availability</li><li>• Capital funds invested</li><li>• Meet board-established service criteria</li></ul>
Meet or exceed customer expectations by consistently delivering quality service	
Improve regional mobility and connect communities	
Ensure financial stability and invest in our people and assets	



Source: WMATA, *Momentum: The Next Generation of Metro*

# NATIONAL CASE STUDIES - RTD

## RTD Denver Performance Measurement Standards

Goal	Objectives	Performance Measures
<p>To meet the present transportation needs of the District by providing cost-effective and efficient transportation service</p>	<ul style="list-style-type: none"> <li>• Maintain cost recovery ratios</li> <li>• Increase ridership</li> <li>• Increase farebox and EcoPass revenue</li> <li>• Improve route efficiency</li> <li>• Monitor selected internal functions for efficiency</li> <li>• Maintain cost effective and efficient transportation services</li> <li>• Hire and train competent personnel</li> </ul>	<ul style="list-style-type: none"> <li>• Operating cost recovery ratio</li> <li>• Overall ridership increase</li> <li>• Fare revenue</li> <li>• EcoPass revenue</li> <li>• Total operating revenue</li> <li>• Number of audits</li> <li>• Bus operator – vacancies</li> <li>• Bus operator – over headcount</li> <li>• Bus mechanic – vacancies</li> <li>• Bus mechanic – over headcount</li> <li>• Stock-out level</li> </ul>



Source: RTD, compiled from 2012 Adopted Budget

# NATIONAL CASE STUDIES - TRANSFORT

## Transfort's Current Transit Performance Measures

Category	Performance Measures
On-Time Performance	<ul style="list-style-type: none"> <li>• On-time performance</li> <li>• Percent of routes scheduled to clock headways</li> <li>• Delay ratio</li> </ul>
Distribution of Transit Amenities	<ul style="list-style-type: none"> <li>• Percentage of stops with shelter and benches</li> <li>• Fleet cleaning</li> <li>• Passenger environment</li> </ul>
Transit Security	<ul style="list-style-type: none"> <li>• Passenger safety</li> <li>• Ratio of police officers to transit vehicles</li> <li>• Number of vehicles with specified safety devices</li> </ul>



Source: Transfort, Service Standards and Policies

# NATIONAL CASE STUDIES - SUMMARY

- Large transit agencies do not necessarily have more performance measures than small agencies
  - **It is the quality of the measure, not the quantity**
- All agencies use 'On-time Performance' as a measure
- More than 50% use measures related to safety/accidents, customer satisfaction, amount of service provided, and cost-effectiveness
- All agencies link performance measures to goals & objectives
- Performance data shared with other agencies/departments
- All agencies review annually or bi-annually

# FLORIDA URBAN FIXED ROUTE TRANSIT AGENCY SURVEY

- **Agency survey conducted in Dec. 2013 of urban fixed route providers**
  - What data collected and measured at agencies, how collected, & how often performance measures are reported
- **FDOT**
  - Leader in the US for monitoring of performance measures since 1970s; transit agencies required to report in the 1990s
  - Florida Standard Performance Variables (FSV)



# FLORIDA CASE STUDIES

- **Four Case Studies:**
  - Large, Medium, Small transit agencies
- Miami Dade Transit (MDT)
- Jacksonville Transportation Authority (JTA)
- Lee County Transit (LeeTran)
- Council on Aging of St. Lucie, Inc. (COASL)



# FLORIDA CASE STUDIES - MDT



## MDT's Customer Data, On-Time Performance and Technology Targets

Transit Data	Customer Period	Actual MDT	Target	Variance
Age of Fleet (yrs.)	Fleet Data	83.72%	FY-To-Date	
On-time Performance/Schedule Adherence – Bus (2)	Mar 14 Measure (1,352/1,615)		78.00%	Target 5.72%
Farebox Revenue	Electronic fareboxes			
Minimize traffic congestion	Percentage completion a design project			N/A
Maintenance Expenses	Peak vehicle requirement – weekday	76.34%	78.00%	100% 1.66%
Provide reliable transit service	Maintenance records (4,645/6,085)			
Number of accidents/ incidents/ collisions	On-time performance (Metrolink)			95%
Number of boardings	On-time performance (weekday farebox (Overall System))	78.73%	78.00%	78% 0.73%
Number of system failures	Mean distance between failures (Bus) (3,005/3,817)			4,000
Operating Expenses	Mean distance between disruptions (Rail)	79.26%		39,000
Other and improve public transportation operations	Mean distance between disruptions (Mover) (1,757/2,213)		78.00%	1,500 1.26%
Passenger Trips	Average daily boardings – Rail			295,000
Revenue Hours	Average daily boardings – Bus			1,205,000
Improve mobility of low income individuals, the elderly and the disabled	Average daily boardings – Mover			150,000
Route Network facilities	Total monthly boardings – Bus			N/A
Ensure excellent customer service for passengers	On-time performance (STS)			80%
	Total Monthly boardings (STS)			N/A
	Security post inspections			3,000
	Other in-house documents			
	All complaints per 100K boardings for bus, rail, mover			12
	All complaints per boardings for paratransit – monthly			N/A

Source: MDT Department Scorecard FY 13-14

# FLORIDA CASE STUDIES - JTA



## Fixed Route - Selected Performance Review Measures

Measures	
Operational Measures	Financial Measures
<p><b>Service</b></p> <ul style="list-style-type: none"> <li>• Service Area Population</li> <li>• Service Area Population Density</li> <li>• Passenger Trips</li> <li>• Passenger Miles</li> <li>• Average Passenger Trip Length</li> <li>• Revenue Miles</li> <li>• Revenue Hours</li> <li>• Directional Route Miles</li> </ul> <p><b>Employee</b></p> <ul style="list-style-type: none"> <li>• Total Employee FTEs (full-time equivalents)</li> <li>• Revenue Hours Per Employee FTE</li> <li>• Passenger Trips Per Employee FTE</li> </ul>	<p><b>Efficiency</b></p> <ul style="list-style-type: none"> <li>• Operating Expenses per Capita</li> <li>• Operating Expenses per Passenger Trip</li> <li>• Operating Expenses per Revenue Mile</li> <li>• Operating Expenses per Revenue Hour</li> <li>• Fare Revenue per Passenger</li> <li>• Farebox Recovery Rate</li> </ul> <p><b>Expenses and Revenue</b></p> <ul style="list-style-type: none"> <li>• Operating Expenses</li> <li>• Maintenance Expenses</li> <li>• Fare Revenue</li> </ul>

Source: JTA Transit Development Plan



# FLORIDA CASE STUDIES



## JTA's Goals and Objectives

Goal	Objectives	Measures
Excellence in Customer Service	Deliver high quality Connexion services by providing reliable and timely services	On-time Performance Connexion
		Percent of Connexion No-shows
	Ensure JTA buses, Skyway and facilities are comfortable and clean	Fixed Route Load Factor (Access to a seat)
		Community Shuttle Load Factor (Access to seat)
		Average Percentage of JTA Bus Fleet Cleaned Daily
		Bus Cleanliness (CSS)
	Improve operator courtesy	Bus Stop Cleanliness (CSS)
		Driver Courtesy (CSS)
	Provide responsive and clear communications to customers concerns and questions	Concern Resolution (CSS)
		Customer Service Call Center – Average Speed to Answer (Hold Time)
		Customer Service Call Center - Abandon Rate
		Connexion Call Center – Average Speed to Answer (Hold Time)
Connexion Call Center – Abandon Rate		

Source: JTA Transit Development Plan  
 \*CSS: for Customer Satisfaction Survey

# FLORIDA CASE STUDIES - LEETRAN



## LeeTran's Goals, Objectives, and Initiatives

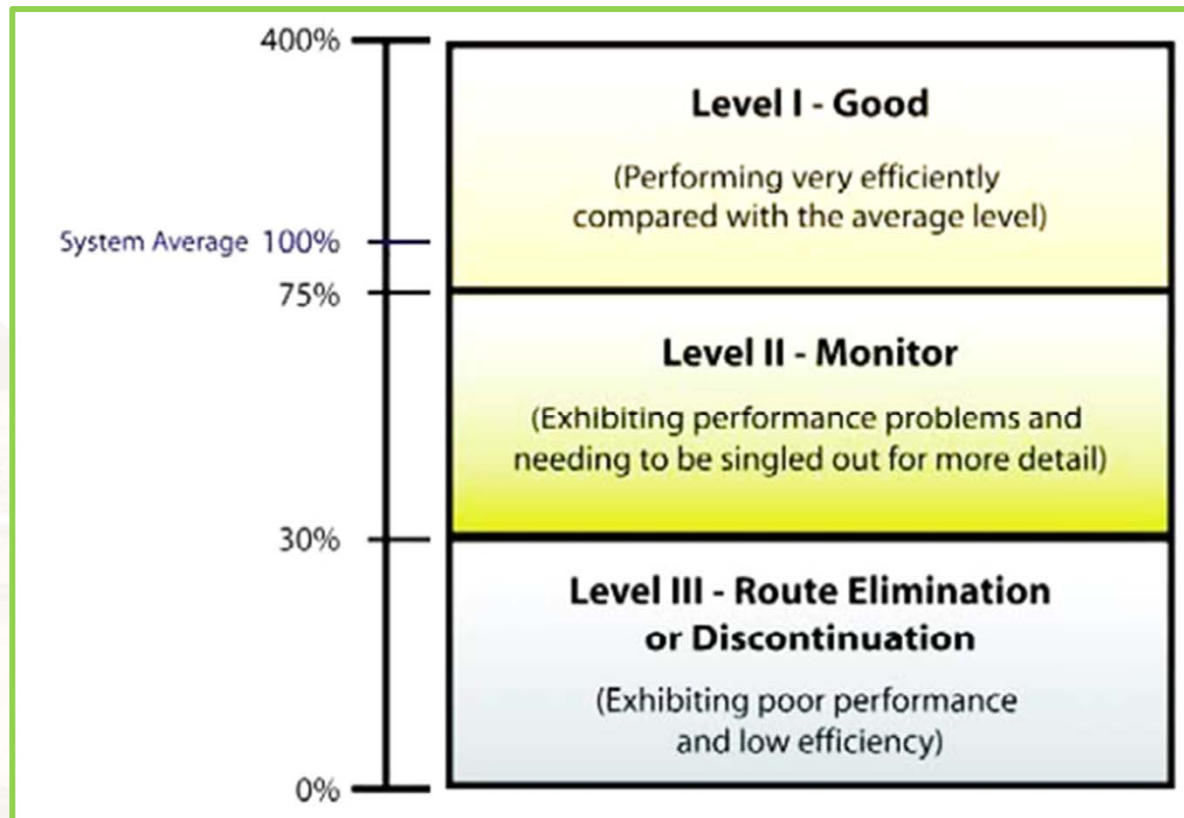
Goal	Objective	Initiative
1. Increase the Market Share for Transit	1.1 Increase the number of one-way fixed-route passenger trips by an average of five percent annually, from 3 million in FY 2008/09 to 5 million in FY 2020/21	1.1 Continue to maintain existing LeeTran Service levels.
	1.2 Meet the fixed-route performance measures included in Objective 43.1 and Policy 43.3.1 in the Lee Comprehensive Plan, which states that the County will maintain <b>operating standards of 14 passengers per revenue vehicle hour, 1.3 passengers per revenue vehicle mile, and farebox revenues at a minimum of 20% of operating expenses.</b>	1.2 Implement new and expanded services prioritized in the Lee MPO LRTP, the LeeTran TDP, and Vision Plan 1.3 Implement the performance monitoring program that addresses performance standards for fixed-route service. 1.4 Develop a Marketing and Education Program by March 2012. 1.5 Expand marketing and educational efforts to local universities and colleges. 1.6 Explore opportunities for marketing hybrid vehicles and other environmentally-friendly transit technologies. 1.7 Develop and distribute marketing materials that integrate the opinion and transit needs of community business leaders.

Source: Lee County Transit TDP

# FLORIDA CASE STUDIES



## Evaluation Levels



Source: Lee County Transit TDP

# FLORIDA CASE STUDIES - COASL



## COASL Goals and Objectives with Corresponding Performance Measure

Goal	Objectives	Unit of Measure
2. Increase the availability and use of public transportation services through mobility enhancements, expanded fixed-route service, and more inter-country fixed bus routes.	Increase the number of fixed-route passenger trips by 50% between FY 2010 and FY 2019.	Percent increase in fixed-route rider
	Increase the number of inter-county bus routes from one to three by 2019.	Number of inter-county bus routes
	Add at least one vanpool to the commuter services program each year through the 2019 TDP planning horizon.	Number of new vanpools
	By 2019, reduce demand for paratransit by 25 % as fixed-route services are improved for customers to utilize.	Percent decrease in paratransit trips

Source: Regional Transit Development Plan for the Port St. Lucie Urbanized Area 2010-2019

# FLORIDA CASE STUDY SUMMARY



- Each transit agency provided a **link from performance measures to goals and objectives** that are consistent with county and local strategic transportation plans such as long range transportation plans, transportation improvement program and comprehensive development master plan.
- Large and medium-sized agencies use **technological software**. Small transit agencies continue to efficiently collect data that feeds into performance measures. The key to manual data collection is to **focusing on the basic data needed** to calculate key measures.
- Most agencies collect safety and asset management data and report performance measures that can be used to comply with MAP-21 requirements. **All agencies reported with confidence that the agency would be able to quickly adapt to the MAP-21 performance reporting changes**, once the final ruling is released.
- Quality of measures counts.

# TOOLBOX

- **Why is this Toolbox useful for your Transit Agency?**
  - Successful Florida examples that have unique approaches for tracking and monitoring performance measures
  - Sample Goals and Objectives are shown that can be incorporated into the TDP Planning Process and other agency plans
  - Sample performance measures are presented that may meet MAP-21 Safety/Security and Asset Management requirements



# CATEGORIES FOR PERFORMANCE MEASURES

1. Service Effectiveness
2. Service Efficiency
3. Labor Productivity
4. **Safety and Security**
5. **Vehicle Utilization and Asset Management**



- Categories are based upon national review and FL transit agency survey feedback.
- The 5 categories are a compilation of TCRP, NCHRP, Florida Standard Variables (FSV), and TDP methods.

# TOOLBOX- SNEAK PEEK



Most of the performance measures are reported to the Florida Transit Handbook and can be calculated using National Transit Database (NTD) data, ensuring an easy manageable data collection process.

The Formula column shows how to use the data elements to calculate each performance measure.

Sample Goals	Criteria	Measure	Data Collection		Formula	Purpose of Measure	Ease of Data Collection by Size of Agency		
			Data Elements Needed	Possible Data Source/Technology			Small	Medium	Large

## CASE STUDY 3: LEE COUNTY TRANSIT (LEETRAN)

Lee County Transit (LeeTran) serves over 4 million riders annually on over 400 miles of roadway in Lee County, and employs approximately 240 persons to run its fleet of 50 buses; 10 trolleys; and 42 Americans with Disabilities Act (ADA) compliant vans. The agency goals and objectives adopted by LeeTran were prepared based on the review and assessment of existing conditions, feedback received during the public involvement process, and the review of local transportation planning documents. They are consistent with the goals and objectives found in the 2035 MPO Long Range Transportation Plan for Collier and Lee Counties and the Transportation Element of the Lee County Comprehensive Plan.

LeeTran utilizes a performance monitoring program to track the efficiency of the transit system. The monitoring program utilizes specific route-level data and compares each route's performance with all other regular local service routes. LeeTran uses an Evaluation Form created in excel spreadsheets to calculate and evaluate performance measures.

LeeTran collects data using different sources, such as Transman Fleet Management (TMT) software to collect data on the number of system failures. LeeTran collects a variety of performance measures to comply with the new MAP-21 requirements pertaining to safety and asset management/state of good repair.



Safety and Asset Management/State of Good Repair Performance Measures	
Customer Accidents	
Number of Accidents	
Number of Collisions	
Number of Fatalities	
Number of Incidents	
Number of Injuries	
Average Age of Fleet (in years)	
Mechanics per 1,000 revenue miles	
Missed trips due to operation failures	
Number of repeat breakdowns per month	
Number of repeat repairs per month	
Percent of stops with shelters and benches	
Revenue miles between roadcalls	
Revenue miles between incidents	
Total roadcalls	





# DISCUSSION

- **Thank you!**
- **Panel members:**  
Michelle Davis Hines,  
Special Projects  
Administrator,  
Miami-Dade Transit  
(MDT)

Marianne Arbore,  
Transit Director,  
Council on Aging of  
St. Lucie (COASL)

