

Memorandum



Date: April 8, 2016

To: Honorable Chairman Jean Monestime
and Members, Board of County Commissioners

From: Carlos A. Gimenez
Mayor

Subject: Report Regarding the Current Bus Schedules to Determine Adequate Running Time, Headways, Mileage, and Driver Break Schedules and to Prepare Implementation Plan - Directive 152102

Agenda Item No. 2(B)1
May 3, 2016

This report has been prepared by the Miami-Dade County (County) Department of Transportation and Public Works (DTPW) in response to Board of County Commission (Board) Resolution R-892-15 sponsored by Commissioners Barbara J. Jordan, Esteban L. Bovo, and Rebeca Sosa directing the Mayor or Mayor's designee to evaluate current bus schedules to improve operational efficiency by determining adequate running time, headways, mileage, and driver break schedules; to include a proposed implementation plan for identified improvements to put the findings identified in the report into place; and to review and update all bus route schedules no less than every three (3) years based on the criteria examined in this report.

As we change our approach to address transportation countywide, the DTPW is focused on improving mobility by providing efficient and reliable public transportation options.

The creation and modification of bus schedules falls under the purview of the DTPW's Service Planning and Scheduling Division. Twice a year – in June and November – a review of all bus routes is undertaken to assess route performance and current customer demand. As part of each review period, an assessment of current traffic conditions and travel times is conducted to determine potential impacts on the schedule.

In addition, current budget, manpower, and equipment availability is reviewed to ensure that current service levels are met in the most efficient manner. Modifications to the schedule reflect feedback received from stakeholders, such as passengers, bus operators, planning staff, and other governmental agencies. As resources become available, such as the delivery of new buses, additional modifications are undertaken to enhance service delivery to our customers.

Assessing the reliability of bus service consists of the three (3) components listed below:

- **Simplified routes** – One of the main components of a "Frequent Service" plan is to streamline bus routes. The more streamlined the route (fewer turns or deviations off of main alignment), the more reliable the service. The optimal plan is essentially following the "80/20 Principle," or 80 percent of routes should be straight routes running frequently through areas of dense activity and adequate walkability, and 20 percent could meander through areas with low ridership. When a bus route is not

direct and deviates to serve a few, the rest of the riders will have a longer trip and the reliability and effectiveness of the route degrades.

- **Layover/Recovery time** – Layover or Recovery time is the amount of time provided at the termination point of each route to allow for the schedule to ensure on-time departure for the next trip should the bus be operating late, as well as to provide the Operator a break. This is a critical element of reliability with the intent of ensuring that a bus trip that arrives late at the end of the line can begin the next trip on time. However, even the most optimal schedule cannot fully anticipate what can occur on any given bus trip (e.g., delays due to traffic conditions, drawbridge operations, temporary construction, or a train at a railroad crossing).
- **Revenue time** – Revenue time is the amount of scheduled time allocated to operate the bus while in revenue service (i.e., picking up and dropping off passengers). Routes are constantly monitored to determine if they are operating according to the published schedule. If not, a detailed segment analysis is performed to determine which segment of the route requires more scheduled time.

To address service reliability, in 2013, DTPW contracted with Kimley-Horn and Associates and Nelson Nygaard to conduct a comprehensive assessment of the bus network in order to identify efficiencies, increase ridership, and reduce costs. The resulting plan (Transit Service Evaluation Study Phase 2) recommended the streamlining of bus routes to concentrate services on main corridors with increased frequencies and the rewriting of bus schedules to reflect the current operating environment. In November 2013, DTPW began implementing recommendations from this plan and, to date, has implemented over 15 recommendations. However, further “straightening” of routes is required so that travel time by bus can be improved and become more comparable to travel by car, which will be necessary in order to attract more riders to choose bus service over their private vehicles in order to help reduce congestion and improve mobility.

Implementation Plan

As we continue to review our existing infrastructure and mobility network, the DTPW has been focusing on effectuating short-term improvements that will improve the rider experience. The DTPW will continue to systematically review the bus schedules to accurately reflect current conditions and ensure reliability by reviewing the route simplicity, layover/recovery time, and revenue time of each route.

A large amount of bus ridership is concentrated in a relatively small number of routes. As the chart below indicates the following:

- Six (6) DTPW routes account for a quarter of the overall bus ridership;
- The top eight (8) routes account for a third of the overall bus ridership; and
- The top 16 routes account for half of the overall bus ridership.

**2015 Average Weekday Ridership Share
 (Percentage)**

		Route	Average Daily Boardings	Cumulative Percentage	On-Time Performance *	
Top 25%	Top 33%	119 - S	11,998	5.70%	69.10%	
		11	11,033	11.00%	66.70%	
		77	9,558	15.50%	69.10%	
		112 - L	9,347	20.00%	61.20%	
		27	8,252	23.90%	70.10%	
		120-SOUTH BEACH MAX	7,523	27.50%	61.90%	
		38	6,897	30.80%	72.80%	
		8	6,751	34.00%	67.80%	
Top 50%			3	6,701	37.20%	68.80%
			9	5,917	40.00%	66.60%
			22	4,481	42.20%	70.80%
			17	4,266	44.20%	67.40%
			7	4,197	46.20%	65.30%
			93 - BISCAYNE MAX	3,642	47.90%	53.00%
			103 - C	3,615	49.60%	66.60%
			37	3,577	51.30%	67.70%

*Based on Automatic Vehicle Location (AVL) data, January – June 2015

Based on the dispersion of ridership, the DTPW will address the reliability of bus service by concentrating on the most used routes first. Effective December 2015, the 16 routes that represent half of the system's ridership had additional running time and recovery time factored in to their schedules. These improvement efforts will continue as the DTPW reviews service changes for the June 2016 and November 2016 schedule update by prioritizing and addressing the most used routes followed by the lesser used routes.

Lesser used routes will be evaluated in the same manner; however, a holistic review of the existing bus network will be undertaken by the DTPW. Currently, some of the system's low performing routes are experiencing less than 50 boardings a day. These routes are operating under the industry's standard, and result in a cost per rider in the range of \$20.00 to \$40.00. This cost is comparable to the cost per rider for a Special Transportation Services (STS) trip, which is provided at a cost of \$23.79 for trips that do not require assistance from the chauffeur or wheelchair lift (ambulatory trips), and \$34.40 for non-ambulatory trips.

The DTPW bus network was established as a grid network, but has been modified through the years by the cumulative effects of individual deviations, branches, and other service changes. As a result, bus service is often complex, with numerous deviations to

destinations that produce low or no additional boardings resulting from the additional turns. A full review of the bus network will identify route overlaps and evaluate deviations in the system, resulting in a more streamlined bus network. Moreover, this review will allow staff to identify alternative routes and mobility modes to address rider need and demand.

Pursuant to Ordinance 14-65, this memorandum will be placed on the next available Board meeting. If additional information is required, please contact Alice N. Bravo, P.E., Director of the DTPW, at (786) 469-5406.

c: Alina T. Hudak, Deputy Mayor, Office of the Mayor
Alice N. Bravo, P.E., Director, Department of Transportation and Public Works
Eugene Love, Agenda Coordinator