15.0 RIDERSHIP FORECAST

A transit system's ridership is dependent on several key factors. These factors include the alignment, the land use surrounding the transit corridor, the operational characteristics, and any competing services in the transit corridor. The recommended streetcar alignment between NE 41st Street and SW 1st Street was examined for its ridership potential with respect to these variables. Given the ridership sensitivity of the streetcar transit system to the surrounding land use and its operational characteristics, several alternatives were examined. This was done to develop a range of ridership projections, as the future land use of the corridor and the system operating plans have not been formally defined for this feasibility study.

Ridership on the Miami Streetcar project was estimated using the Florida Standard Urban Transportation Model Structure (FSUTMS) travel demand model utilized for the 2025 Miami-Dade Long Range Transportation Plan (LRTP). This currently adopted model includes the 2025 Downtown Miami highway and transit network. These future networks are crucial in that they provide the necessary connectivity between the proposed streetcar system and the future transit and street networks. After the streetcar recommended alignment was coded into the model, several alternative scenarios were developed to test the sensitivity of the streetcar transit system ridership to various land use assumptions and to operational characteristics.

15.1 Land Use Data Sets

Three land use scenarios were assumed to estimate ridership for the proposed Miami Streetcar. The Base scenario included the 2025 land use forecast in the 2025 Miami-Dade LRTP. However, close inspection revealed that the 2025 land use data set did not show significant population and employment growth in the Downtown Miami area. As discussed in Section 4.0, the Miami-Dade County Metropolitan Planning Organization's (MPO's) projected population and employment growths in the Downtown Miami traffic analysis zones from 1999 to 2025, shown in **Figure 4.3.1**, are lower than anticipated within the streetcar transit corridor.

Since the 2025 Miami-Dade LRTP was developed, there have been revisions to the growth assumptions in Miami-Dade County. With this in mind, two other land use scenarios were obtained from the City and the MPO and developed into the ridership model. The two additional land use scenarios were originally generated from the adopted Miami Downtown Transportation Master Plan (MDTMP). The scenarios previously reviewed in Part II, Section 13.0, labeled the 2025 Enhanced and 2025 Vision forecasts, were established in the model by updating the 2025 Miami-Dade LRTP land use with the land use data sets from the MDTMP. As part of the MDTMP, the 2020 land uses in many Downtown Miami traffic analysis zones were revised upward, creating a moderately aggressive data set (2020 Enhanced) and an aggressive data set (2020 Vision). Because these two data sets were for 2020, they had to be increased to 2025 projections. To do so, the two land use data sets were increased to match the zonal growth rates between the adopted 2020 and 2025 Miami-Dade LRTP data sets and were then incorporated into the adopted 2025 data set to create the 2025 Enhanced and 2025 Visionary land use scenarios.


Portland, Oregon—streetcar passengers..

15.2 Operating Characteristics

Different operating characteristics were tested to examine how the streetcar system would respond under different operating plans. For all alternatives, both the peak-period headway and the off-peak headway were assumed to be 10 minutes. This is due to the fact that the streetcar is not intended to serve as a predominantly commuter system in which additional service would be needed for commuter periods.

Alternatives were also tested as both a fare-free system and a fare structure similar to that used for the proposed Bay Link system represented in the adopted MPO model. The fare structure tested included a $1.25 fare and transfer fares dependent on the mode. It would also be desirable to develop a fare structure in which the system can operate with a fare-free zone as well as with a fare for connections to and from destinations outside of the fare-free zone. Without this structure, there would be a loss of ridership for short trips on the


Portland, Oregon—Operator Controls within Streetcar Vehicle .

streetcar in the Downtown Miami area. However, this feasibility study did not examine a fare-free zone combined with a fare structure for longer trips.

Another sensitivity tested was how the streetcar system was coded into the travel demand model. In one set of alternatives, the streetcar was coded as if it operated like Metrobus and Bus Rapid Transit (BRT), which travel in traffic. In this case, the speed of the streetcar would depend on prevailing traffic conditions also experienced by other vehicles traveling along the corridor. Another set of alternatives was created to simulate a streetcar system operating at specified speed or travel time. To accomplish this, the streetcar system was coded as a fixed guideway system within the roadway and given various levels of signal priority through the system. Two levels of signal priority were tested, low and moderate, summarized as follows:

- Low priority is assumed to provide exclusive transit phases for streetcar operations at all intersections. Priority or exclusive phases are provided where the streetcar must turn through an intersection and phase extensions are provided for operations at all other signalized intersections. With low priority, it is assumed that the system can achieve an average speed of 15 mph over the route.

- Moderate priority is assumed to provide the same advantages as low priority as well as signal pre-emption capability to allow streetcar drivers to maintain schedule and obtain signal priority at congested intersections. This priority level is provided on the Portland, Oregon, streetcar system using Opticom signal pre-emption, which is similar to that used by emergency vehicles. Under moderate priority, it is assumed that the streetcar system can achieve an average speed of 25 mph over the route.

15.3 Ridership Results

A total of nine different alternatives were tested to gauge the range of ridership that could be expected for the initial phase of the proposed Miami Streetcar system. The headway, fare, and alignment were assumed to be identical for all alternatives. **Table 15.3.1** compares the ridership under the various alternatives. Using the 2025 Miami-Dade LRTP model, the ridership on the streetcar system is projected to be between 3,900 and 8,100 riders per day in 2025, beginning with 3,000 riders on opening day , projected to be late 2008.

Even with the limited assumptions used in this analysis, there are trends that are noteworthy. One is that more dense and aggressive growth in Downtown Miami would result in increased ridership on a streetcar system. Therefore, the dense land use development proposed along the streetcar corridor in the Miami Design District, Midtown Miami, and other areas of Downtown Miami could ultimately result in higher streetcar ridership than that measured using the Base, Enhanced, and Visionary land use data sets.

Another trend confirmed in this analysis is that higher signal priority, resulting in a faster operating speed of the streetcar, would produce higher ridership. This will be important as the operational characteristics of the streetcar are further refined. Although the streetcar would not require a separated right-of-way, limiting the delays experienced by the streetcar as it travels within traffic would make this transit mode more attractive and result in increased ridership.

Table 15.3.1
Streetcar Ridership Scenarios

Alternative Number	Land Use Data Set	Similar Mode Operation	Signal Priority	Daily Rideship	Daily Ridership w/ $1.25 Fare
1	Base	MetroBus	None	3,900	Not Tested
2	Enhanced	MetroBus	None	4,800	Not Tested
3	Visionary	MetroBus	None	5,500	Not Tested
4	Base	Fixed Guideway	Low	4,900	Not Tested
5	Enhanced	Fixed Guideway	Low	5,800	Not Tested
6	Visionary	Fixed Guideway	Low	6,700	Not Tested
7	Base	Fixed Guideway	Moderate	5,900	3,900
8	Enhanced	Fixed Guideway	Moderate	7,100	4,600
9	Visionary	Fixed Guideway	Moderate	8,100	5,100