

Table 7.1
Alternative Corridors Evaluation

7.0 ALTERNATIVE CORRIDORS EVALUATION

The evaluation of corridors for possible streetcar service, as depicted in Table 7.1, were presented in Section 6.0 and were used to measure advantages and disadvantages of each corridor.

7.1 Advantages and Disadvantages

7.1.1 North-South Streets

The north-south streets considered for evaluation are Biscayne Boulevard, NE and SE 2nd Avenue, NE and SE 1st Avenue, and North and South Miami Avenue.

In general, streetcar service on all north-south streets would be physically feasible and would positively contribute to planned redevelopment activity and infrastructure improvements in these corridors. The planned reconstruction programs for these roadways could provide opportunities for streetcar cost savings where provisions are made to accommodate streetcars during the roadway reconstruction phase. However, much advanced planning is necessary for conversion to occur during such opportunities; the low likelihood of integrating elements of streetcars with public roadway improvements that are already in the design stage does not warrant special consideration in the evaluation process.

Evaluation Criteria	North-South Streets				East-West Streets				Downtown Miami Circulation Streets			
	Biscayne Boulevard	NE/SE 2nd Ave	NE/SE 1st Ave	N/S Miami Ave	NE 14th Street	NE 29th Street	NE 36th Street	NE 39th to 41st Streets	NE/SE 1st Streets	Flagler Street	NE 3rd to NE 6th Street	NE 7 th to NE 9th Street
Land Use/Eco. Dev./Trans Compatibility												
Fit with planned character of corridor/district	●	●	●	◐	●	●	●	●	●	●	N/A	N/A
Complements transit-supportive land uses	●	●	●	◐	●	●	●	●	●	●	●	●
Consistent with local land use regulations	●	●	●	●	●	●	●	●	●	●	●	●
Direct connections to Metro Dade Transit Services	●	●	●	●	●	●	●	◐	●	●	◐	●
Encourages pedestrian activity	◐	●	●	●	●	●	●	●	●	●	●	●
Scale of redevelopment that could be generated	◐	●	●	●	●	●	●	●	●	●	●	●
Connectivity between neighborhoods, Midtown, and Downtown Miami	●	●	○	●	●	●	●	●	●	●	●	●
Physical Compatibility												
Available ROW	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐
Effect on local traffic flow	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	○
Integration with other transit services	●	●	●	●	●	●	●	N/A	●	●	N/A	●
Effect to on-street and off-street parking	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	○	◐
Manage all modal movements	◐	●	●	●	●	●	○	●	●	●	●	○
Simplicity/clarity of route	●	●	◐	●	●	●	●	●	●	●	●	●
Ability to program with street reconstruction projects	●	●	◐	●	●	◐	●	◐	◐	◐	◐	◐
Adequate clearances	◐	◐	○	◐	◐	◐	◐	◐	◐	◐	◐	◐
Adequate sidewalk area for station stops	●	●	●	●	●	●	●	●	●	●	●	●
Available area to locate maintenance facility	○	●	●	●	●	●	●	○	●	●	●	○
Ability to provide continuous communications/power	●	●	●	●	●	●	●	●	●	●	●	●
Policy and Regulatory Compatibility												
Avoidance of state or federal transportation facilities	○	◐	◐	◐	◐	◐	○	◐	◐	◐	◐	◐
Consistency with streetscape designs/redevelopment	●	●	●	●	●	●	●	●	●	●	N/A	N/A
Presents safety conflict with other modes	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐
Meets transit demands	●	●	●	●	●	●	●	●	●	●	●	●

Key ● Positive Impact / Correlation
 ◐ No Impact / Weak Correlation
 ○ Negative Impact / Correlation
 NA Not Applicable

Primary challenges and opportunities to consider for these north-south corridors are as follows:

- The Biscayne Boulevard right-of-way, north of the MacArthur Causeway (located north of NE 11th Street), presents some challenges to streetcar operations and safe, user-friendly pedestrian access. In its current configuration, Biscayne Boulevard, with its wide right-of-way, can be difficult for pedestrians to cross to reach significant area attractions such as Bayfront Park, American Airlines Arena, Bayside Marketplace, and the Museum Park/Bicentennial Park area.
- Streetcar service on Biscayne Boulevard may impact mobility between the state facilities of MacArthur Causeway and Julia Tuttle Causeway (I-195). The segment of Biscayne Boulevard south of NE 7th Street also presents unique challenges to transition the alignment from the median to the curb lane if the alignment were to be located within the wide landscaped median on this segment.
- An advantage of the Biscayne Boulevard corridor is the additional alignment opportunity available in the public parking area separating northbound from southbound traffic under Metromover between SE 1st and NE 6th Streets.
- The vertical clearance of NE 2nd Avenue under I-195/SR 112 is only 14 ft 6 in; however, overhead contact systems can be modified to accommodate vertical clearances as low as 14 ft.
- The vertical clearance of NE 1st Avenue at the I-395 underpass is only 13 ft 9 in, which would result in costly construction to lower the profile of NE 1st Avenue below the viaduct to achieve the minimum vertical clearance.

NE 2nd Avenue is the corridor that is most conducive to streetcar project development north of I-395, between Downtown Miami and the Miami Design District and Buena Vista East Historic District. Three factors make this a compelling corridor: 1) the scale of redevelopment opportunities there, 2) the pace of redevelopment activity (some of it already underway, particularly in the Midtown Miami project area), and 3) the clear transit destination of the Miami Design District. However, north of the Miami Design District, the options for an alignment narrow and the scale of redevelopment opportunity is much reduced. Although there is significant transit demand in this northerly segment of the corridor, there is no major destination point to anchor a streetcar extension there at this time.

Consequently, the alignment options that will be developed from this evaluation of north-south streets will focus on opportunities to connect Downtown Miami (Government Center) to the Miami Design District and Buena Vista East Historic District as the Phase 1 project.

7.1.2 East-West Streets

Similarly, all east-west streets evaluated would be compatible with streetcar service, which would also enhance redevelopment opportunities that are underway and planned. The east-west streets in the Miami Design District do not currently accommodate transit except for the Little Haiti Connection circulator on NE 39th Street. Streetcar service would not provide connectivity in this district for integration with other Miami-Dade Transit (MDT) services; however, connection to this district could provide improved transit service and coverage for a developing area.

The north-south alignment of the streetcar service obviously will influence which east-west streets provide the most advantageous connections. Key considerations for these east-west streets include:

- NE 38th, NE 39th, and NE 40th Streets are scheduled for reconstruction and therefore may provide an improved streetscape environment and opportunity to be made more compatible for streetcar operation. Similarly, improvements are anticipated for NE 14th, NE 29th, and NE 36th Streets.
- Initially locating the end of the streetcar line within the Miami Design District presents some challenges for turning the vehicle around for the return run back to Government Center. Options could include a loop or a switch track, which could be located on one of these east-west side streets. The switching operation, however, may impact parking or traffic operations as the streetcar traverses the roadway for the southbound operation.
- The complexity of the NE 36th Street/NE 2nd Avenue and Florida East Coast (FEC) Railway crossing intersection may impact the performance of other traffic movements if the streetcar were added to this intersection; mobility to I-195/Julia Tuttle Causeway could also be affected.
- The north-south corridors for access to the Performing Arts Center along either Biscayne Boulevard or NE 2nd Avenue affect the selection of the east-west roadways. The primary alternatives for east-west access to the Performing Arts Center are NE 13th Street and NE 14th Street.
- NE 14th Street between NE 2nd Avenue and Biscayne Boulevard is needed to access the truck loading docks on the north side of the Ballet and

Opera House at the Performing Arts Center. Depending on the frequency of use, time of day operation, and entering/exiting maneuvers for truck access, streetcar operations on this segment could create a conflict for truck access to the Performing Arts Center.

- NE 13th Street between NE 2nd Avenue and Biscayne Boulevard will serve as the access to the valet drop-off and side door patron access to the Ballet and Opera House. Traffic congestion and valet traffic parking along NE 13th Street may create conflict for streetcar operation on this roadway section.

As with the evaluation of the north-south streets, these few site-specific constraints would not rule out use of portions of the east-west streets for streetcar service.

7.1.3 Downtown Miami Circulation Routes

In contrast to the corridors evaluated above, two Downtown Miami circulation corridors (NE 3rd Street to NE 6th Street, and NE 7th Street) are deemed less advantageous, or even infeasible, because of the lack of redevelopment activity planned for these corridors. In addition, NE 6th and NE 7th Streets are heavily traveled truck routes between the Port of Miami and I-395, which would impede streetcar operations. Moreover, little redevelopment is currently planned for NE 7th Street; a streetcar would thus be expected to promote less economic development in this corridor.

On the other hand, NE and SE 1st Streets (as an east-west couplet) and Flagler Street are superior streets for streetcar service (particularly, if two-way streetcar service were permitted and efforts were made to improve the pedestrian amenities on Flagler Street). The large employment base and diverse retail activities there

would be highly compatible with streetcar operation. Key opportunities and challenges in conjunction with the Downtown Miami east-west streets are as follows:

- NE 3rd Street may provide an opportunity for one-way streetcar service to NW 1st Avenue and access to Government Center. The right-of-way on NE 3rd Street is narrow, with on-street parking provided on only one side. This would make it difficult to turn the streetcar vehicle onto NE 3rd Street without encroaching into additional lanes, unless a corner right-of-way clip is taken. Right-of-way clips are a concern for any right turns by the streetcar.
- The NE 4th Street pedestrian corridor would be an ideal cross street for low-speed streetcar operations and would provide a very high degree of access to Miami-Dade College.
- The high volume of truck traffic using NE 5th Street and NE 6th Street makes these roadways less desirable for streetcar use and less likely for developing into intensive pedestrian oriented environments.

7.1.4 FEC Branch Line

Use of the FEC Railway line is being considered for the potential implementation of improved freight rail and transit service in the *FEC Tri-County Corridor Study Alternatives Analysis* being prepared for FTA. This study will examine the FEC branch line as part of a potential second SFRTA or other rail transit service line that would directly serve Downtown Miami. The primary objective of this type of service is to provide longer commuter trips rather than the short, local circulation afforded by streetcar service.

The possibility of incorporating the Miami Streetcar project into the FEC Railway corridor was reviewed but dismissed for the following reasons:

- The small streetcar vehicle does not meet the Federal Railroad Administration (FRA) crash-worthiness requirements that would allow it to operate on an active rail line such as the FEC Railway corridor. Permits for streetcar service operating in a mixed environment with heavy freight and passenger rail would be extremely difficult to obtain. A waiver for time-separated operation would have to be negotiated with the host railroad and the Federal Railroad Administration (FRA). Although freight rail and streetcar operations could be scheduled and dispatched in a manner to avoid conflicts, experience throughout the U.S. indicates that obtaining a permit is a significant challenge even under these kinds of operations.
- The overhead power supply needs of the streetcar would conflict with the vertical clearance requirements that FEC Railway has established for overhead utilities on the active freight line.

Although the proposed streetcar could run on the same-sized rail as the freight trains that operate on the FEC Railway corridor, these two factors preclude streetcar operation, in the near term, on the FEC corridor while the freight line remains active.

7.2 Issues and Constraints

There are several constraints that can adversely impact the feasibility of the streetcar service. Some are mentioned above and implied in the discussion of the evaluation criteria; issues with respect to the recommended alignments are discussed in Section 11.0. Thus far, the evaluation of alternative corridors has addressed limited horizontal and vertical clearance, conflicts with private property, the need to acquire right-of-way from others, and impediments to service along the FEC Railway.

Future analysis of the routes will cover traffic circulation, parking, integration with transit, the ability to provide maintenance and operations facility locations, power substations, and the poles and wires forming an overhead catenary system (OCS).

7.3 Advancing Corridors for Further Examination

With few exceptions, all of the streets reviewed in this evaluation have several advantages that would be compatible with a new streetcar service. Streetcars would attract a large ridership, and their attractiveness and convenience would, on its own, generate street life and economic development in the corridors. Because the proposed streetcar concept is envisioned as a circulator type of transit service, the recommended alignments should use those corridors that access the largest number of destinations with the fewest adverse impacts. Based on this set of criteria, the following corridors appear to have the greatest advantages:

- North-South Streets
 - Biscayne Boulevard (SE 1st to NE 14th Streets)
 - NE 2nd Avenue (SE 1st Street to NE 79th Streets)
 - Midtown Boulevard (NE 29th to NE 36th)
 - NE 1st Avenue (NE 36th to NE 40th Streets)
 - N. Miami Avenue (SE 1st to NE 14th Streets)
- East-West Streets
 - NE 14th Street (Biscayne Boulevard to NE 2nd Avenue)
 - NE 29th Street (NE 2nd to NE 1st Avenues)
 - NE 38th to NE 40th Streets (NE 1st to NE 2nd Avenues)

- Downtown Miami Circulation Routes
 - NE and SE 1st Streets couplet (NW 1st Avenue to Biscayne Boulevard)
 - Flagler Street (NW 1st Avenue to Biscayne Boulevard)