

Draft

Alternative Screening Methodology



SR 968/Flagler Street Premium Transit Project Development & Environment (PD&E) Study

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1 Introduction

The proposed alternatives screening process for the Flagler Street Premium Transit Project Development & Environment (PD&E) Study is described in this report. The proposed methodology will address a variety of alternatives including the No-Build, Transportation System Management (TSM) and build options. Alternatives to be evaluated include Bus Rapid Transit (BRT) in exclusive and/or Reversible Lanes as described in the Miami-Dade Metropolitan Planning Organization's (MPO) Bus Express Rapid Transit (BERT) Network (April 2016). The overall methodology is presented in Figure 1.

Figure 1 – Alternative Screening Process



The alternatives screening process includes the following steps:

Tier 1 Initial Alternatives: This screening effort will focus on the potential initial alternatives along the corridor which include the alternatives identified in the study Scope of Services. The evaluation of initial alternatives in Tier 1 will be based on a set of qualitative measures and will result in the identification of up to three Build Alternatives as well as the No-Build Alternative and TSM Alternative. These alternatives will then advance to a more detailed evaluation in Tier 2.

Tier 2 Viable Alternatives: This screening effort will focus on the reasonable and feasible (viable) Build Alternatives emerging from the Tier 1 screening and will include a further evaluation of the No-Build and TSM alternatives. A more detailed set of performance measures related to the overall project goals and objectives will be developed in Tier 2 to allow both qualitative and quantitative analyses, where applicable. The Tier 2 screening analysis will result in the identification of a Recommended Build Alternative which will be further refined, evaluated and compared to the No-Build and TSM alternatives.

Tier 3 Recommended Alternative: This final step in the screening process will focus on refinements to the Recommended Build Alternative emerging from the Tier 2 analysis including refinements, as needed, to the No-Build and TSM alternatives. Based on this final evaluation and input from the public and stakeholders, a Locally Preferred Alternative, or LPA will be identified.

1.1 Key Initial Inputs

At the outset of Tier 1, a thorough data collection and initial transportation analysis will be conducted to identify existing traffic, transit, parking, and pedestrian/bicycling conditions, also referred to as a profile of the transportation characteristics along the corridor. This effort will include a market analysis to identify existing and future person trips (auto and transit) markets and patterns in the corridor. Trips matrices from the 2015 (base year) and 2040 (design year) Southeast Regional Planning Model (SERPM 7) and blue tooth data from AirSage will be used for the travel market analysis.

Land-use density maps will be developed and complement activity centers maps to further identify travel markets and support the development of proposed alternatives. This information will be used as input into two critical initial analyses:

1. identification of a transit service concept for the corridor and
2. development of transit and traffic projections for 2040 for a No-Build condition along the corridor.

The transit service concept will identify the routing, service frequency, and general location of stops for new premium transit service in the corridor. This basic service concept will then be fit into the corridor with respect to different running-way configurations, including reversible lanes.

1.2 Project Goals

The following overall goals have been developed for the Flagler Street study. These goals are generally consistent with the overall goals of the Federal Transit Administration's Project Justification and Rating Criteria for the New Starts and Small Starts program:

- 1) Improve mobility, connectivity, and transportation accessibility in the study area.
- 2) Develop a transportation system that is most-efficient, which maximizes limited resources for the greatest public benefit.

- 3) Preserve and enhance the quality of the environment.
- 4) Stimulate transit-oriented and overall economic development.
- 5) Achieve modal balance in the corridor.

These overall goals will be used to develop specific parameters for screening the various alternatives at each of the screening levels identified in this methodology. The parameters will be based on the level of analysis performed at each of the screening stages. Table 2 provides a listing of objectives and evaluation measures related to each of these goals.

1.3 Project Limits

Implementation of Premium Transit service and infrastructure will be studied along SR 968/Flagler Street and SW 1st Street from NW 107th Avenue to SR5/US 1/Biscayne Boulevard and to the proposed Downtown Miami Intermodal Terminal (at the Miami-Dade Government Center at approximately NW 2nd Avenue).

Additionally, this project will study Premium Transit service and infrastructure implementation along the following corridors:

- SR 985/NW/SW 107th Avenue from SR 90/SW 8th Street to NW 12th Street
- SR 90/SW 8th Street from the proposed NW 147th Avenue Park-and-Ride facility/transit terminal (Tamiami Station) to SR 985/NW 107th Avenue
- NW 12th Street from NW 107th Avenue to approximately NW 122nd Avenue, at the proposed Dolphin Transit Station.

The roadways included in the study are illustrated on Figure 2.



Figure 2: Project Location Map



2 Screening Process

With both transit and traffic demands in the Flagler Street study corridor identified, an initial fatal flaw assessment of various mode/running-way configurations will be identified, regardless of potential project cost and impact. This step will result in a “long list” of alternatives to be carried into further alternatives screening and finally detailed evaluation of select alternatives. This initial fatal flaw assessment will be based on previous planning studies (including most recently the Flagler Corridor Enhanced Bus Study), feedback received in early stakeholder interviews, and initial project team observations. Four questions will be used to pre-screen the initial universe of alternatives:

- Is the option/mode included in current Cost Feasible Long Range Transportation Plan and is consistent with MPO policy?
- Has the alternative been eliminated in previous studies/discussions for reasons that are still considered valid?
- Is a mode or alignment (including alignment segments) clearly ill-suited to addressing purpose and need in the study corridor?
- Does the mode and/or alignment have an obvious fatal flaw considering the market to be served, major safety considerations, and/or the environment within which it would operate?

If the answer to one or more of these questions is “yes” for a given alternative, that alternative may be eliminated from further consideration as a reasonable or feasible (viable) alternative.

The corridor will be divided into four segments based on roadway and land-use characteristics. The segments will be used for screening purposes and tier evaluations. The limits of the segments are described below and illustrated on Figure 3.

- Segment 1 – Flagler Street/1st Street from Downtown Transit Center to NW 27th Avenue
- Segment 2 – Flagler Street from NW 27th Avenue to SR 826/Palmetto Expressway
- Segment 3 – Flagler Street and SW 8th Street from SR 826/Palmetto Expressway to SW 147th Avenue via NW/SW 107th Avenue.
- Segment 4 – NW/SW 107th Avenue from Flagler Street to NW 12th Street and NW 12th Street from NW 107th Avenue to NW 122nd Avenue.

Figure 3 – Project Segments





2.1 Tier 1 Screening Analysis – Initial Alternatives

The proposed scope for the project identifies an extensive array of alternatives and running-way concepts to be evaluated. These concepts were used to identify the initial screening alternatives identified in Table 1. The potential alternatives were identified, combining particular transit lane configuration, including reversible lanes, its location in the street cross-section, and applicability to the transit mode.




Table 1 – Initial Screening Alternatives




Alternative Number	Basic Lane Configuration	Street Location	Cross-Section Assumption	Mode
1	No-Build	Mixed traffic	No widening	Local Bus
2	TSM&O	Mixed traffic	No widening	Premium Transit
3	Concurrent flow	Exclusive right side lane	No widening	Premium Transit
4	Concurrent flow	Exclusive left side lane	No widening	Premium Transit
5	Concurrent flow	Shared right side lane (BAT lane)	No widening	Premium Transit
6	Concurrent flow	Exclusive right side offset lane	No widening	Premium Transit
7	Concurrent flow	Shared right side offset lane (BAT lane)	No widening	Premium Transit
8a 	Reversible	Exclusive lane	Lane Re-purposing	Premium Transit /Roadway Only
9	Transitway/Fixed Guideway	At-grade median (2-lane)	Lane Re-purposing	Premium Transit
10	Transitway/Fixed Guideway	Elevated median (2-lane)	No widening	Premium Transit
11 	Transitway/Fixed Guideway	At-grade side-of-road (2-lane)	Lane Re-purposing	Premium Transit


For this initial screening analysis, a qualitative fatal flaw assessment will be performed. A transit envelope will be identified for each of the alternatives identified in Table 1. These envelopes will then be compared to the various existing typical sections in the corridor to identify major right-of-way conflicts or potential impacts along the corridor. Consistent with the objectives of the study and in addition to right-of-way impacts, the following criteria will be used to screen these initial alternatives:

- Consistency with MPO policy
- Community acceptance (for example, reversible lane or lane re-purposing)


- On-street parking impacts
- System capacity
- Compatibility with other modes 
- Overall traffic operation and safety
- Planning-level capital and operating costs.

Each criterion will be evaluated using high, medium and low ratings and a score assigned accordingly to each of the options identified in Table 1. This process will result in up to three Build Alternatives for further screening in Tier 2 in addition to the No-Build and TSM Alternatives as described below. 

2.1.1 No-Build Alternative

This alternative will include all of the Cost Feasible projects included in the Miami-Dade County Metropolitan Planning Organization (MPO) 2040 Long Range Transportation Plan. The projects will include both highway and transit projects included in the Plan. All Build Alternatives will use this alternative as a base upon which to add the proposed improvements along the Flagler Street Corridor as identified in the Study Area section of this memorandum. 

2.1.2 TSM Alternative

This alternative will include all of the improvements included in the No-Build Alternative with the addition of TSM options and technologies appropriate to the corridor. The TSM Alternative is defined as an alternative that does not require major capital expenditures. For this corridor, the following TSM options will be considered: transit service improvements (headway, amenities, connections, span of service), transit signal priority, Intelligent Transportation Systems options, traffic signalization and phasing. 

2.2 Tier 2 Screening Analysis – Viable Alternatives

The Tier 2 Screening will evaluate the reasonable and feasible alternatives remaining from the Tier 1 Initial Screening with respect to specific evaluation measures reflective of the goals and objectives for the project. The evaluation will be performed using typical sections and other data depicting each of the alternatives. Table 2 provides a summary of the project goals, associated objectives in achieving each individual goal as well as the evaluation measures to be used in assessing the effectiveness of meeting the stated project goals and objectives.







Each alternative will be developed at the overall corridor level and will also include a segment level analysis. This segment-by-segment analysis will facilitate identification of the most appropriate improvements for specific segments, and facilitate the development of a potential “hybrid” alternative as the selected Viable Alternatives. 

Table 2 – Project Goals and Objectives and Tier 2 Screening Measures

	Goal 	Objective	Tier 2 Screening Measure
1	Improve Mobility and Transportation Accessibility in Study Area	1. Enhance mobility choices by offering alternate transportation option with competitive travel times	<ul style="list-style-type: none"> Ability to provide multiple modes Potential vehicle conflicts Number of transit dependant population served (zero-car, elderly, low income households)
		2. Enhance transit service and better connections with existing regional transit system	<ul style="list-style-type: none"> Improved headways and service span  Ability to provide direct connection to regional transit system
		3. Provide better access to Downtown Miami, Mall of the Americas, Florida International University, and Dolphin Mall. 	<ul style="list-style-type: none"> Improved access to designated activity centers from different segments of corridor Impact on local access to adjacent land-use 
		4. Provide safe, multi-modal access to the transit system	<ul style="list-style-type: none"> Improved station amenities
2	Develop a Transportation System that is the Most Efficient, which Maximizes Limited Resources for the Greatest Public Benefit	1. Maximize the use of existing transportation corridors and infrastructure	<ul style="list-style-type: none"> Percent of alignment (miles) on existing roadway right-of-way Number of parcels needed to accommodate the proposed improvements
		2. Provide a transportation improvement that can be implemented in a phased manner	<ul style="list-style-type: none"> Ability to implement improvement in stages
		3. Provide a transportation improvement that is cost efficient	<ul style="list-style-type: none"> Estimated capital cost per rider
3	Preserve and Enhance the Quality of the Environment	1. Minimize potential adverse impact on residences, businesses, and the built environment	<ul style="list-style-type: none"> Number of potential residential/business relocations Number of adjacent historic properties impacted Number of noise and vibration sensitive sites impacted
		2. Minimize potential adverse impacts on the natural environment	<ul style="list-style-type: none"> Number of impacted environmentally-sensitive land use – wetlands, parks, contamination sites
4	Stimulate Transit-Oriented and Overall Economic Development	1. Provide transit investments supportive of City and County development/ redevelopment and land use plans	<ul style="list-style-type: none"> Number of potential locations for new developments and/or redevelopment Linear miles through designated economic development areas Land area available for new developments (right-of-way impacts)
		2. Maximize the economic benefits gained from transit capital investments 	<ul style="list-style-type: none"> Transit-oriented development opportunities related to capital cost estimates based on length
5	Achieve modal balance	1. Increase the transit mode share of trips made within the study corridor and external to adjacent areas	<ul style="list-style-type: none"> Percentage increase in the number of transit trips
		2. Develop transit infrastructure improvements that will facilitate transit usage without undue increase in roadway traffic congestion or reduction in safety	<ul style="list-style-type: none"> Retains existing, provides additional roadway capacity, and impacts on level of service Increases person throughput in the corridor
		3. Addresses multimodal and non-motorized modes in the corridor	<ul style="list-style-type: none"> Accommodates non-motorized modes (bike, pedestrians)




For each of the viable alternatives, a high, medium or low rating will be identified for each measure. Each rating will have a designated range in value for a particular measure if the measure is quantifiable, otherwise a qualitative assessment will be made of the ratings for a particular measure. A “high” rating will be assigned a score of 5, “medium” rating a score of 3, and “low” a rating a score of 1. Individual measures will not be rated compared to other measures. Scores for each measure will be totaled, with the highest scored alternatives considered the most feasible.


The measures identified in Table 2 and ratings will be applied to each alternative. The rating will be based on quantitative and qualitative values developed for each of the alternatives, for each of the measures identified. A Comparative Analysis Matrix will be developed, leading to identification of the recommended alternative. The recommended alternative will then be further analyzed and refined in Tier 3.

2.3 Tier 3 Screening Analysis – Recommended Alternatives

The purpose of this screening analysis is to further refine and evaluate the recommended build alternative identified in Tier 2, in addition to the No-Build and TSM Alternatives.

Conceptual plans will be developed for the refined build alternative identified as a result of the Tier 2 Screening Analysis, and the following measures used to identify the final recommended alternative:

- Capital and operating costs 
- Land-Use: employment within ½ of proposed stops/stations
- Travel demand forecasts for highway and transit: Average Annual Daily Traffic (AADT); Vehicle-Miles Traveled (VMT); Vehicle-Hours Traveled (VHT); average daily ridership at the regional level and along the routes servicing and intersecting the corridor; change in regional auto and transit trips; transit trips by transit dependant population; and new weekday linked transit trips. 
- Traffic operation: level of service and delay by link and intersections; average link travel speeds. 

The refinements will be performed at the overall corridor level will include additional segment level analysis. This segment-by-segment analysis will facilitate identification of the most appropriate improvements for specific segments, and facilitate the development of a potential “hybrid” alternative as the Final Build Alternative. Projected 2040 conditions and data will be used for the evaluation of the above measures. The No-Build Alternative will be used as basis for comparison. These measures include some of the  criteria used for project justification by Federal Transit Administration (FTA) as part of the Small/New Starts process.

This final evaluation will lead to the identification of a Locally Preferred Alternative, or LPA, based on the technical evaluation conducted and associated agency/public involvement program.



3 Interface with Agency/Public Involvement

The alternatives screening process will be coordinated with the public involvement program documented in the Public Involvement Plan for this project. Prior to development of each tier, the study team will meet with the Technical Oversight Committee (TOC) to further discuss the methodology. Results of each tier will also be discussed and presented to the TOC. The Screening Analysis will be documented in the Draft Preliminary Engineering Report.



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