SOUTH FLORIDA REGIONAL TRANSPORTATION AUTHORITY

# Strategic Regional Transit Plan

**December 2008**

## Chapter 7:

## *Screen Two (Detailed) Evaluation*

(Chapter 7 originally prepared December 2007)

# SCREEN TWO (DETAILED) EVALUATION
## TABLE OF CONTENTS

**1.0 INTRODUCTION ..... 2**

1.1 SCREEN TWO ANALYSIS ..... 2
1.2 SCREEN TWO PERFORMANCE CRITERIA ..... 2

**2.0 SCREEN TWO RANKING ..... 9**

**3.0 SCREEN TWO ALTERNATIVES ..... 13**

**4.0 NEXT STEPS ..... 24**

## FIGURES

FIGURE 1 – ALTERNATIVE DEVELOPMENT PROCESS ..... 3
FIGURE 2 – SCREEN TWO ALTERNATIVES MAP ..... 14
FIGURE 3A – ALTERNATIVES FLOW CHART THROUGH SCREEN TWO ..... 15
FIGURE 3B – ALTERNATIVES FLOW CHART THROUGH SCREEN TWO (CONT.) ..... 16

## TABLES

TABLE 1 – SCREEN TWO ALTERNATIVES – RAW DATA ..... 10
TABLE 2 – SCREEN TWO ALTERNATIVES – COMPARATIVE SCORES ..... 11
TABLE 3 – ALTERNATIVE WEIGHTING EXAMPLE ..... 9
TABLE 4 – SCREEN TWO ALTERNATIVES – WEIGHTED SCORES ..... 12

# 1.0 INTRODUCTION

This working paper documents the process taken to complete the Screen Two evaluation and the resulting Screen Two Alternatives. This serves as a continuation of *Chapter 4, High Opportunity Corridors (Screen One)*, June 2007.

## *1.1 SCREEN TWO ANALYSIS*

The Screen One Evaluation process resulted in the removal or modification of the 27 preliminary alternatives plus the addition of new alternatives for testing through Screen Two. Seven alternatives previously eliminated from testing were brought back with adjustments on the direction of the South Florida Regional Transportation Authority (SFRTA) staff, and eight new alternatives were added.

The process will use similar performance criteria used in Screen One, but with a weighted scoring methodology to assist with the development of networks focused on specific characteristics. Each corridor will be examined for its ability to perform in each of the criteria categories and redundancy against the other alternatives, and then modified as needed before advancing, or removed from testing altogether. **Figure 1** shows the advancement of alternatives through the screening process.

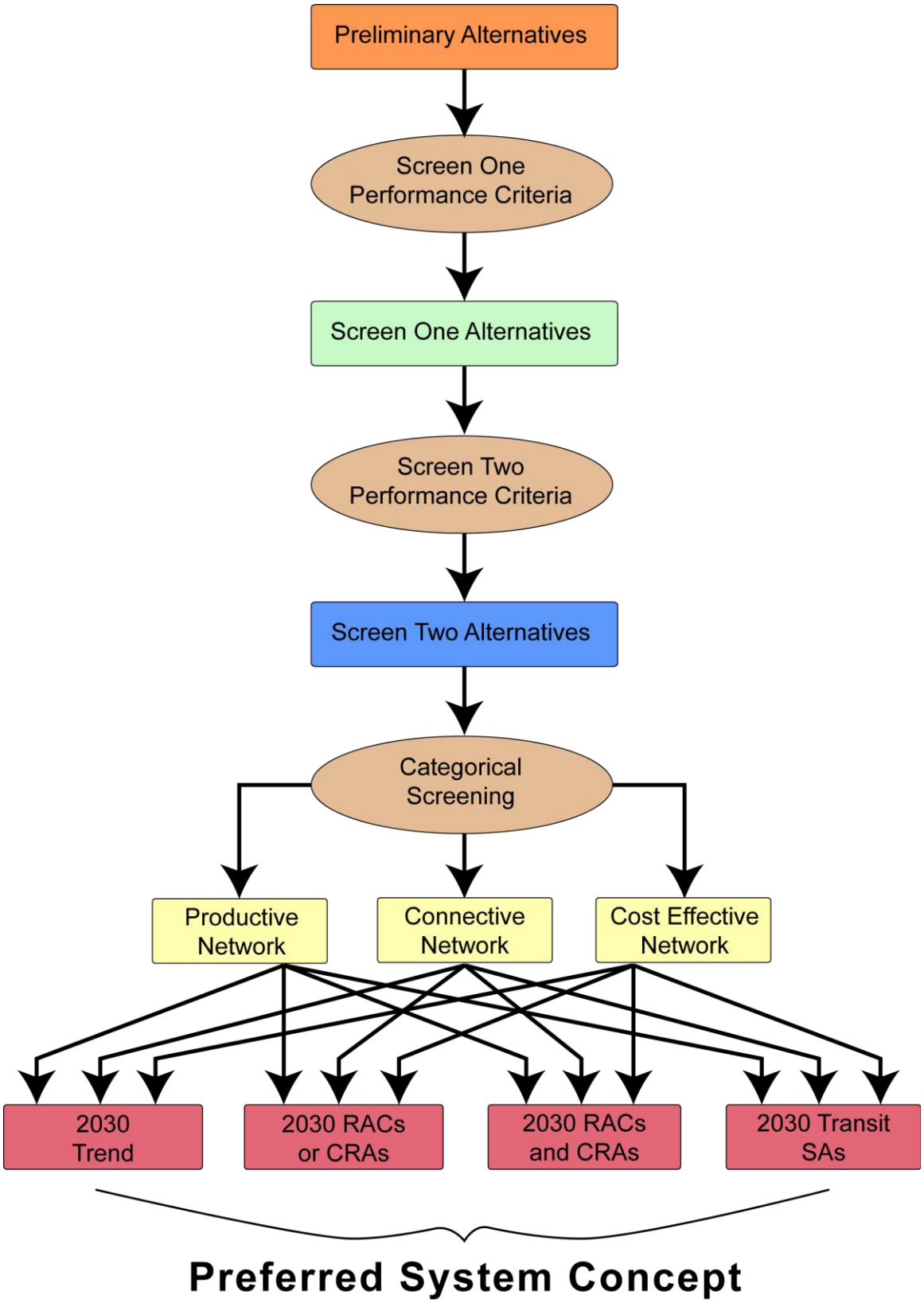
## *1.2 SCREEN TWO PERFORMANCE CRITERIA*

Once the Screen One analysis was complete and the resulting alignments advanced to Screen Two, 15 additional alignment alternatives were added to allow for the consideration of alternative variations. The analysis of the resulting 38 alignment alternatives included a screening process that compared the projects to one another through a set of eight performance criteria. The Southeast Regional Planning Model, Version 5 (SERPM V) travel demand model, in which all baseline projects were included, was used to generate ridership estimates for each alternative separately. The results from this process were input into a cost model along with capital and operating costs to determine cost effectiveness characteristics of cost per trip and subsidy per trip. Each alignment was then graded according to the standards set for each criterion to determine a score.

The performance criteria were separated into three categories prior to ranking:

- Productive
  - Incremental trips per mile
  - Total trip Flows
- Connective
  - Interjurisdictional
  - Number of regional activity centers (RACs)
  - Intermodal Connection (includes “Connects to Existing Premium Transit Service”)
- Cost Effective
  - Capital cost per mile
  - Annual cost per trip
  - Subsidy per trip

**Figure 1 – Alternative Development Process**



Although still a comparative analysis, the Screen Two scoring system was altered from the Screen One analysis, and separated into four tiers instead of three, where Tier 4 is the higher, or better score. Because the lowest scoring Preliminary Alternatives were adjusted or removed from testing, the new scoring rationale allows for a clearer division of performance thresholds. Results were compared among all alternatives for each criterion. In most performance criteria that are quantitative, the 25$^{th}$, 50$^{th}$, and 75$^{th}$ percentiles of the alternatives were calculated to determine the value of each tier. Additionally, performance criterion for "Connects to Existing Premium Transit Service" was removed because all remaining and new alignments connect to Tri-Rail or Metrorail, making the criterion irrelevant. However, this measure was folded into an expanded definition of the Intermodal Connection criterion, as explained in **Section 1.2.5**.

Performance criteria regarding ridership, connection to regional activity centers (RACs), and trip flows were placed into tiers in which Tier 1 (alignments below the 25$^{th}$ percentile) was given the lowest score of 1; Tier 2 (projects in the 26$^{th}$ - 50$^{th}$ percentile) received a score of 2; Tier 3 (projects in 51$^{st}$ - 75$^{th}$ percentile) was given a score of 3; and Tier 4 (projects above the 75$^{th}$ percentile) was given the highest score of 4. Criteria relating to cost required the tiers to be reversed, as higher costs are less desirable.

An exception to the tiered scoring was made in the Interjurisdictional and Intermodal Connection criteria, in which the result of the raw data count carried over to the scoring.

Alternatives that emerge from Screen Two will advance to a Categorical Screening process where they will be grouped to comprise three networks utilizing the highest scoring alignments in each of the three categories. In the network phase, the alternatives will be tested as a system rather than as individual alternatives. This process will be used to better compare the alignments and their contribution to the overall system. Once the networks have been established, they will be examined using three different land use scenarios.

### 1.2.1 Incremental Trips per Mile

While overall ridership is important, it is the number of new riders that determine the success of new service within the system. This criterion measures how many new riders are added to the network annually by including the new service provided by the alternative. By measuring new riders, riders that would have used a different transit service in the base network if the new alternative was not offered are not counted. This avoids "stealing" riders from the base network. Because longer alternatives will typically have more riders, additional riders per mile allows alternatives to be compared on an equivalent basis. **The definition for this performance criterion did not change from Screen One process.**

**Statistics**

| Descriptive Statistic | Score |
|---|---|
| Average | 210,897 |
| Standard Deviation | 185,603 |
| Maximum Value | 873,140 |
| Minimum Value | 46,654 |
| Sum | 8,435,877 |
| Median | 135,827 |
| 1st Quartile | 98,446 |
| 2nd Quartile | 135,827 |
| 3rd Quartile | 225,866 |
| Range | 826,486 |

**Tier 1:** < 98,446 new riders

**Tier 2:** 98,447 – 135,828 new riders

**Tier 3:** 135,829 – 225,865 new riders

**Tier 4:** ≥ 225,866 or more new riders

### 1.2.2 Interjurisdictional

This performance criterion measures whether an alternative provides a "one-seat" ride, or a ride without transfer, across county lines. This is a major benefit to riders making out of county trips, as they are not required to take more than one mode or transit system to reach their destinations, in turn saving money and time. This is also a clear definition of a regional trip, and thus an investment of regional benefit. **The definition for this performance criterion was altered slightly during the Screen Two process. Previously, the alternatives that are extensions of the current premium transit (fixed guideway) systems were scored on the entire alignment, not just the extension. In this screen, the extensions were given points only if the extension crosses county lines. The points for this criterion were carried directly over to the ranking.**

**Statistics**

This criterion is determined by giving one point for each county line the new alignment (or extension) crosses. The highest score possible for this criterion is two. As it was not determined using a comparative method, the count of county lines crossed carried over to the scoring.

### 1.2.3 Number of Regional Activity Centers (RACs) Served

RACs were determined using demographic data from the SERPM V for the Year 2030 and are considered major destinations that could be potential hubs for transit including employment centers and major destination defined by local comprehensive plans. This performance criterion takes into account the total number of RACS served by each alternative. Premium transit services perform best when they are able to serve concentrated developments. RACs serve as hubs to anchor transportation services to major destinations. The alignments that are extensions of existing service include RACs served by the entire alignment in this criterion's analysis. **The definition for this criterion did not change from the Screen One process.**

**Statistics**

| Descriptive Statistic | Score |
|---|---|
| Average | 5 |
| Standard Deviation | 3 |
| Maximum Value | 11 |
| Minimum Value | 0 |
| Sum | 192 |
| Median | 5 |
| 1st Quartile | 2 |
| 2nd Quartile | 5 |
| 3rd Quartile | 7 |
| Range | 11 |

**Tier 1:** < 2 activity centers served

**Tier 2:** 2 – 4 activity centers served

**Tier 3:** 5 – 6 activity centers served

**Tier 4:** ≥ 7 activity centers served

### 1.2.4 Connects to Existing Premium Transit Service

**This criterion was eliminated as all remaining alternatives connect to existing premium transit service as defined in Screen One.**

### 1.2.5 Intermodal Connection

This performance criterion measures whether an alternative provides connections to other modes of transportation besides the automobile. If so, it has potential to meet the goals of the state Strategic Intermodal System by giving support to economic drivers and centers. **The scoring structure was modified for this criterion to better account for the number of different types of intermodal connections the alignments make. In this step, the extensions were given points only if the extension connects to another mode of transportation other than automobiles.**

**Statistics**

This criterion is determined by giving one point for a direct connection to each of the following: Airport, Seaport, Metrorail, and Tri-Rail. As this criterion was not determined using a comparative method, the count of connections carried over to the scoring.

### 1.2.6 Capital Cost per Mile (with Right-of-Way) in Millions

This performance criterion takes into account the capital costs associated with each alternative, and is determined by taking the total projected capital costs and dividing by the number of miles of each alternative. Because longer alternatives will have inherently larger costs, cost per mile allows alternatives to be compared on a more even basis. It also allows fixed costs to be distributed across the whole alignment. The cost is inversely proportional to the attractiveness of the alternative. **The definition for this performance criterion did not change from the Screen One process.**

**Statistics**

| Descriptive Statistic | Score |
|---|---|
| Average | $51.60 |
| Standard Deviation | $39.40 |
| Maximum Value | $181.40 |
| Minimum Value | $7.10 |
| Sum | $2,063.60 |
| Median | $41.10 |
| 1st Quartile | $23.30 |
| 2nd Quartile | $41.10 |
| 3rd Quartile | $58.90 |
| Range | $174.20 |

**Tier 1** ≥ $59.00 million per mile

**Tier 2** $41.20 million - $58.90 million per mile

**Tier 3** $23.40 million - $41.10 million per mile

**Tier 4** < $23.30 million per mile

### 1.2.7 Annual Cost per Trip

This performance criterion considers the total annualized capital and annual operating cost of the alternative and divides it by the expected ridership. Because higher capacity alternatives or longer alternatives often carry larger price tags, their costs can be offset by the benefits of their service. This balances cost reductions achieved by limiting stations with the effectiveness of the system. The per trip cost is inversely proportional to the attractiveness of the alternative. **The definition for this performance criterion did not change from the Screen One process.**

**Statistics**

| Descriptive Statistic | Score |
|---|---|
| Average | $25.10 |
| Standard Deviation | $11.20 |
| Maximum Value | $55.80 |
| Minimum Value | $8.30 |
| Sum | $1,002.60 |
| Median | $23.30 |
| 1st Quartile | $17.20 |
| 2nd Quartile | $23.30 |
| 3rd Quartile | $31.70 |
| Range | $47.60 |

**Tier 1** ≥ $31.71 per trip

**Tier 2** $23.31 – $31.70 per trip

**Tier 3** $17.21 – $23.30 per trip

**Tier 4** < $17.20 per trip

### 1.2.8 Subsidy per Trip

This performance criterion measures the amount of subsidy for each trip, whether through local, state, or federal funding. This criterion takes into account farebox recovery as a ridership factor and will be affected by the cost per trip, as well as by what riders are willing to pay for that trip. The per trip subsidy is inversely proportional to the

attractiveness of the alternative. **The definition for this performance criterion did not change from the Screen One process.**

**Statistics**

| Descriptive Statistic | Score |
|---|---|
| Average | $2.30 |
| Standard Deviation | $1.70 |
| Maximum Value | $8.20 |
| Minimum Value | -$1.10 |
| Sum | $93.70 |
| Median | $2.00 |
| 1st Quartile | $1.40 |
| 2nd Quartile | $2.00 |
| 3rd Quartile | $3.20 |
| Range | $9.30 |

**Tier 1** ≥ $3.21 per trip

**Tier 2** $2.01 – $3.20 per trip

**Tier 3** $1.41 – $2.00 per trip

**Tier 4** < $1.40 per trip

### 1.2.9 Total Trip Flows

As part of this project, trip flow demand was examined between superzones. This performance criterion considers the total trips demanded in the generalized corridor that serves the flow pattern. Corridors that support high total trips speak to the overall congestion in the system created by demand for new connections to key destinations. **The definition for this performance criterion did not change from the Screen One process.**

**Statistics**

| Descriptive Statistic | Score |
|---|---|
| Average | n/a |
| Standard Deviation | n/a |
| Maximum Value | n/a |
| Minimum Value | n/a |
| Sum | n/a |
| Median | n/a |
| 1st Quartile | 10,000 |
| 2nd Quartile | 20,000 |
| 3rd Quartile | 30,000 |
| Range | n/a |

**Tier 1** < 10,000 trips

**Tier 2** 10,000 – 19,999 trips

**Tier 3** 20,000 – 29,999 trips

**Tier 4** ≥ 30,000 trips

# 2.0 SCREEN TWO RANKING

**Table 1** illustrates the alternatives' numerical values, or raw data, for the each of the performance criteria. **Table 2** shows the scores each alignment received for the performance criteria. As previously discussed, the scoring system consists of four tiers, with the highest, or best, score being four. Each alternative's individual scores were added to provide a Screen Two total, one of the factors used to determine whether or not the alternative would advance past the Screen Two testing process.

The basic scoring process, shown in **Table 2**, gave each performance criteria category equal weight, and therefore each alignment competed to perform best overall. Additional analysis was taken to ensure the alignments that were selected to advance achieved multiple goals of being productive, connective, and cost-effective. To determine each alignment's contribution to the regional system, each was weighted by emphasizing specified classification groups separately: Productive, Connective, and Cost Effective. To determine each alignment's weighted score, the corresponding classification group was given a weight of 60%, and the two other classification groups were each given a weight of 20%. **Table 3** below shows the method for determining the weighted score, using Alternative 30C as an example.

**Table 3 – Alternative Weighting Example**

| | Productive | | Connective | | Cost-Effective | | |
|---|---|---|---|---|---|---|---|
| **Alternative 30C** | Raw Score | Weight | Raw Score | Weight | Raw Score | Weight | Weighted Score |
| Productive Weighting | 8 | 60% | 6 | 20% | 5 | 20% | 7 |
| Connective Weighting | 8 | 20% | 6 | 60% | 5 | 20% | 6.2 |
| Cost-Effective Weighting | 8 | 20% | 6 | 20% | 5 | 60% | 5.8 |

The weighting allowed a secondary check of the alignments and their comparative performance to the others. Once the weighted scores were calculated, the alignments were placed into the Bottom (total weighted scores below the 25$^{th}$ percentile), Middle (total weighted cores within the 25$^{th}$ – 75$^{th}$ percentile), or Top (total weighted scores above the 75$^{th}$ percentile) tier of each classification group.

Those that scored in the bottom of the weighted ranking for more than one classification group were removed from testing (noted in dark gray). Duplicate alternatives were also eliminated for further testing (noted in light gray) prior to network composition. The results of the categorical analysis scoring for each of the performance criteria classification groups are shown in **Table 4.**

# Table 1 – Screen Two Alternatives – Raw Data

| | Alternative | | Mode | Performance Criteria | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Total Alignment Length (in miles) | Total Trip Flows | Incremental Trips on New Service (Annual) | Incremental Trips/Mile on New Service (Annual) | Inter-jurisdictional (Crosses county lines) | Number of Regional Activity Centers (RACs) Served | Intermodal Connection (Airport/ Seaport/Tri-Rail/ Metrorail) | Capital Cost per Mile (w/ Right-of-Way) (in millions) | Annual Cost per Trip | Subsidy per Trip | Total Capital Cost (w/ Right-of-Way) (in millions) |
| Miami East-West | 30C | East-West Metrorail Extension West to FIU | Metrorail | 8.8 | GT 30,000 | 3,561,600 | 404,727 | 0 | 7 | 3 | $145.0 | $29.19 | $2.55 | $1,276.2 |
| Miami East-West | 30D | East-West Metrorail Extension South to Kendall | Metrorail | 14.4 | GT 30,000 | 4,490,100 | 311,813 | 0 | 7 | 3 | $144.2 | $37.70 | $3.50 | $2,077.1 |
| Miami East-West | 31R | 137th Rapid Bus | BRT | 23.6 | GT 30,000 | 1,225,920 | 51,946 | 0 | 2 | 3 | $23.3 | $38.91 | $2.85 | $548.78 |
| Miami East-West | 31T | Metrorail Extension plus 137th Avenue Rapid Bus | Combined Metrorail/BRT | 8.8 | GT 30,000 | 5,663,680 | 643,600 | 0 | 5 | 3 | $181.4 | $23.26 | $2.21 | $1,595.93 |
| Miami East-West | 30E | Kendall Drive East-West Extension | Metrorail | 7.8 | 20-30,000 | 2,714,400 | 348,000 | 0 | 5 | 1 | $142.9 | $32.30 | $2.02 | $1,114.3 |
| MB LRT | 30F | Miami Beach LRT | LRT | 8.6 | GT 30,000 | 3,965,755 | 461,134 | 0 | 3 | 2 | $56.7 | $12.14 | $1.99 | $487.9 |
| Broward East-West | 30G | Broward East-West LRT | LRT | 20.8 | 20-30,000 | 7,623,274 | 366,504 | 0 | 6 | 3 | $75.2 | $17.94 | $1.21 | $1,563.8 |
| Broward East-West | 30T | Broward E-W LRT SFEC to CBD | LRT | 8.2 | 10-20,000 | 4,121,631 | 502,638 | 0 | 2 | 1 | $76.7 | $13.41 | $1.05 | $628.9 |
| Broward East-West | 30U | Broward E-W LRT SR7 to CBD | LRT | 3.6 | 10-20,000 | 3,143,304 | 873,140 | 0 | 1 | 1 | $81.1 | $8.26 | $0.71 | $292.0 |
| Jupiter Tri-Rail Extensions | 30I | Jupiter West Palm Beach DMU | DMU | 17.0 | 20-30,000 | 2,818,367 | 165,786 | 0 | 2 | 2 | $40.7 | $20.05 | $1.64 | $692.4 |
| Jupiter Tri-Rail Extensions | 30V | Jupiter Extension (7 Stations) | Commuter Rail | 13.4 | 20-30,000 | 1,973,648 | 147,287 | 0 | 7 | 2 | $41.6 | $23.38 | $1.62 | $557.39 |
| Jupiter Tri-Rail Extensions | 30W | Jupiter Extension (5 Stations) | Commuter Rail | 13.4 | 20-30,000 | 1,622,927 | 121,114 | 0 | 7 | 2 | $40.7 | $27.92 | $2.15 | $545.74 |
| Jupiter Tri-Rail Extensions | 30X | Jupiter via Mangonia | Commuter Rail | 15.5 | 20-30,000 | 1,163,503 | 75,065 | 0 | 7 | 2 | $39.6 | $43.32 | $3.55 | $614.34 |
| Jupiter Tri-Rail Extensions | 31U | Tri-Rail Extension to VA Hospital | Commuter Rail | 2.8 | GT 30,000 | 278,057 | 99,306 | 0 | 6 | 2 | $45.0 | $33.87 | ($1.11) | $125.92 |
| Miami Tri-Rail Extensions | 30J | Tri-Rail Split to CBD | Commuter Rail | 9.6 | GT 30,000 | 2,462,079 | 257,809 | 0 | 6 | 2 | $40.4 | $20.82 | $8.21 | $386.0 |
| Miami Tri-Rail Extensions | 32K | Tri-Rail Extension to Dadeland | Commuter Rail | 10.7 | GT 30,000 | 1,970,425 | 184,152 | 2 | 11 | 3 | $39.6 | $17.92 | $0.78 | $423.36 |
| FEC | 30K | FEC Complete | Commuter Rail | 83.3 | GT 30,000 | 10,793,534 | 129,574 | 2 | 9 | 3 | $41.1 | $27.51 | $3.29 | $3,426.5 |
| FEC | 30L | FEC Shorter Line | Commuter Rail | 40.6 | GT 30,000 | 8,512,529 | 209,668 | 1 | 5 | 4 | $40.2 | $16.71 | $1.77 | $1,634.1 |
| FEC | 30Z | FEC Complete (LRT) | LRT | 82.3 | GT 30,000 | 11,350,820 | 137,920 | 2 | 9 | 3 | $41.7 | $26.59 | $1.79 | $3,429.65 |
| FEC | 32A | FEC West Palm Beach to Miami | Commuter Rail | 66.1 | GT 30,000 | 8,586,951 | 129,908 | 2 | 9 | 3 | $41.2 | $27.49 | $3.30 | $2,723.51 |
| FEC | 32B | FEC Ft. Lauderdale to Miami | Commuter Rail | 24.4 | GT 30,000 | 4,976,898 | 203,971 | 1 | 5 | 3 | $43.1 | $24.78 | $2.69 | $1,050.60 |
| Bus | 31A | North-South Premium Bus | BRT | 98.0 | GT 30,000 | 5,712,000 | 58,286 | 2 | 8 | 3 | $7.1 | $11.82 | $0.88 | $700.65 |
| Bus | 31S | North-South Rapid Bus with Douglas Avenue | BRT | 92.5 | GT 30,000 | 4,315,520 | 46,654 | 2 | 8 | 3 | $7.2 | $15.09 | $1.57 | $670.38 |
| Bus | 31D | University Drive Rapid Bus | BRT | 23.0 | 10-20,000 | 1,617,280 | 70,317 | 1 | 2 | 1 | $22.7 | $27.51 | $1.52 | $522.79 |
| Bus | 31K | Wellington Rapid Bus | BRT | 13.9 | 10-20,000 | 2,535,040 | 182,377 | 0 | 1 | 1 | $22.7 | $10.66 | $0.26 | $316.01 |
| Bus | 31L | Military Trail Rapid Bus | BRT | 32.2 | GT 30,000 | 4,306,240 | 133,734 | 0 | 6 | 2 | $22.7 | $14.47 | $0.09 | $729.35 |
| Bus | 31N | Pines Rapid Bus | BRT | 16.0 | 10-20,000 | 2,553,600 | 159,600 | 1 | 0 | 2 | $23.2 | $13.61 | $1.60 | $370.73 |
| Bus | 31P | Atlantic Rapid Bus | BRT | 18.1 | 10-20,000 | 2,243,840 | 123,969 | 0 | 1 | 1 | $23.3 | $17.40 | $1.94 | $421.08 |
| Bus | 31O | Oakland Park Rapid Bus | BRT | 18.5 | GT 30,000 | 2,235,840 | 120,856 | 0 | 3 | 1 | $23.5 | $18.25 | $2.04 | $435.15 |
| Bus | 32D | Sample Road Modified Rapid Bus | BRT | 27.4 | 10-20,000 | 1,651,200 | 60,263 | 0 | 1 | 1 | $22.4 | $31.53 | $1.91 | $612.70 |
| Kendall | 31V | Tri-Rail Extension to Zoo | Commuter Rail | 19.4 | GT 30,000 | 1,215,071 | 62,633 | 0 | 6 | 2 | $41.1 | $55.84 | $6.73 | $796.72 |
| Kendall | 30O | Kendall DMU #1 - Zoo | DMU | 14.4 | 10-20,000 | 1,277,480 | 88,714 | 0 | 3 | 2 | $46.6 | $43.34 | $4.54 | $671.6 |
| Kendall | 30Q | Kendall DMU #3 - Krome | DMU | 14.6 | 10-20,000 | 1,399,661 | 95,867 | 0 | 3 | 2 | $45.2 | $38.93 | $3.97 | $660.1 |
| Kendall | 30Y | Kendall DMU Combination | DMU | 21.4 | 10-20,000 | 1,812,791 | 84,710 | 0 | 3 | 2 | $41.9 | $41.02 | $4.42 | $895.84 |
| Kendall | 31W | DMU to Zoo plus Airport Feeders | Combined DMU/BRT | 19.4 | 10-20,000 | 2,352,008 | 121,238 | 0 | 3 | 3 | $65.4 | $43.86 | $3.19 | $1,268.22 |
| Kendall | 31Q | Kendall Rapid Bus | BRT | 8.0 | 20-30,000 | 874,240 | 109,280 | 0 | 1 | 1 | $23.4 | $18.53 | $0.99 | $186.89 |
| Kendall | 32E | Kendall Hybrid BRT-DMU SW 137th | Combined DMU/BRT | 8.5 | 20-30,000 | 1,829,350 | 215,218 | 0 | 2 | 1 | $69.2 | $27.30 | $2.64 | $587.87 |
| Kendall | 32G | Kendall Hybrid BRT-DELRT SW 137th Augmented | Combined DELRT/BRT | 6.0 | 20-30,000 | 3,741,268 | 623,545 | 0 | 2 | 1 | $86.0 | $12.29 | $0.95 | $515.87 |

Removed due to score

Removed due to duplication

# Table 2 – Screen Two Alternatives – Comparative Scores

| | Alternative | | Mode | Performance Criteria | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Incremental Trips / Mile (Annual) | Total Trip Flows | Productive Subtotal | Inter-jurisdictional (Crosses county lines) | Number of Regional Activity Centers (RACs) Served | Intermodal Connection (Airport/ Seaport/Tri-Rail/ Metrorail) | Connective Subtotal | Capital Cost per Mile (w/ Right-of-Way) (in millions) | Annual Cost per Trip | Subsidy per Trip | Cost-Effective Subtotal | TOTAL SCORE |
| Miami East-West | 30C | East-West Metrorail Extension West to FIU | Metrorail | 4 | 4 | 8 | 0 | 3 | 3 | 6 | 1 | 2 | 2 | 5 | 19 |
| Miami East-West | 30D | East-West Metrorail Extension South to Kendall | Metrorail | 4 | 4 | 8 | 0 | 3 | 3 | 6 | 1 | 1 | 1 | 3 | 17 |
| Miami East-West | 30E | Kendall Drive East-West Extension | Metrorail | 4 | 3 | 7 | 0 | 2 | 1 | 3 | 1 | 1 | 2 | 4 | 14 |
| Miami East-West | 31R | 137th Rapid Bus | BRT | 1 | 4 | 5 | 0 | 1 | 3 | 4 | 4 | 1 | 2 | 7 | 16 |
| Miami East-West | 31T | Metrorail Extension plus 137th Avenue Rapid Bus | Combined Metrorail/BRT | 4 | 4 | 8 | 0 | 2 | 3 | 5 | 1 | 3 | 2 | 6 | 19 |
| MB LRT | 30F | Miami Beach LRT | LRT | 4 | 4 | 8 | 0 | 2 | 2 | 4 | 2 | 4 | 3 | 9 | 21 |
| Broward East-West | 30G | Broward East-West LRT | LRT | 4 | 3 | 7 | 0 | 3 | 3 | 6 | 1 | 3 | 4 | 8 | 21 |
| Broward East-West | 30T | Broward E-W LRT SFEC to CBD | LRT | 4 | 2 | 6 | 0 | 1 | 1 | 2 | 1 | 4 | 4 | 9 | 17 |
| Broward East-West | 30U | Broward E-W LRT SR7 to CBD | LRT | 4 | 2 | 6 | 0 | 1 | 1 | 2 | 1 | 4 | 4 | 9 | 17 |
| Jupiter Tri-Rail Extensions | 30I | Jupiter West Palm Beach DMU | DMU | 3 | 3 | 6 | 0 | 1 | 2 | 3 | 3 | 3 | 3 | 9 | 18 |
| Jupiter Tri-Rail Extensions | 30V | Jupiter Extension (7 Stations) | Commuter Rail | 3 | 3 | 6 | 0 | 3 | 2 | 5 | 2 | 2 | 3 | 7 | 18 |
| Jupiter Tri-Rail Extensions | 30W | Jupiter Extension (5 Stations) | Commuter Rail | 2 | 3 | 5 | 0 | 3 | 2 | 5 | 3 | 2 | 2 | 7 | 17 |
| Jupiter Tri-Rail Extensions | 30X | Jupiter via Mangonia | Commuter Rail | 1 | 3 | 4 | 0 | 3 | 2 | 5 | 3 | 1 | 1 | 5 | 14 |
| Jupiter Tri-Rail Extensions | 31U | Tri-Rail Extension to VA Hospital | Commuter Rail | 2 | 4 | 6 | 0 | 3 | 2 | 5 | 2 | 1 | 4 | 7 | 18 |
| Miami Tri-Rail Extensions | 30J | Tri-Rail Split to CBD | Commuter Rail | 4 | 4 | 8 | 0 | 3 | 2 | 5 | 3 | 3 | 1 | 7 | 20 |
| Miami Tri-Rail Extensions | 32K | Tri-Rail Extension to Dadeland | Commuter Rail | 3 | 4 | 7 | 2 | 4 | 3 | 9 | 3 | 3 | 4 | 10 | 26 |
| FEC | 30K | FEC Complete | Commuter Rail | 2 | 4 | 6 | 2 | 4 | 3 | 9 | 2 | 2 | 1 | 5 | 20 |
| FEC | 30L | FEC Shorter Line | Commuter Rail | 3 | 4 | 7 | 1 | 2 | 4 | 7 | 3 | 4 | 3 | 10 | 24 |
| FEC | 30Z | FEC Complete (LRT) | LRT | 3 | 4 | 7 | 2 | 4 | 3 | 9 | 2 | 2 | 3 | 7 | 23 |
| FEC | 32A | FEC West Palm Beach to Miami | Commuter Rail | 2 | 4 | 6 | 2 | 4 | 3 | 9 | 2 | 2 | 1 | 5 | 20 |
| FEC | 32B | FEC Ft. Lauderdale to Miami | Commuter Rail | 3 | 4 | 7 | 1 | 2 | 3 | 6 | 2 | 2 | 2 | 6 | 19 |
| Bus | 31A | North-South Premium Bus | BRT | 1 | 4 | 5 | 2 | 4 | 3 | 9 | 4 | 4 | 4 | 12 | 26 |
| Bus | 31S | North-South Rapid Bus with Douglas Avenue | BRT | 1 | 4 | 5 | 2 | 4 | 3 | 9 | 4 | 4 | 3 | 11 | 25 |
| Bus | 31D | University Drive Rapid Bus | BRT | 1 | 2 | 3 | 1 | 1 | 1 | 3 | 4 | 2 | 3 | 9 | 15 |
| Bus | 31K | Wellington Rapid Bus | BRT | 3 | 2 | 5 | 0 | 1 | 1 | 2 | 4 | 4 | 4 | 12 | 19 |
| Bus | 31L | Military Trail Rapid Bus | BRT | 2 | 4 | 6 | 0 | 3 | 2 | 5 | 4 | 4 | 4 | 12 | 23 |
| Bus | 31N | Pines Rapid Bus | BRT | 3 | 2 | 5 | 1 | 1 | 2 | 4 | 4 | 4 | 3 | 11 | 20 |
| Bus | 31O | Oakland Park Rapid Bus | BRT | 2 | 4 | 6 | 0 | 2 | 1 | 3 | 3 | 3 | 2 | 8 | 17 |
| Bus | 31P | Atlantic Rapid Bus | BRT | 2 | 2 | 4 | 0 | 1 | 1 | 2 | 4 | 3 | 3 | 10 | 16 |
| Bus | 32D | Sample Road Modified Rapid Bus | BRT | 1 | 2 | 3 | 0 | 1 | 1 | 2 | 4 | 2 | 3 | 9 | 14 |
| Kendall | 30O | Kendall DMU #1 - Zoo | DMU | 1 | 2 | 3 | 0 | 2 | 2 | 4 | 2 | 1 | 1 | 4 | 11 |
| Kendall | 30Q | Kendall DMU #3 - Krome | DMU | 1 | 2 | 3 | 0 | 2 | 2 | 4 | 2 | 1 | 1 | 4 | 11 |
| Kendall | 30Y | Kendall DMU Combination | DMU | 1 | 2 | 3 | 0 | 2 | 2 | 4 | 2 | 1 | 1 | 4 | 11 |
| Kendall | 31Q | Kendall Rapid Bus | BRT | 2 | 3 | 5 | 0 | 1 | 1 | 2 | 3 | 3 | 4 | 10 | 17 |
| Kendall | 31V | Tri-Rail Extension to Zoo | Commuter Rail | 1 | 4 | 5 | 0 | 3 | 2 | 5 | 3 | 1 | 1 | 5 | 15 |
| Kendall | 31W | DMU to Zoo plus Airport Feeders | Combined DMU/BRT | 2 | 2 | 4 | 0 | 2 | 3 | 5 | 1 | 1 | 2 | 4 | 13 |
| Kendall | 32E | Kendall Hybrid BRT-DMU SW 137th | Combined DMU/BRT | 3 | 3 | 6 | 0 | 1 | 1 | 2 | 1 | 2 | 2 | 5 | 13 |
| Kendall | 32G | Kendall Hybrid BRT-DELRT SW 137th Augmented | Combined DELRT/BRT | 4 | 3 | 7 | 0 | 1 | 1 | 2 | 1 | 4 | 4 | 9 | 18 |

Removed due to score

Removed due to duplication

# Table 4 – Screen Two Alternatives – Weighted Scores

| | Alternative | | Mode | Raw Scores | | | | Weighted Scores | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Productive | Connective | Cost-Effective | TOTAL | Productive | Rank | Connective | Rank | Cost-Effective | Rank |
| Miami East-West | 30C | East-West Metrorail Extension West to FIU | Metrorail | 8 | 6 | 5 | 19 | 7 | MID | 6.2 | MID | 5.8 | BOT |
| | 30D | East-West Metrorail Extension South to Kendall | Metrorail | 8 | 6 | 3 | 17 | 6.6 | MID | 5.8 | MID | 4.6 | BOT |
| | 30E | Kendall Drive East-West Extension | Metrorail | 7 | 3 | 4 | 14 | 5.6 | MID | 4 | BOT | 4.4 | BOT |
| | 31R | 137th Rapid Bus | BRT | 5 | 4 | 7 | 16 | 5.2 | MID | 4.8 | MID | 6 | MID |
| | 31T | Metrorail Extension plus 137th Avenue Rapid Bus | Combined Metrorail/BRT | 8 | 5 | 6 | 19 | 7 | MID | 5.8 | MID | 6.2 | MID |
| MB | 30F | Miami Beach LRT | LRT | 8 | 4 | 9 | 21 | 7.4 | TOP | 5.8 | MID | 7.8 | TOP |
| Broward East-West | 30G | Broward East-West LRT | LRT | 7 | 6 | 8 | 21 | 7 | MID | 6.6 | MID | 7.4 | MID |
| | 30T | Broward E-W LRT SFEC to CBD | LRT | 6 | 2 | 9 | 17 | 5.8 | MID | 4.2 | MID | 7 | MID |
| | 30U | Broward E-W LRT SR7 to CBD | LRT | 6 | 2 | 9 | 17 | 5.8 | MID | 4.2 | MID | 7 | MID |
| Jupiter Tri-Rail Extensions | 30I | Jupiter West Palm Beach DMU | DMU | 6 | 3 | 9 | 18 | 6 | MID | 4.8 | MID | 7.2 | MID |
| | 30V | Jupiter Extension (7 Stations) | Commuter Rail | 6 | 5 | 7 | 18 | 6 | MID | 5.6 | MID | 6.4 | MID |
| | 30W | Jupiter Extension (5 Stations) | Commuter Rail | 5 | 5 | 7 | 17 | 5.4 | MID | 5.4 | MID | 6.2 | MID |
| | 30X | Jupiter via Mangonia | Commuter Rail | 4 | 5 | 5 | 14 | 4.4 | BOT | 4.8 | MID | 4.8 | BOT |
| | 31U | Tri-Rail Extension to VA Hospital | Commuter Rail | 6 | 5 | 7 | 18 | 6 | MID | 5.6 | MID | 6.4 | MID |
| Miami Tri-Rail Extensions | 30J | Tri-Rail Split to CBD | Commuter Rail | 8 | 5 | 7 | 20 | 7.2 | TOP | 6 | MID | 6.8 | MID |
| | 32K | Tri-Rail Extension to Dadeland | Commuter Rail | 7 | 9 | 10 | 26 | 8 | TOP | 8.8 | TOP | 9.2 | TOP |
| FEC | 30K | FEC Complete | Commuter Rail | 6 | 9 | 5 | 20 | 6.4 | MID | 7.6 | TOP | 6 | MID |
| | 30L | FEC Shorter Line | Commuter Rail | 7 | 7 | 10 | 24 | 7.6 | TOP | 7.6 | TOP | 8.8 | TOP |
| | 30Z | FEC Complete (LRT) | LRT | 7 | 9 | 7 | 23 | 7.4 | TOP | 8.2 | TOP | 7.4 | MID |
| | 32A | FEC West Palm Beach to Miami | Commuter Rail | 6 | 9 | 5 | 20 | 6.4 | MID | 7.6 | TOP | 6 | MID |
| | 32B | FEC Ft. Lauderdale to Miami | Commuter Rail | 7 | 6 | 6 | 19 | 6.6 | MID | 6.2 | MID | 6.2 | MID |
| Bus | 31A | North-South Premium Bus | BRT | 5 | 9 | 12 | 26 | 7.2 | TOP | 8.8 | TOP | 10 | TOP |
| | 31S | North-South Rapid Bus with Douglas Avenue | BRT | 5 | 9 | 11 | 25 | 7 | MID | 8.6 | TOP | 9.4 | TOP |
| | 31D | University Drive Rapid Bus | BRT | 3 | 3 | 9 | 15 | 4.2 | BOT | 4.2 | MID | 6.6 | MID |
| | 31K | Wellington Rapid Bus | BRT | 5 | 2 | 12 | 19 | 5.8 | MID | 4.6 | MID | 8.6 | TOP |
| | 31L | Military Trail Rapid Bus | BRT | 6 | 5 | 12 | 23 | 7 | MID | 6.6 | MID | 9.4 | TOP |
| | 31N | Pines Rapid Bus | BRT | 5 | 4 | 11 | 20 | 6 | MID | 5.6 | MID | 8.4 | TOP |
| | 31O | Oakland Park Rapid Bus | BRT | 6 | 3 | 8 | 17 | 5.8 | MID | 4.6 | MID | 6.6 | MID |
| | 31P | Atlantic Rapid Bus | BRT | 4 | 2 | 10 | 16 | 4.8 | BOT | 4 | BOT | 7.2 | MID |
| | 32D | Sample Road Modified Rapid Bus | BRT | 3 | 2 | 9 | 14 | 4 | BOT | 3.6 | BOT | 6.4 | MID |
| Kendall | 30O | Kendall DMU #1 - Zoo | DMU | 3 | 4 | 4 | 11 | 3.4 | BOT | 3.8 | BOT | 3.8 | BOT |
| | 30Q | Kendall DMU #3 - Krome | DMU | 3 | 4 | 4 | 11 | 3.4 | BOT | 3.8 | BOT | 3.8 | BOT |
| | 30Y | Kendall DMU Combination | DMU | 3 | 4 | 4 | 11 | 3.4 | BOT | 3.8 | BOT | 3.8 | BOT |
| | 31Q | Kendall Rapid Bus | BRT | 5 | 2 | 10 | 17 | 5.4 | MID | 4.2 | MID | 7.4 | MID |
| | 31V | Tri-Rail Extension to Zoo | Commuter Rail | 5 | 5 | 5 | 15 | 5 | BOT | 5 | MID | 5 | BOT |
| | 31W | DMU to Zoo plus Airport Feeders | Combined DMU/BRT | 4 | 5 | 4 | 13 | 4.2 | BOT | 4.6 | MID | 4.2 | BOT |
| | 32E | Kendall Hybrid BRT-DMU SW 137th | Combined DMU/BRT | 6 | 2 | 5 | 13 | 5 | BOT | 3.4 | BOT | 4.6 | BOT |
| | 32G | Kendall Hybrid BRT-DELRT SW 137th Augmented | Combined DELRT/BRT | 7 | 2 | 9 | 18 | 6.4 | MID | 4.4 | MID | 7.2 | MID |
| | | | | | | | Productive | 60% | | 20% | | 20% | |
| | | | | | | | Connective | 20% | | 60% | | 20% | |
| | | | | | | | Cost-Effective | 20% | | 20% | | 60% | |

Removed due to score

Removed due to duplication

# 3.0 SCREEN TWO ALTERNATIVES

Following the initial Screen Two analysis, each corridor performing lowest comparatively was examined for potential alignment adjustments that might enhance its performance. In cases where the corridor's performance was too low for regional competition (score <17 and two "Bottom" scores in the categorical analysis), the alternative was considered for removal. Additional alignments were removed for poor performance in weighted scoring, or due to duplication of service that complicates building a network of improvements. One alignment (University Drive Rapid Bus) remained with a score of 15: The alignment's Cost-Effective raw score was high enough to keep the alternative's weighted scores above the 25th percentile in two of the weighted score categories. Additionally, the alternative serving North Broward County on Atlantic Avenue was replaced by a new Sample Road option at the request of Broward County Transit (BCT).

In the following list, each alternative is accompanied by its composite raw score and a notation as to whether it was advanced to network development or removed from testing. **Figure 2** illustrates the resulting Screen Two Alternatives. **Figure 3** shows each alternative and its progress and refinement through the screening process to date. The Screen Two analysis resulted in 27 Screen Two Alternatives.

**30C East-West Metrorail Extension West to FIU** (Score=19, Advanced)

This project would extend Metrorail service from the Miami Intermodal Center (MIC) to Florida International University (FIU) along State Road 836 (SR 836)/Dolphin Expressway corridor. This 10.1-mile alternative would have seven stations. Trains would operate at six minute headways during peak hours and 10 minute headways during off-peak hours. The guideway would be completely grade separated (elevated). Capital costs for this alternative are estimated to be $1.28 billion. **This alternative will advance to network development.**

**30D East-West Metrorail Extension South to Kendall** (Score=17, Advanced)

This project would extend Metrorail from the MIC to Kendall Drive via FIU along SR 836/Dolphin Expressway and the Homestead Extension of the Florida Turnpike (HEFT) corridor. This 14.4-mile alternative includes 13 stations. Trains operate at five minute headways during peak hours and 10 minute headways during off-peak hours. The vertical profile for this alternative is grade separated (elevated). Capital costs for this alternative are estimated to be $2.08 billion. **This alternative will advance to network development.**

~~**30E Kendall Drive East-West Extension**~~ (Score=14, Removed Due to Score)

This project would be a 7.8-mile elevated Metrorail extension that operates along SW 104th Street from Kendall Drive in the west to the proposed terminal station for the one-mile extension to the east. This alignment has 10 stations and runs at 10 and 15 minute headways during peak and off-peak hours, respectively. Capital costs for this alternative are estimated to be $1.11 billion. **This alternative was removed from testing due to its score.**

# FIGURE 2
# SCREEN TWO ALTERNATIVES

## Palm Beach County Alternatives

- Wellington Rapid Bus (31 K)
- Military Trail Rapid Bus (31 L)
- Jupiter Alternative - CR (30 V)
- Tri-Rail Extension to the VA Hospital (31 U)

## Three County Alternatives

- North-South Premium Bus - Dadeland South (31 A)
- North-South Premium Bus - Palmetto Line B (31 A)
- North-South Premium Bus - Palmetto Line A (31 A)
- North-South Premium Bus - Sawgrass to Boca (31 A)
- Douglas Road Rapid Bus (31 S)
- Tri-Rail Split to CBD (30 J)
- FEC Complete (30 K)
- FEC West Palm Beach to Miami (32 A)

## Broward County Alternatives

- University Drive Rapid Bus (31 D)
- Pines Rapid Bus to University - Line A (31 N)
- Pines Rapid Bus to FEC - Line B (31 N)
- Oakland Park Rapid Bus to Dntn Ft. Lauderdale- Line A (31 O)
- Oakland Park Rapid Bus to Cypress Creek - Line B (31 O)
- Sample Road Modified Rapid Bus - Line A (32 D)
- Sample Road Modified Rapid Bus - Line B (32 D)
- Broward East-West LRT (30 G)
- Broward East-West LRT - College to Dntn Ft. Lauderdale (30 T)

## Two County Alternatives

- FEC Shorter Line (30 L)
- FEC Ft. Lauderdale to Miami (32 B)

## Miami-Dade County Alternatives

- Kendall Drive Rapid Bus (31 Q)
- 137th Avenue Rapid Bus (31 R)
- East-West Metrorail Extension to FIU (30 C)
- East-West Metrorail Extension to Kendall (30 D)
- Miami Beach LRT (30 F)
- Tri-Rail Extension to Dadeland (32 K)
- Kendall Hybrid BRT-DELRT SW 137th Ave - Line A (32 G)
- Kendall Hybrid BRT-DELRT SW 137th Ave - Line B (32 G)
- Metrorail East-West Extension with 137th Avenue Rapid Bus - Line A (31 T)
- Metrorail East-West Extension with 137th Avenue Rapid Bus - Line B (31 T)

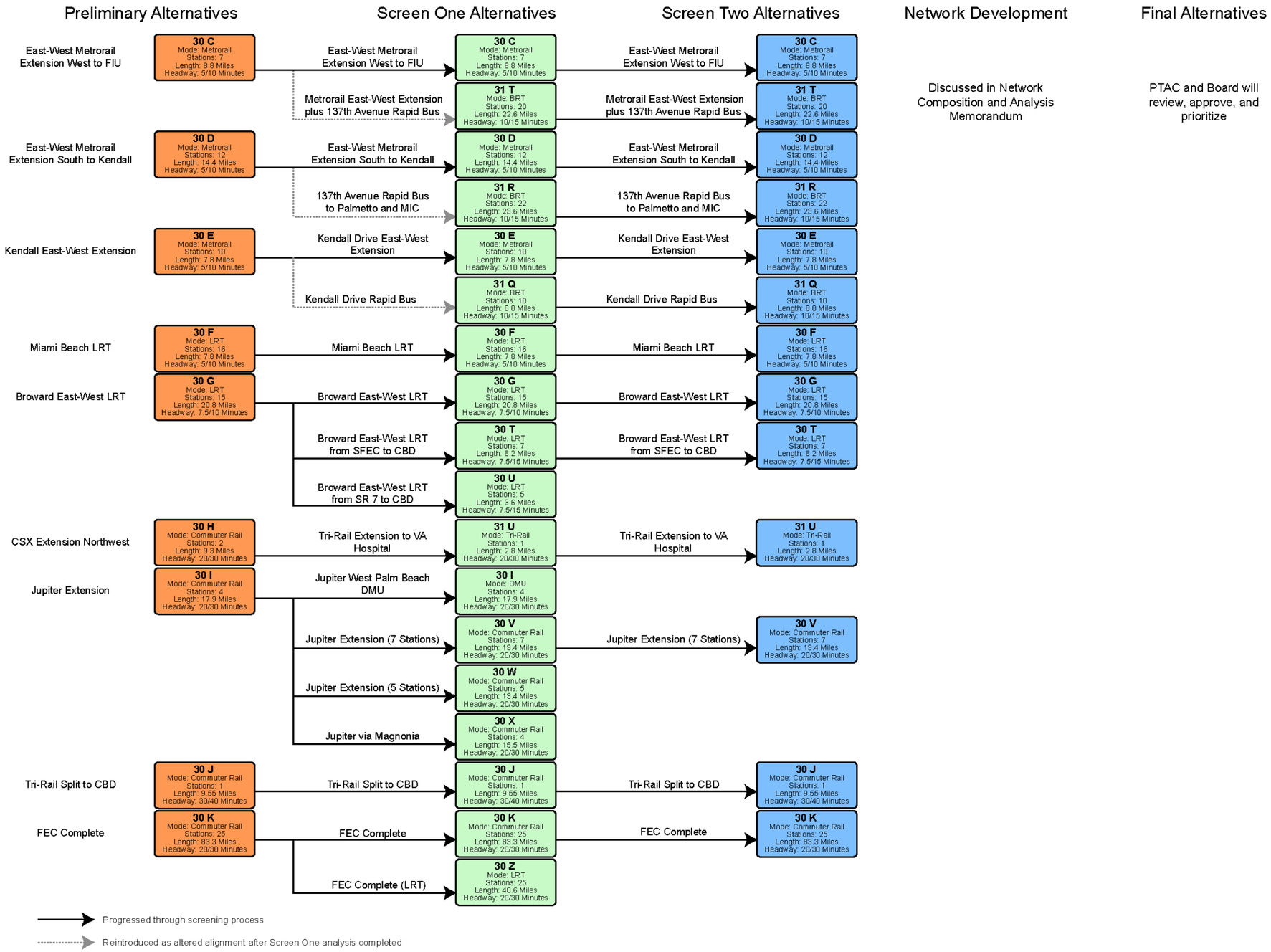
## Legend

- Baseline Premium Transit
- Interstate/Toll Road/US Road/State Road
- Activity Centers
- Superzones
- Railroad
- Lake Okeechobee
- County

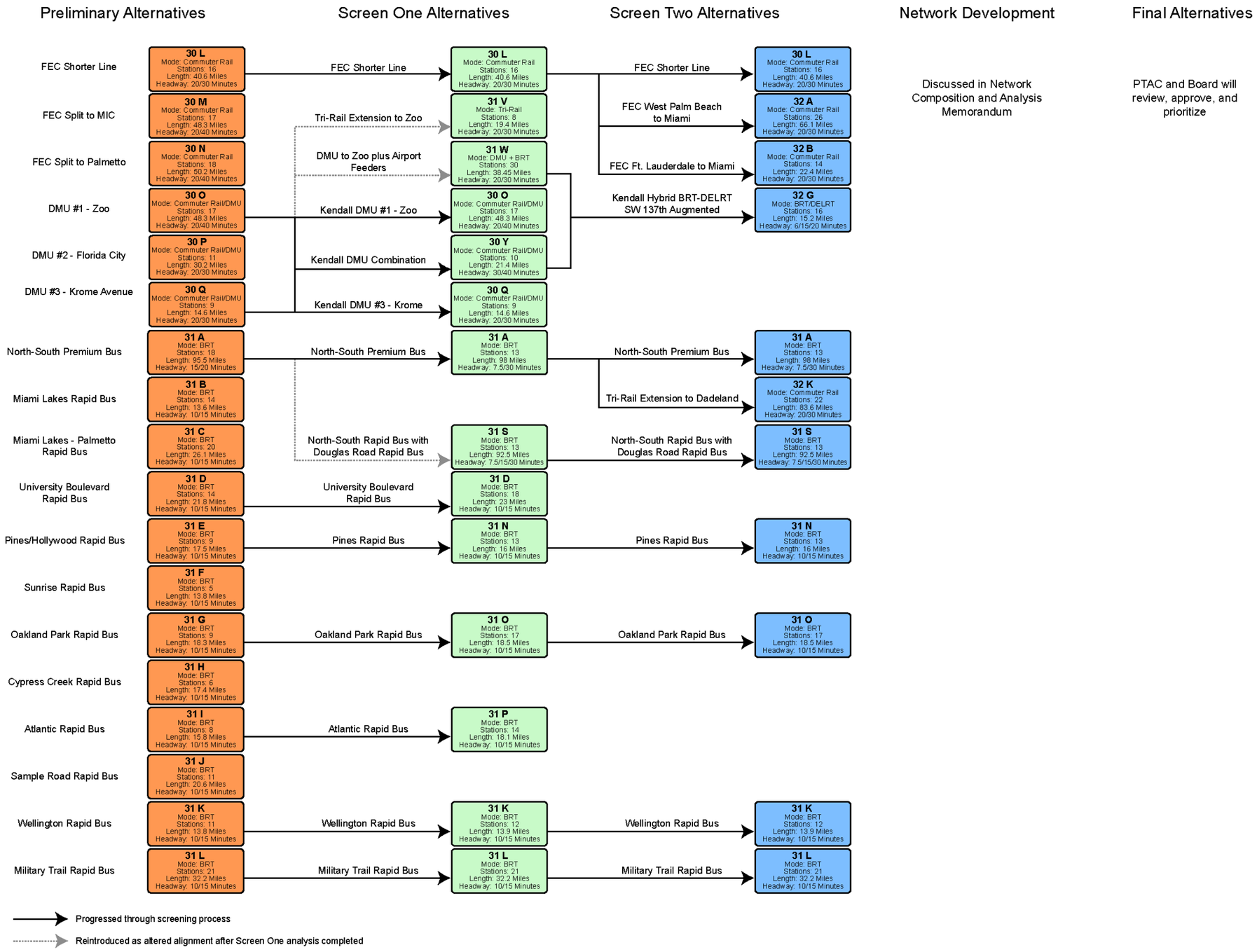
5 Miles

Source: South Florida Regional Transportation Authority Strategic Regional Transit Plan, 2007

## Figure 3a – Alternatives Flow Chart through Screen Two



## Figure 3b – Alternatives Flow Chart through Screen Two (Cont.)



**30F Miami Beach LRT** (Score=21, Advanced)

This project would be an 8.6-mile at-grade light rail alignment with 16 stations connecting Miami Beach and Downtown Miami. Trains in this alternative would run at five and 10 minute headways during peak and off-peak hours, respectively. Capital costs for this alternative are estimated to be $488 million. **This alternative will advance to network development.**

**30G Broward East-West LRT** (Score=21, Advanced)

This project would be a predominately elevated light rail alignment connecting Sawgrass Mills Mall in the west to Ft. Lauderdale-Hollywood (FLL) Airport in the east. This alignment would be mostly grade separated and contain 15 stations. The headways would be 7.5 and 15 minutes for peak and off-peak, respectively. Capital costs for this alternative are estimated to be $1.56 billion. **This alternative will advance to network development.**

~~**30I Jupiter West Palm Beach DMU**~~ (Score=18, Removed Due to Duplication)

This project would be a 17-mile extension of the existing Tri-Rail commuter rail service from Downtown West Palm Beach to Indiantown Road in Jupiter. This alternative was adjusted to examine potential new operating conditions. The modified Alternative 30I would function completely in FEC right-of-way, with more closely spaced stations using Diesel Multiple Unit (DMU) technology with a transfer to other systems at Downtown West Palm Beach. Capital costs for this alternative are estimated to be $692 million. **This alternative was removed from testing due to duplication of 30V.**

**30J Tri-Rail Split to CBD** (Score=20, Advanced)

This project would be 9.55-mile spur extending from the existing Tri-Rail alignment in the vicinity of W 21st Street, going east and then south to terminate in Downtown Miami. The alignment would be completely at-grade, and includes one additional station. Headways for this alternative are 30 minutes during peak hours and 40 minutes during off-peak hours. Capital costs for this alternative are estimated to be $386 million. **This alternative will advance to network development.**

**30K FEC Complete** (Score=20, Advanced)

This project would be an at-grade commuter rail alignment operating in existing FEC rail right-of-way from Indiantown Road in Jupiter, Palm Beach County, to Downtown Miami. This 82.5-mile alignment is completely at-grade and contains 33 stations. Headways for this alternative would be 20 and 30 minutes during peak and off-peak hours, respectively. Capital costs for this alternative are estimated to be $3.43 billion. **This alternative will advance to network development.**

**30L FEC Shorter Line** (Score=24, Advanced)

This project would be an at-grade commuter rail alignment operating in existing FEC rail right-of-way extending from Downtown Miami to the Pompano area, where the line switches to the CSX corridor. This 36.1-mile alignment would be completely at-grade and contain 18 stations. The headways for this alternative would be 20 and 30 minutes for peak and off-peak hours, respectively. Capital costs for this alternative are estimated to be $1.63 billion. **This alternative will advance to network development.**

**~~30O Kendall DMU #1 – Zoo~~** (Score=11, Removed due to Performance)

This project would be a 19.4-mile, at-grade commuter rail alternative, from the MIC to the Urban Service Area boundary, using DMU rail technology. The alignment would include eight additional stations and 20 and 30 minute headways during peak and off-peak hours, respectively. Capital costs for this alternative are estimated to be $671 million. **This alternative was removed from testing due to its score.**

**~~30Q Kendall DMU #3 – Krome~~** (Score=11, Removed due to Performance)

This project would be an at-grade commuter rail alternative, 18.1-mile alignment from the MIC to the Krome Spur, ending at church station, using DMU rail technology. This alignment would include eight additional stations and 20 and 30 minute headways during peak and off-peak hours, respectively. Capital costs for this alternative are estimated to be $660 million. **This alternative was removed from testing due to its score.**

**30T Broward East-West LRT from South Florida Education Center (SFEC) to CBD** (Score=17, Advanced)

This project would be an elevated light rail alignment connecting the SFEC in the west to Downtown Ft. Lauderdale in the east. This 8.2-mile alternative would contain seven stations and operate at 7.5 and 15 minute headways during peak and off-peak hours, respectively. Capital costs for this alternative are estimated to be $629 million. **This alternative will advance to network development.**

**~~30U Broward East-West LRT from SR 7 to CBD~~** (Score=17, Removed Due to Duplication)

This project would be an elevated light rail alignment connecting SR 7 in the west to Downtown Ft. Lauderdale in the east. This 3.6-mile alternative would include five stations and run at 7.5 and 15 minute headways during peak and off-peak hours, respectively. Capital costs for this alternative are estimated to be $292 million. **This alternative was removed from testing due to duplication of 30T.**

**30V Jupiter Extension (7 Stations)** (Score=18, Advanced)

This project would be a new, 13.4-mile extension of the existing Tri-Rail commuter rail service with seven stations between Downtown West Palm Beach and Indiantown Road in Jupiter. The alignment would carry trains from the existing CSX rail corridor to the FEC rail right-of-way. Vehicles would run at 20 and 30 minute headways during peak and off-peak hours, respectively. Capital costs for this alternative are estimated to be $557 million. **This alternative will advance to network development.**

~~**30W Jupiter Extension (5 Stations)**~~ (Score=17, Removed Due to Duplication)

This project would be a limited stop 13.4-mile extension of the existing Tri-Rail commuter rail service with five stations from Downtown West Palm Beach to Indiantown Road in Jupiter. The alignment would carry trains from the existing CSX rail corridor to the FEC rail right-of-way and have 20 and 30 minute headways during peak and off-peak hours, respectively. Capital costs for this alternative are estimated to be $546 million. **This alternative was removed from testing due to duplication of 30V.**

~~**30X Jupiter via Mangonia**~~ (Score=14, Removed due to Performance)

This project would be a local 15.5-mile extension of the existing Tri-Rail commuter rail service from Downtown West Palm Beach to Indiantown Road in Jupiter, with a connection to the existing Mangonia station. The alignment would carry trains north on the existing CSX rail corridor to northwest of Mangonia Park, then jog east to the FEC rail right-of-way. Operationally, it would have 20 and 30 minute headways during peak and off-peak hours, respectively. Capital costs for this alternative are estimated to be $614 million. **This alternative was removed due to its score.**

~~**30Y Kendall DMU Combination**~~ (Score=11, Removed due to Performance)

This at-grade commuter rail alternative is a 21.4-mile long alignment combined from two alternatives, the MIC to the Urban Service Area Boundary, and the MIC to the Krome Spur, ending at church station. There are 10 stations in this alternative and 30 and 40 minute headways during peak and off-peak hours, respectively. Capital costs for this alternative are estimated to be $896 million. **This alternative was removed due to its score.**

~~**30Z FEC Complete as LRT**~~ (Score=23, Removed Due to Duplication)

This project would be a mostly at-grade light rail alignment from Indiantown Road in Jupiter to Downtown Miami. This alternative would contain 33 stations and run at 20 minute headways during peak hours and 30 minute headways during off-peak hours. Capital costs for this alternative are estimated to be $3.43 billion. **This alternative was removed from testing due to duplication of 30K.**

### 31A North-South Premium Bus (Score=26, Advanced)

Formerly a 90-mile at-grade/surface rapid bus service operating largely in freeway right-of-way from Miami International Airport (MIA) to Downtown Boca Raton via the MIC, this alignment will be split into four services – "A" service would connect the Dadeland South to the MIC; "B" service would connect the Palmetto area to the HEFT; "C" service would connect the Palmetto area to the Sawgrass Mills Area; and "D" service would connect the Sawgrass Mills area to I-95, Boca Town Center, and Mizner Park. Headways would range from 7.5 minutes in peak hour to 30 minutes in off-peak. Capital costs for this alternative are estimated to be $701 million. **This alternative will advance to network development.**

### 31D University Boulevard Rapid Bus (Score=15, Advanced)

This project would be a 23.4-mile long at-grade/surface rapid bus service operating on SR 817/University Drive from Florida's Turnpike to the Sawgrass Expressway in Broward County. This alignment would include 18 stations and operate at 10 and 15 minute headways during peak and off-peak hours, respectively. Capital costs for this alternative are estimated to be $523 million. **This alternative will advance to network development due to its performance in the weighted score analysis.**

### 31K Wellington Rapid Bus (Score=19, Advanced)

This project would be a 13.8-mile at-grade rapid bus service operating largely on Okeechobee Boulevard from Wellington in the vicinity of US Highway 441 (US 441) and Forest Hill Boulevard to Downtown West Palm Beach. This alternative would contain 12 stations and run at 10 and 15 minute headways during peak and off-peak hours, respectively. Capital costs for this alternative are estimated to be $316 million. **This alternative will advance to network development.**

### 31L Military Trail Rapid Bus (Score=23, Advanced)

This project would be a 32.2-mile at-grade rapid bus service operating largely on Military Trail from Downtown Boca Raton to north of Downtown West Palm Beach. There would be 21 stations along the alignment and buses would operate at 10 and 15 minute headways during peak and off-peak hours, respectively. Capital costs for this alternative are estimated to be $729 million. **This alternative will advance to network development.**

### 31N Pines Rapid Bus (Score=20, Advanced)

This project would be a 16-mile at-grade rapid bus service operating on Pines/Hollywood Boulevard in Broward County. This A/B service would connect west of the Sawgrass Expressway to the FEC Corridor and south of the HEFT. There would be 13 stations and buses would operate at 10 and 15 minute headways during peak and off-peak hours, respectively. Capital costs for this alternative are estimated to be $371 million. **This alternative will advance to network development.**

**31O Oakland Park Rapid Bus** (Score=17, Advanced)

This project includes A/B service from Sawgrass Mills, east on Oakland, and north on I-95 to Cypress Creek Station, There would be 17 stations on this alignment, and buses would operate at 10 and 15 minute headways during peak and off-peak hours, respectively. Capital costs for this alternative are estimated to be $435 million. **This alternative was advanced to network development.**

**~~31P Atlantic Boulevard Rapid Bus~~** (Score=16, Removed due to Performance)

This project includes service from Sawgrass Mills, east on Oakland, and north on I-95 to Cypress Creek Station. There would be 14 stations on this alignment and buses would operate at 10 and 15 minute headways during peak and off-peak hours, respectively. Capital costs for this alternative are estimated to be $421 million. **This alternative was removed from testing due to performance, but will be replaced in the next phase by a Sample Road option at the request of BCT.**

**31Q Kendall Drive Rapid Bus** (Score=17, Advanced)

This eight-mile project includes service along Kendall Drive from the proposed Sunset KAT Metrorail Extension to Dadeland South. There would be 10 additional stations, and buses would operate and 10 and 15 minute headways during peak and off-peak hours, respectively. Capital costs for this alternative are estimated to be $187 million. **This alternative was added after the Screen One process, and will advance to network development.**

**31R 137th Avenue Rapid Bus to Palmetto and the MIC** (Score=16, Advanced)

This project includes service along SW 137th Avenue and 8th Street from Kendall to Palmetto and the MIC. The 23.6-mile service would have 22 stations and buses would operate at 10 and 15 minute headways during peak and off-peak hours, respectively. Capital costs for this alternative are estimated to be $549 million. **This alternative was added after the Screen One process, and will advance to network development.**

**31S Douglas Road Rapid Bus** (Score=25, Advanced)

This project would be a 92.5-mile at-grade bus rapid transit service operating at-grade along Douglas Road from Dadeland South to the MIC. It would join the North-South Premium Bus and would be an alternative to using the section behind Palmetto. The project would have __ stations and would run at headways ranging from 7.5 minutes to 30 minutes. Capital costs for this alternative are estimated to be $670 million. **This alternative was added after the Screen One process, and will advance to network development.**

**31 T Metrorail East-West Extension plus 137th Avenue Rapid Bus** (Score=19, Advanced)

This project combines the 8.8-mile Metrorail Extension with a 13.8-mile rapid bus along 137th Avenue and the Dolphin Expressway, and on the A/B service, has a combined 20 additional stations, eight Metrorail and 12 rapid bus. Vehicles would operate at 10 and 15 minute headways during peak and off-peak hours, respectively. Capital costs for this alternative are estimated to be $1.60 billion. **This alternative was added after the Screen One process, and will advance to network development.**

**31 U Tri-Rail Extension to VA Hospital** (Score=18, Advanced)

This 2.8-mile Tri-Rail extension is an at-grade alternative with one additional station. Vehicles would operate at 20 and 30 minute headways during peak and off-peak hours, respectively. Capital costs for this alternative are estimated to be $126 million. **This alternative was added after the Screen One process, and will advance to network development.**

~~**31 V Tri-Rail Extension to Zoo**~~ (Score=15, Removed due to Performance)

This 19.4-mile extension of Tri-Rail would travel south from the MIC to the Urban Service Area boundary. The alignment would include eight additional stations and 20 and 30 minute headways during peak and off-peak hours, respectively. Capital costs for this alternative are estimated to be $797 million. This alternative would provide a one-seat ride from Palm Beach County to southern Miami-Dade County and takes the place of Alternative 30O. **This alternative was added after the Screen One process, but was removed from testing.**

~~**31 W DMU to Zoo plus Airport Feeders**~~ (Score=13, Removed due to Performance)

This project would be a 19.4-mile, at-grade commuter rail alternative, from the MIC to the Urban Service Area boundary, using DMU rail technology. It would also include 19.05-miles of rapid bus to MIA. The alignment would include 30 additional stations (eight additional stations for DMU and 22 additional stations for BRT) and 20 and 30 minute headways during peak and off-peak hours, respectively. Capital costs for this alternative are estimated to be $1.27 billion. **This alternative was added after the Screen One process, but was removed testing.**

**32 A FEC West Palm Beach to Miami** (Score=20, Advanced)

This project includes service from Downtown West Palm Beach to Miami using the FEC Rail Line. The 66.1-mile commuter rail service would have 26 stations and would operate at 20 and 30 minute headways during peak and off-peak hours, respectively. Capital costs for this alternative are estimated to be $2.72 billion. **This alternative was added after the Screen One process, and will advanced to network development.**

**32 B FEC Ft. Lauderdale to Miami** (Score=19, Advanced)

This project includes service from Downtown Ft. Lauderdale to Miami using the FEC Rail Line. The 24.4-mile commuter rail service would have 14 stations and would operate at 20 and 30 minute headways during peak and off-peak hours, respectively. Capital costs for this alternative are estimated to be $1.05 billion. **This alternative was added after the Screen One process, and will advance to network development.**

~~**32 D Sample Road Modified Rapid Bus**~~ (Score=14, Removed Due to Score)

This 7.7-mile rapid bus service would connect Sawgrass Expressway to Pompano Beach and Cypress Creek. This alternative would have nine stations and would operate at 10 and 15 minute headways during peak and off-peak hours, respectively. Capital costs for this alternative are estimated to be $613 million. **This alternative was added after the Screen One process, but was removed from testing due to its score.**

~~**32 E Kendall Hybrid BRT-DMU SW 137th**~~ (Score=13, Removed Due to Score)

This 17.7-mile combined service alternative would include BRT service from 137th Avenue to Dadeland on Kendall Drive combined with DMU service from Dadeland to the Zoo on the CSX Rail Line. The service would have 16 stations and buses would operate at six and 15 minute headways, while DMU vehicles would operate at 20 and 30 minute headways during peak and off-peak hours, respectively. Capital costs for this alternative are estimated to be $588 million. **This alternative was added after the Screen One process, but was removed from testing due to its score.**

**32 G Kendall Hybrid BRT-Diesel Electric Light Rail Transit (DELRT) SW 137th Augmented** (Score=18, Advanced)

This 15.2-mile combined service alternative would include BRT service from 137th Avenue to Dadeland on Kendall Drive combined with DELRT service from Dadeland to the Zoo on the CSX Rail Line. BRT and DELRT service would operate in the same right-of-way from the CSX to Dadeland on Kendall Drive. The service would have 16 stations (10 BRT, three DELRT, and three combined) and buses would operate at six and 15 minute headways, while DELRT vehicles would operate at 15 and 20 minute headways during peak and off-peak hours, respectively. Capital costs for this alternative are estimated to be $516 million. **This alternative was added after the Screen One process, and will advance to network development.**

**32 K Tri-Rail Extension to Dadeland** (Score=26, Advanced)

This project would include commuter rail service along the CSX Rail Line extending from its current southern terminus to Dadeland. The 10.7 additional miles would have four additional stations and would operate at 20 and 30 minute headways during peak and off-peak hours, respectively. Capital costs for this alternative are estimated to be $423 million. **This alternative was added after the Screen One process, and will advance to network development.**

# 4.0 NEXT STEPS

The 24 Screen Two Alternatives will be grouped to comprise three networks utilizing the highest scoring alignments in each criteria classification: Productive, Connective, and Cost-Effective. The motivation for the network development and testing is to remove the chance of duplicate alternatives competing for riders. Once the networks have been established they will be examined using four land use scenarios.

- 2030 Base Scenario – This scenario would use current MPO projections for the development trend expected under adopted demographic projections.
- Scenario 1 – 2030 RACs or Community Redevelopment Areas (CRAs) Scenario – This scenario would reallocate a portion of employment growth to designated RACs and residential growth to CRAs.
- Scenario 2 – 2030 RACs and CRAs Scenario –. This scenario would reallocate a portion of employment growth and residential growth to both RACs and CRAs.
- Scenario 3 – 2030 Transit Station Areas – This scenario would reallocate a portion of employment and residential growth to station areas along each proposed fixed guideway services.

After land use scenario testing, a preferred network (system plan) will be selected for PTAC and Board review, approval, and prioritization. Each corridor of the preferred network would then go through detailed corridor-level analyses in order to advance into the next stage of project development.