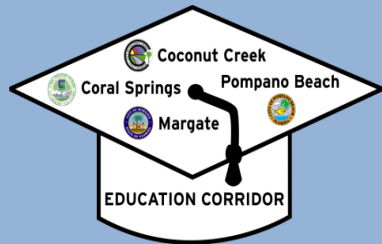
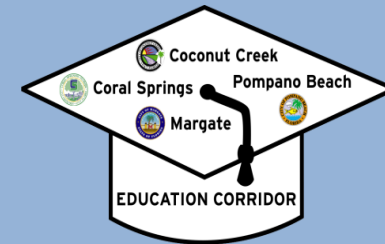




Pompano Education Corridor Transit Study



July 23rd , 2015





Agenda Overview

- **Tech Memo 2 - Existing Transportation Conditions and System Opportunities**
 - Existing transportation and transit conditions
 - Physical infrastructure deficiencies
 - Performance measures and evaluation criteria
- **Tech Memo 3 – Transit Service Plans with Capital and O&M Costs**
 - Proposed service plan
 - Cost estimates
- **Update on Public Involvement**
 - Results from ongoing survey
- **Land Use Analysis Approach**
 - Developing recommendations for transit supportive land use policies and regulations
- Adjourn



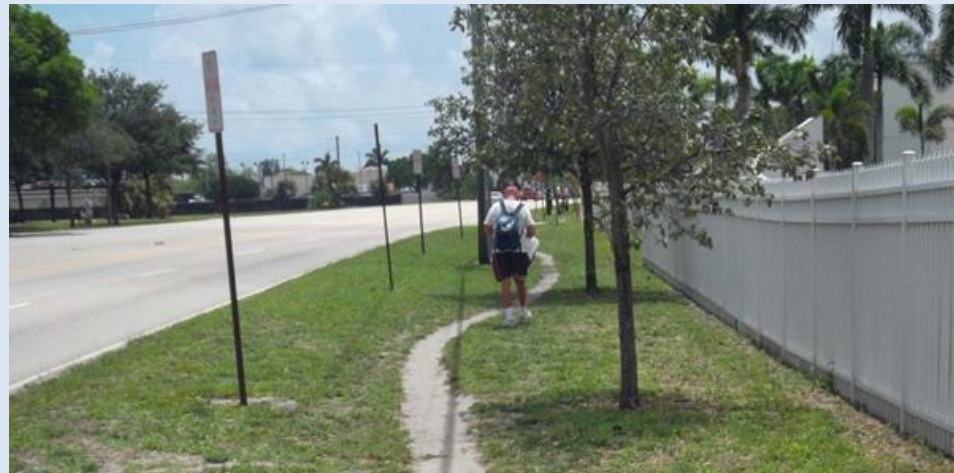
Tech Memo 2

Existing Transportation Conditions and System Opportunities



Tech Memo 2 – Bicycle and Pedestrian Conditions

- Evaluate existing bicycle and pedestrian facilities
 - Field Review
 - Identify Deficiencies
 - Recommend Opportunities





Tech Memo 2 – Bicycle and Pedestrian Conditions

- Connectivity Opportunities**

- Sample Rd – Crosswalks
- SR 7 – Bicycle lanes and crosswalks
- Coconut Creek Parkway – Bicycle lanes, sidewalks, and crosswalks
- Dr. Martin Luther King, Jr. Blvd – Bicycle Lanes and sidewalks

Corridor Segment	Limits	Bicycle Facilities	Pedestrian Facilities
Sample Road	From University Dr. to Riverside Dr.	Existing	Existing
	From Riverside Dr. to Rock Island Rd.	Existing	Existing
	From Rock Island Rd. to US 441	Existing	Provide crosswalks at US 441
US 441	From Sample Rd. to Copans Dr.	Existing	Provide crosswalks at NW 24th St.
	From Copans Dr. to Coconut Creek Pkwy.	Provide bicycle lanes	Provide crosswalks at NW 18th St.
Coconut Creek Pkwy.	From US 441 to Banks Rd.	Provide bicycle lanes	Existing
	From Banks Rd. to Broward Campus N.	Existing	Existing
	From Broward Campus N. to FL Turnpike	Provide bicycle lanes	Existing
Dr. Martin Luther King, Jr. Blvd.	From FL Turnpike to Powerline Rd.	Provide bicycle lanes	Provide Sidewalks
	From Powerline Rd. to I-95	Provide bicycle lanes	Existing
	From I-95 to NW 6th Ave.	Provide bicycle lanes	Existing
	From NW 6th Ave. to Dixie Hwy.	Provide bicycle lanes	Existing



Tech Memo 2 – Transportation Conditions

- **Evaluate Existing Roadways**
 - Multi-lane divided with medians
 - Speed limits range from 25 – 45 mph
 - Daily traffic and level of service (LOS)

Corridor Segment	Limits	No. of Lanes	Speed Limit	Daily Traffic (AADT)	Daily LOS
Sample Road	From University Dr. to Riverside Dr.	3 - 11' R/L	45 MPH	34,000	C
	From Riverside Dr. to Rock Island Rd.	3 - 11' R/L	45 MPH	45,500	C
	From Rock Island Rd. to US 441	3 - 11' R/L	45 MPH	43,000	C
US 441	From Sample Rd. to Copans Dr.	3 - 11' R/L	45 MPH	49,500	C
	From Copans Dr. to Coconut Creek Pkwy.	3 - 11' R/L	45 MPH	51,500	C
Coconut Creek Pkwy.	From US 441 to Banks Rd.	2 - 12' R/L	40 MPH	24,500	D
	From Banks Rd. to Broward Campus N.	2 - 10' R/L	40 MPH	28,500	D
	From Broward Campus N. to FL Turnpike	2 - 12' R/L	40 MPH	28,500	D
Dr. Martin Luther King, Jr. Blvd.	From FL Turnpike to Powerline Rd.	2 - 11.5' R/L	40 MPH	13,000	C
	From Powerline Rd. to I-95	2 - 12' R/L	35 MPH	25,500	D
	From I-95 to NW 6th Ave.	2 - 12' R/L	25 MPH	12,800	C
	From NW 6th Ave. to Dixie Hwy.	2 - 12' R/L	25 MPH	12,800	C



Tech Memo 2 – Transit Conditions

- Evaluate Bus Stop Facilities**

- Stops with shelters
- Stops with benches
- Stops without facilities



Corridor Segment	Limits	Transit Route No.	Transit Stops with Shelters	Transit Stops with Benches	Transit Stops w/o Facilities	Needs
Sample Road	From University Dr. to Riverside Dr.	34, Blue	3		8	Upgrade with shelters and benches.
	From Riverside Dr. to Rock Island Rd.	34, Blue, As, A, C	2	2	3	Upgrade with shelters and benches.
	From Rock Island Rd. to US 441	34, A	4		3	Upgrade with shelters and benches.
US 441	From Sample Rd. to Copans Dr.	19, 441, A, South	4	1		N/A
	From Copans Dr. to Coconut Creek Pkwy.	19, 441, 60, As, A, South	2	5	1	Upgrade with shelters and benches.
Coconut Creek Pkwy.	From US 441 to Banks Rd.	60, D, South	1	3	1	Upgrade with shelters and benches.
	From Banks Rd. to Broward Campus N.	60, South	2		3	Upgrade with shelters and benches.
	From Broward Campus N. to FL Turnpike	60	3		5	Upgrade with shelters and benches.
Dr. Martin Luther King, Jr. Blvd.	From FL Turnpike to Powerline Rd.	60, Red			3	Upgrade with shelters and benches.
	From Powerline Rd. to I-95	60, Blue, Red		10	1	Upgrade with shelters and benches.
	From I-95 to NW 6th Ave.	60, Blue, Red		2		Upgrade with shelters.
	From NW 6th Ave. to Dixie Hwy.	42, 60, Blue, Red, Green	1	1		Upgrade with shelters.



Tech Memo 2 – Evaluation Criteria

- **Ridership Potential**
 - Service Coverage
 - Route Coverage
 - Route Directness
 - Accessibility
- **Community Impact**
 - Mobility
 - Demographics
 - Personal Economic Impacts
 - Community Cohesion
- **Travel Time and Speed**
 - Travel Time
 - Transit-Auto Travel Time
 - Number of Transfers
 - Transfer Time
- **Cost**
 - Capital Cost
 - Operational Cost
 - Cost Effectiveness
- **Traffic Impacts**
 - Roadway LOS



Tech Memo 3

Transit Service Plans with Capital and O&M Costs



Tech Memo 3 – Proposed Transit Service Plans

- **Proposed Service Goal – robust, frequent service**

- **Weekday Service**

6am to 9am – every 10 mins
9am to 3pm – every 15 mins
3pm to 6pm – every 10 mins
6pm to 8pm – every 15 mins
8pm to 11pm – every 30 mins

- **Weekend Service**

8am to 9pm – every 15 mins
9pm to 11pm – every 30 mins

- **Weekday Service**

6am to 9am – every 15 mins
9am to 3pm – every 20 mins
3pm to 6pm – every 15 mins
6pm to 8pm – every 20 mins
8pm to 11pm – every 30 mins

- **Weekend Service**

8am to 9pm – every 20 mins
9pm to 11pm – every 30 mins

23% Annual O&M Savings

- **Weekday Service**

6am to 9am – every 20 mins
9am to 3pm – every 30 mins
3pm to 6pm – every 20 mins
6pm to 8pm – every 30 mins
8pm to 11pm – every 60 mins

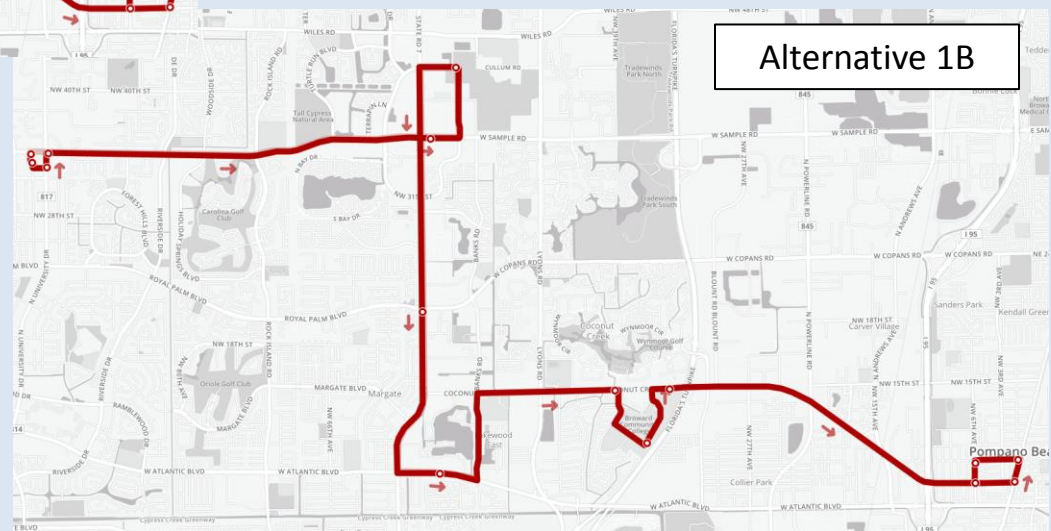
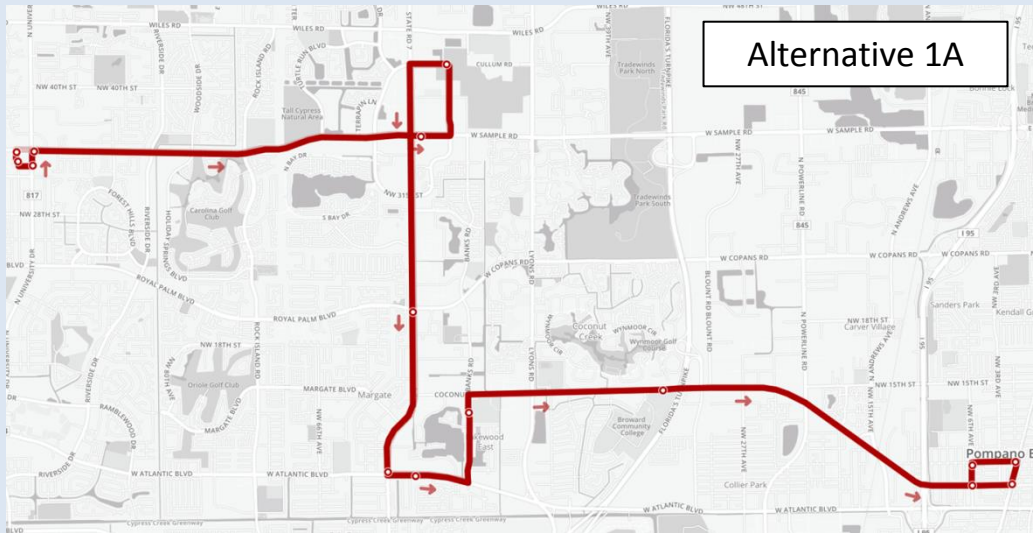
- **Weekend Service**

8am to 9pm – every 30 mins
9pm to 11pm – every 60 mins

44% Annual O&M Savings



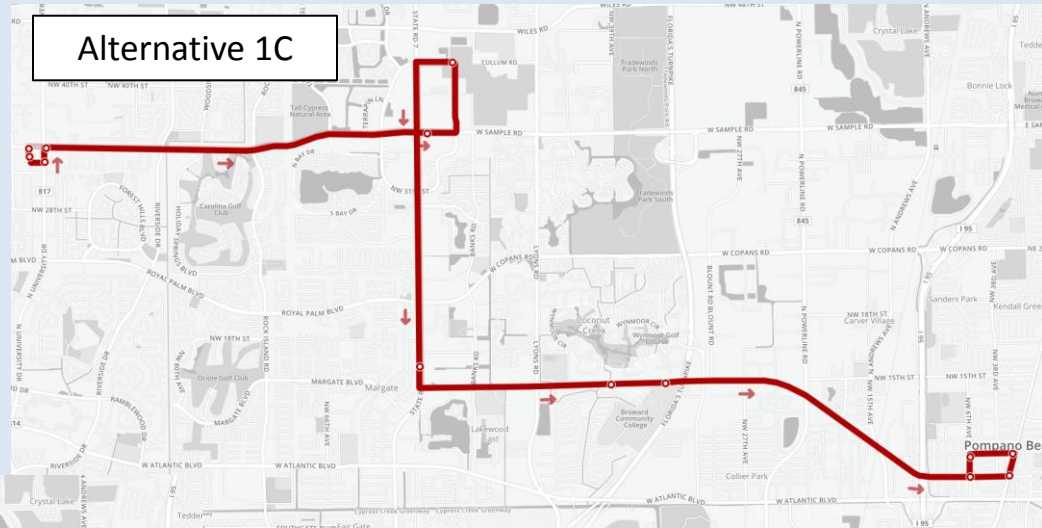
Tech Memo 3 – Proposed Route Alignments (No-transfer)



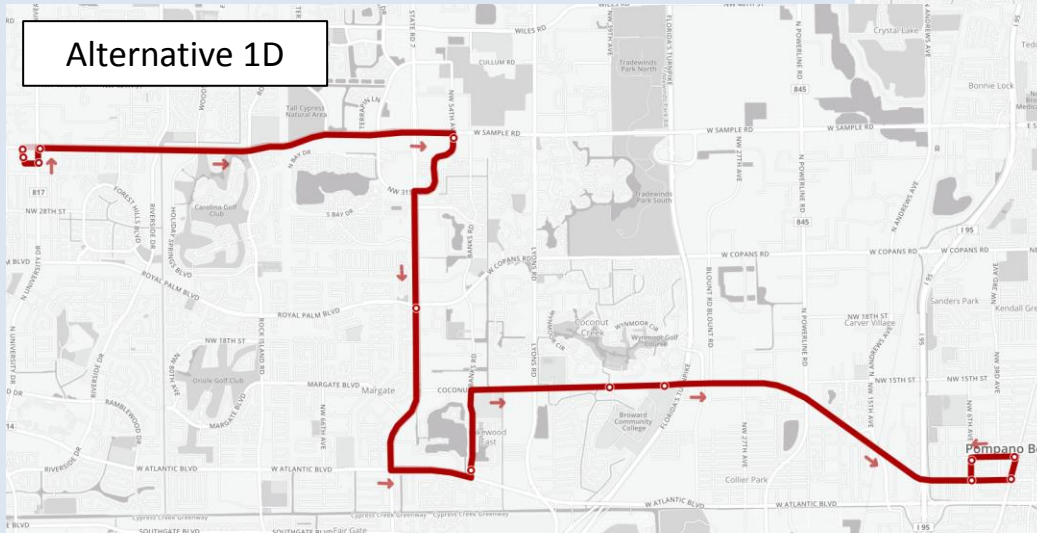


Tech Memo 3 – Proposed Route Alignments (No-transfer)

Alternative 1C

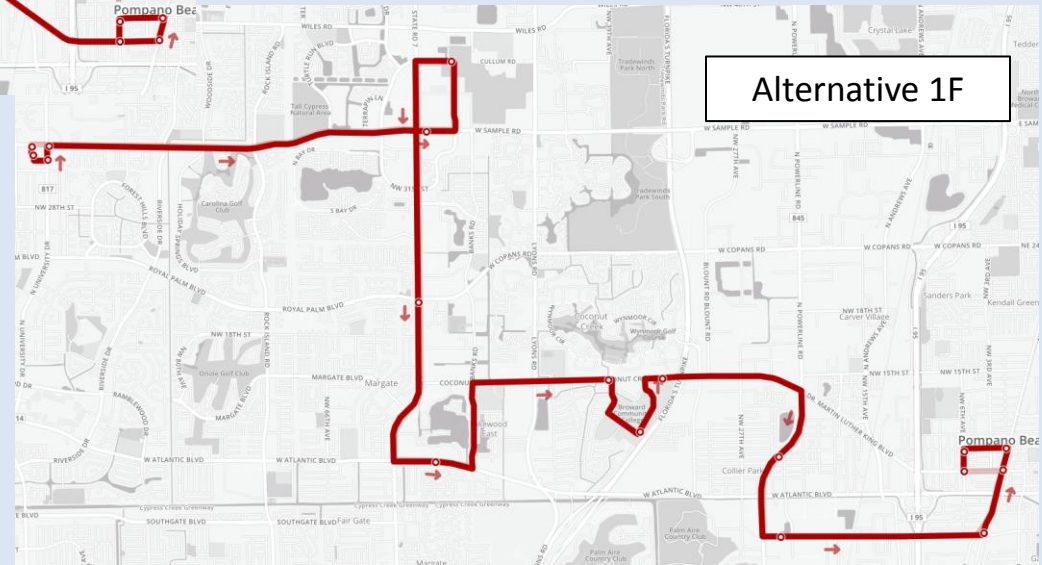
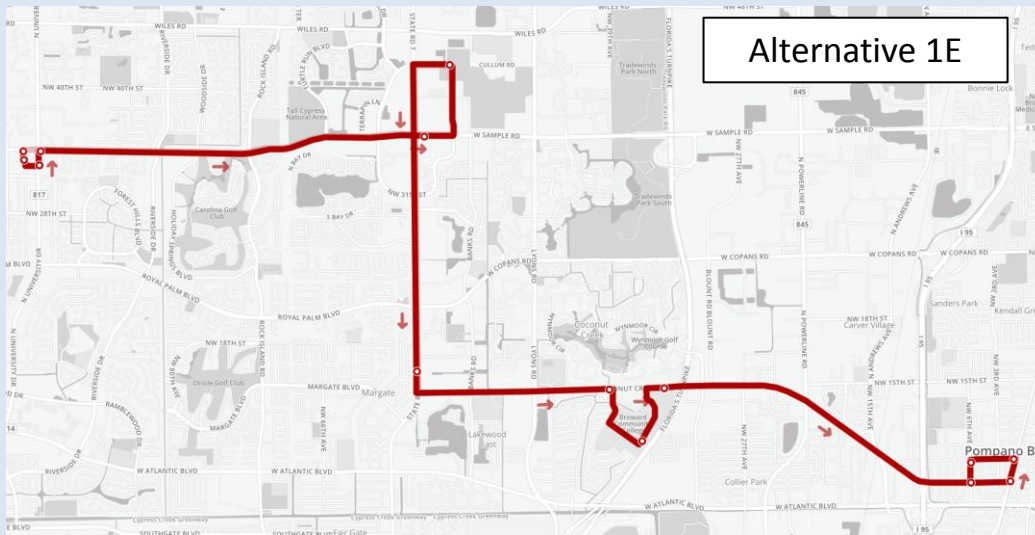


Alternative 1D



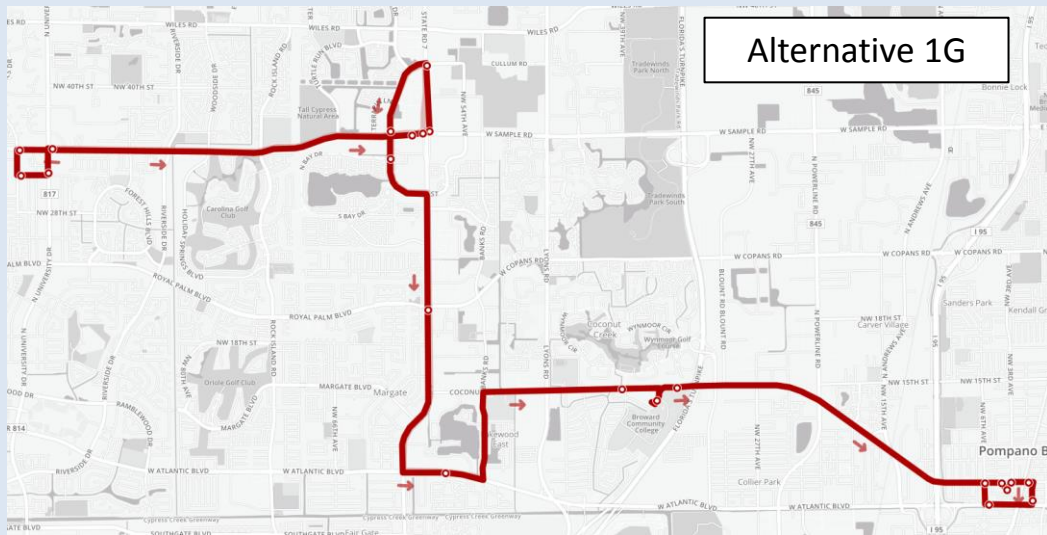


Tech Memo 3 – Proposed Route Alignments (No-transfer)





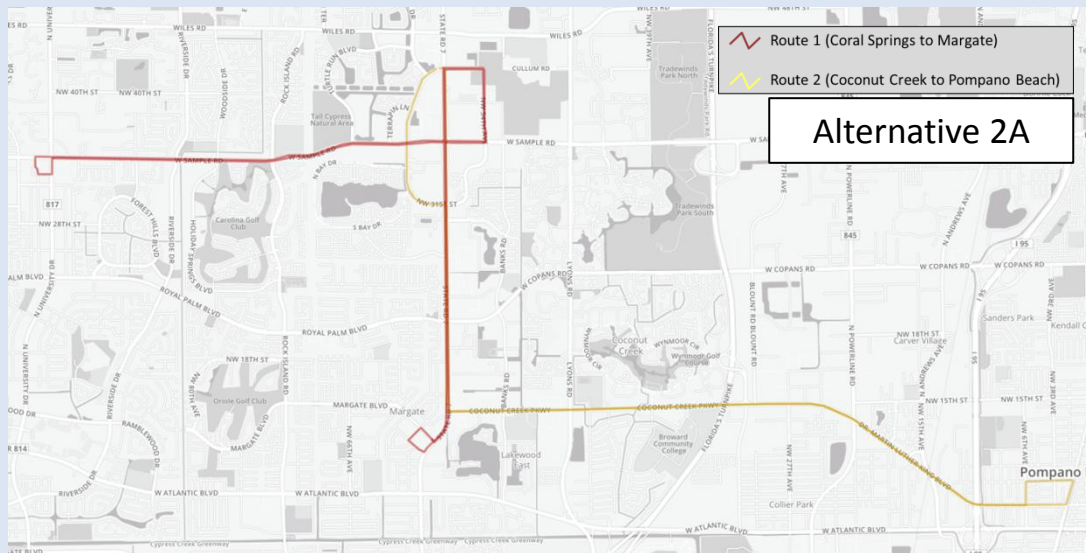
Tech Memo 3 - Proposed Route Alignments (No-transfer)



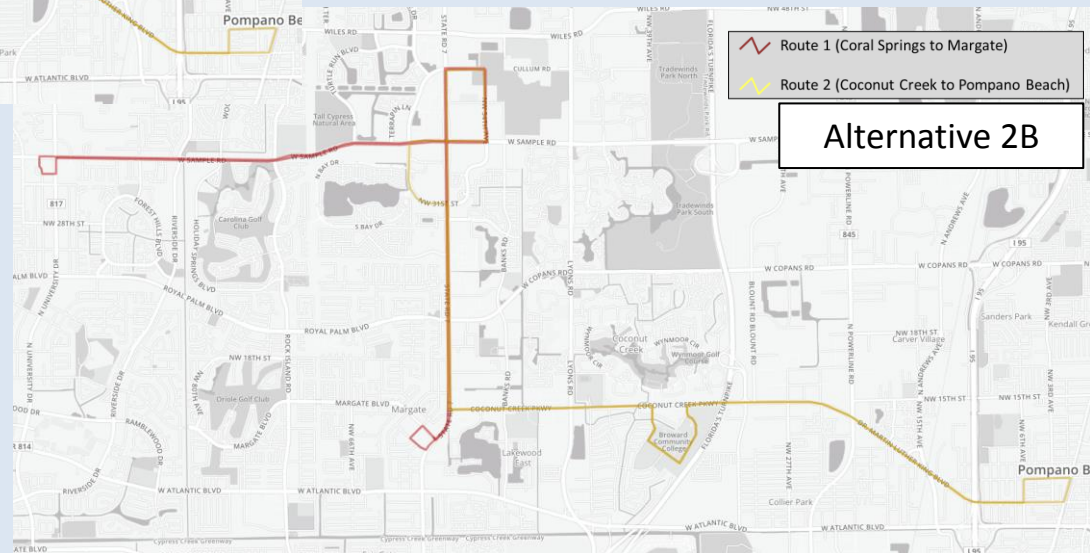
No-transfer Alternative Alignments							
Criteria	1A	1B	1C	1D	1E	1F	1G
Service Coverage - area (sq.mi.) 1/4 mile from bus stop	6.839	7.109	6.088	6.472	6.358	8.133	6.892
Service Coverage - population 1/4 mile from bus stop	12,321	14,454	8,209	10,170	8,322	19,075	15,916
Route Mileage (roundtrip)	27.63	29.26	24.42	25.21	26.04	33.40	28.22
# of Major Ridership Locations	15	15	14	15	14	16	15



Tech Memo 3 – Proposed Route Alignments (One-transfer)



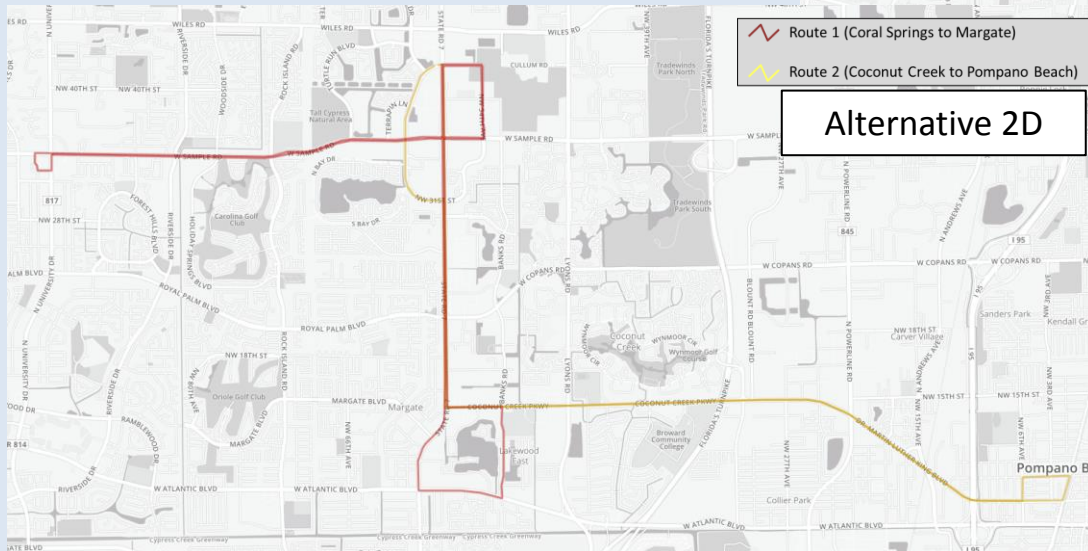
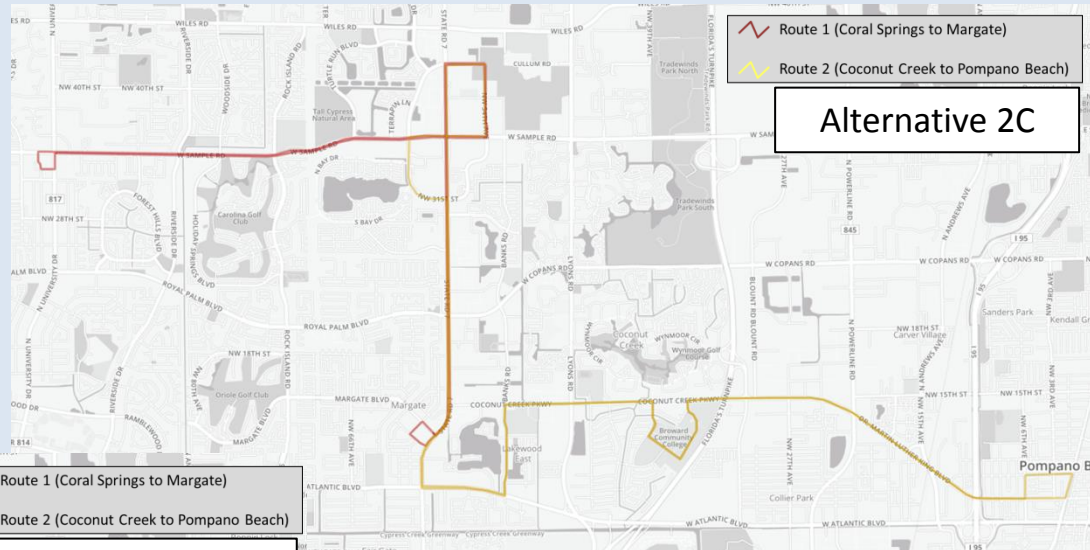
Alternative 2A



Alternative 2B

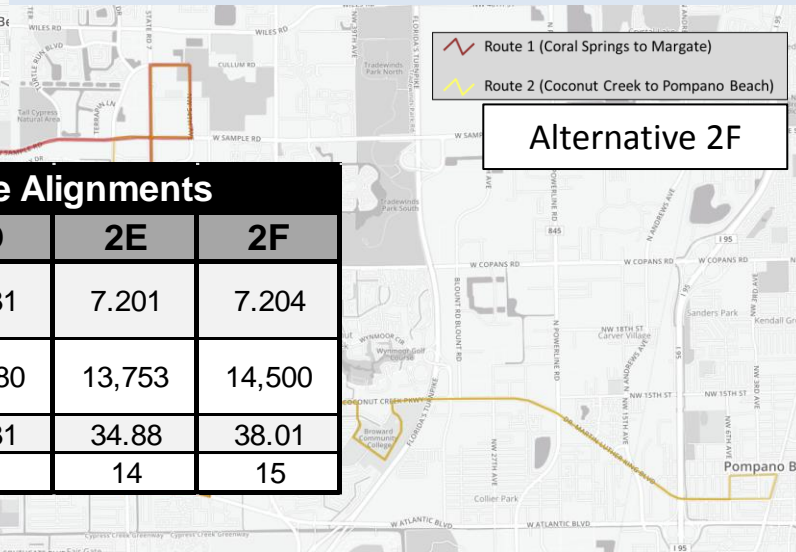
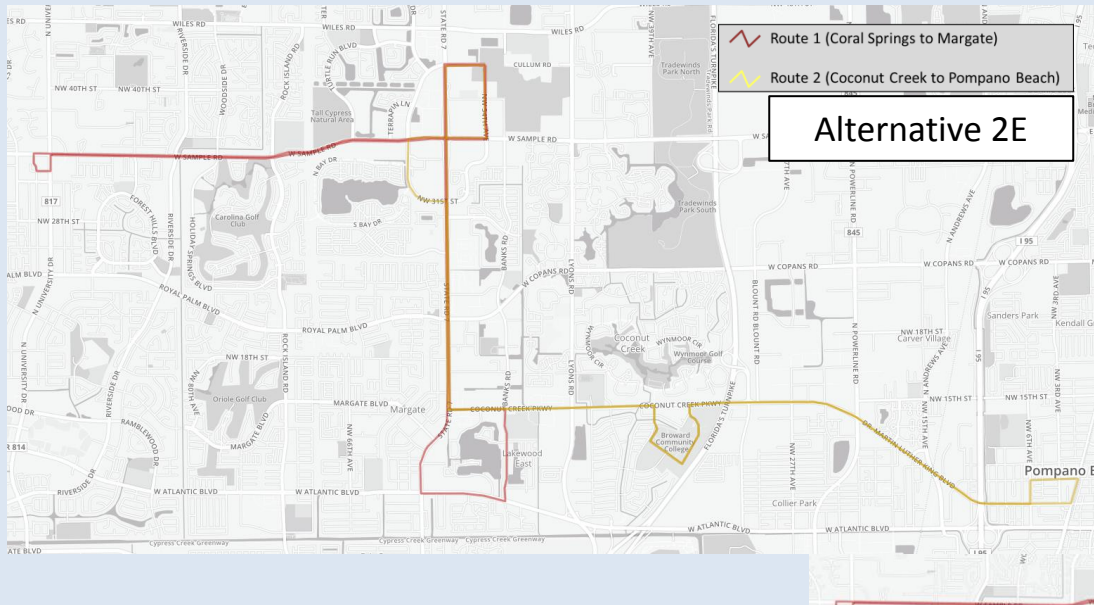


Tech Memo 3 – Proposed Route Alignments (One-transfer)





Tech Memo 3 – Proposed Route Alignments (One-transfer)



One-transfer Alternative Alignments						
Criteria	2A	2B	2C	2D	2E	2F
Service Coverage - area (sq.mi.) 1/4 mile from bus stop	6.432	6.702	7.268	6.931	7.201	7.204
Service Coverage - population* 1/4 mile from bus stop	11,859	13,327	15,764	12,680	13,753	14,500
Route Mileage (roundtrip)	32.19	33.53	37.06	33.31	34.88	38.01
# of Major Ridership Locations	14	14	15	14	14	15



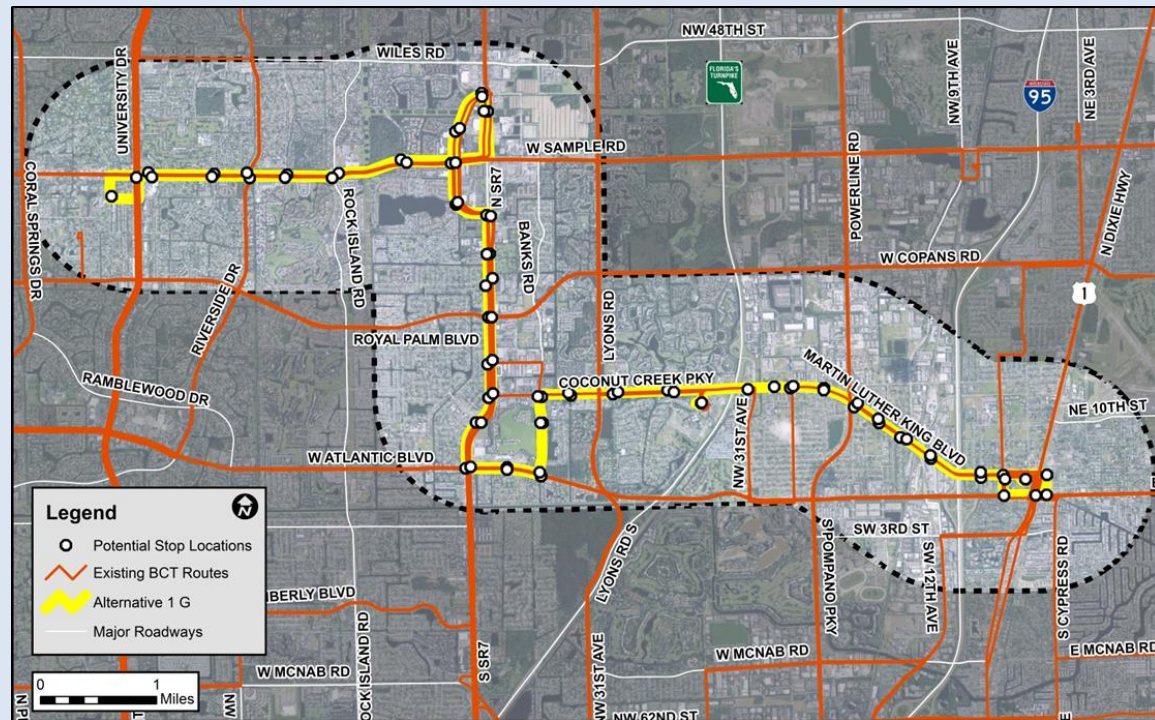
Tech Memo 3 – Proposed Route Alignments (One-transfer)

Criteria	One-transfer Alternative Alignments					
	2A	2B	2C	2D	2E	2F
Service Coverage - area (sq.mi.) 1/4 mile from bus stop	6.432	6.702	7.268	6.931	7.201	7.204
Service Coverage - population* 1/4 mile from bus stop	11,859	13,327	15,764	12,680	13,753	14,500
Route Mileage (roundtrip)	32.19	33.53	37.06	33.31	34.88	38.01
# of Major Ridership Locations	14	14	15	14	14	15



Tech Memo 3 – Proposed Station Locations and Guidelines

- The guidelines for locating stops weighs factors and are considered in this order:
 - Transfer locations
 - Existing high ridership stops
 - Major trip generators
 - “Filling in the Gaps”
- Placement also considers:
 - Safety
 - Farside vs. nearside vs. mid-block locations
 - Service quality tradeoff
 - Physical environment





Tech Memo 3 – Travel Time and Capacity

- Based on field review time trials and Google Maps / Bing Maps directions tool:
 - Average total roundtrip = 86 mins
 - *About 20 mph avg.*
 - Factor in the dwell time for the 79 proposed stop locations
 - *30 secs per stop at existing high ridership locations or transfer locations*
 - *15 secs for all other stop locations*
 - Total Roundtrip w/ dwell time = 120 mins
 - *About 14 mph*
- NOTE - most direct route (not including dwell time) averages around **65** minutes roundtrip

Proposed Alignment	Route Miles (roundtrip)	Estimated Travel Time (minutes)
1A	27.63	118
1B	29.26	125
1C	24.42	105
1D	25.21	108
1E	26.04	112
1F	33.4	143
1G	28.22	121
2A	32.19	138
2B	33.53	144
2C	37.06	159
2D	33.31	143
2E	34.8	149
2F	38.01	163



Tech Memo 3 – Estimated Capital Costs

• TRIPS Program



Option A



Option B



Option C

• City of Miami Trolley

- 32' Freightliner MB-65 Series
- \$187,606 each
- Fare Collection device – additional \$15,000
- Seating capacity - 25

Vehicles Required	Lowest Cost: \$109,100	Highest Cost: \$209,600
7	\$763,700	\$1,467,200
10	\$1,091,000	\$2,096,000
12	\$1,309,200	\$2,515,200
15	\$1,636,500	\$3,144,000
18	\$1,963,800	\$3,772,800
22	\$2,400,200	\$4,611,200

Small-Cutaway Low-Floor Vehicles available through TRIPS					
Option	Model	GVWR / Length	Seating Capacity*	Price	Wheelchair Positions
A	Chevrolet 3500 Chassis	12,300 lbs / 21'	6 - 12 (15)	\$109,100 - \$131,800	1
B	Chevrolet 4500 Chassis	14,200 lbs / 23'	6 - 12 (23)	\$117,000 - \$150,000	1 - 3
C	International 25,500	25,500 lbs / 26' - 36'	12 - 26 (32)	\$158,400 - \$209,600	1 - 2

* - () indicates number of seats without wheel chairs



Tech Memo 3 – Estimated O&M Costs

- With full service plan

No-transfer Alternative Alignments							
	1A	1B	1C	1D	1E	1F	1G
Capital Cost (# of buses)	13	13	11	12	12	15	13
Operational Cost (\$ million)	2.56	2.56	2.22	2.29	2.29	2.86	2.56
Annual Service Hours	56,867	56,867	49,272	50,784	50,784	63,480	56,867

One-transfer Alternative Alignments						
	2A	2B	2C	2D	2E	2F
Capital Cost (# of buses)	16	17	18	16	17	18
Operational Cost (\$ million)	3	3.23	3.51	3.16	3.39	3.67
Annual Service Hours	66,584	71,807	78,012	70,173	75,396	81,601



Tech Memo 3 – Estimated O&M Costs

- Headways increased 5 mins = 23% Annual O&M Cost Reduction

No-transfer Alternative Alignments							
	1A	1B	1C	1D	1E	1F	1G
Capital Cost (# of buses)	9	9	8	8	8	10	9
Operational Cost (\$ million)	1.96	1.96	1.69	1.69	1.69	2.19	1.96
Annual Service Hours	43,641	43,641	37,558	37,558	37,558	48,742	43,641

One-transfer Alternative Alignments						
	2A	2B	2C	2D	2E	2F
Capital Cost (# of buses)	10	11	12	11	12	13
Operational Cost (\$ million)	2.26	2.49	3.51	2.33	2.56	2.67
Annual Service Hours	50,212	55,435	57,929	51,724	56,947	59,441



Tech Memo 3 – Estimated O&M Costs

- Headways doubled = 44% Annual O&M Cost Reduction

No-transfer Alternative Alignments							
	1A	1B	1C	1D	1E	1F	1G
Capital Cost (# of buses)	7	7	6	6	6	8	7
Operational Cost (\$ million)	1.42	1.42	1.14	1.14	1.14	1.48	1.42
Annual Service Hours	31,475	31,475	25,392	25,392	25,392	32,987	31,475

One-transfer Alternative Alignments						
	2A	2B	2C	2D	2E	2F
Capital Cost (# of buses)	8	9	10	8	9	9
Operational Cost (\$ million)	1.71	1.77	1.94	1.71	1.77	1.94
Annual Service Hours	37,924	39,436	43,147	37,924	39,436	43,147



Tech Memo 3 – Estimated Infrastructure Costs

- **Transit Stop Improvements**
 - 24 existing stops with only a bench
 - 28 existing stops with only a sign
 - Improvements will be prioritized based on ridership
- **City of Miami Trolley Shelters = originally estimated cost per shelter @ \$10,000 each**
 - Later mostly implemented sign and posts
- **Sidewalk Improvements = \$110,500 per side of road/mile**
 - MLK Jr. Blvd (both sides) between FL Turnpike and Powerline Rd = 1.7 linear miles
 - Total Estimated Cost - \$187,850
- **Specific Bike Lane Improvements:**

Roadway	Segment	Length (miles)	Unit Cost (millions)	Total Cost (millions)
SR 7	Copans and Coconut Creek	0.7	1.7	\$1.19
Coconut Creek	SR 7 to Banks	0.4	0.9	\$0.36
Coconut Creek	Broward College to FL Turnpike	0.5	2	\$1.00
MLK Jr	FL Turnpike to Powerline	0.85	1.7	\$1.46
MLK Jr*	Powerline to Dixie Hwy	1.8	0.15	\$0.27

*Share the road treatment

TOTAL \$4.28



Public Involvement and Land Use Analysis Approach



Public Involvement Update – Survey Results

- **14 total responses (as of Thu 7/16)**
 - All English responses
 - Mostly age 18 and under
 - Many partial responses
 - Location data on where people live and where they work/visit
- **Mixed results on how often respondents ride the bus**
 - More than once a week: 2
 - Less than once a week: 1
 - Never: 4
- **What discourages you from taking the bus? - mixed results**
 - The bus stop is too far away from where I live
 - The bus doesn't run on time
 - I don't feel safe walking or bicycling to the station
 - I have my own car and it's faster

I would take the bus more if...

...the bus stopped closer to where I live

....when I transfer the second bus came quickly

...the bus came more frequently

...the bus fare is discounted for students for if I can use my student ID



Legend



About



Layers



Broward Community Gateway

Find address or place



Legend

What places feel unsafe or need improvement



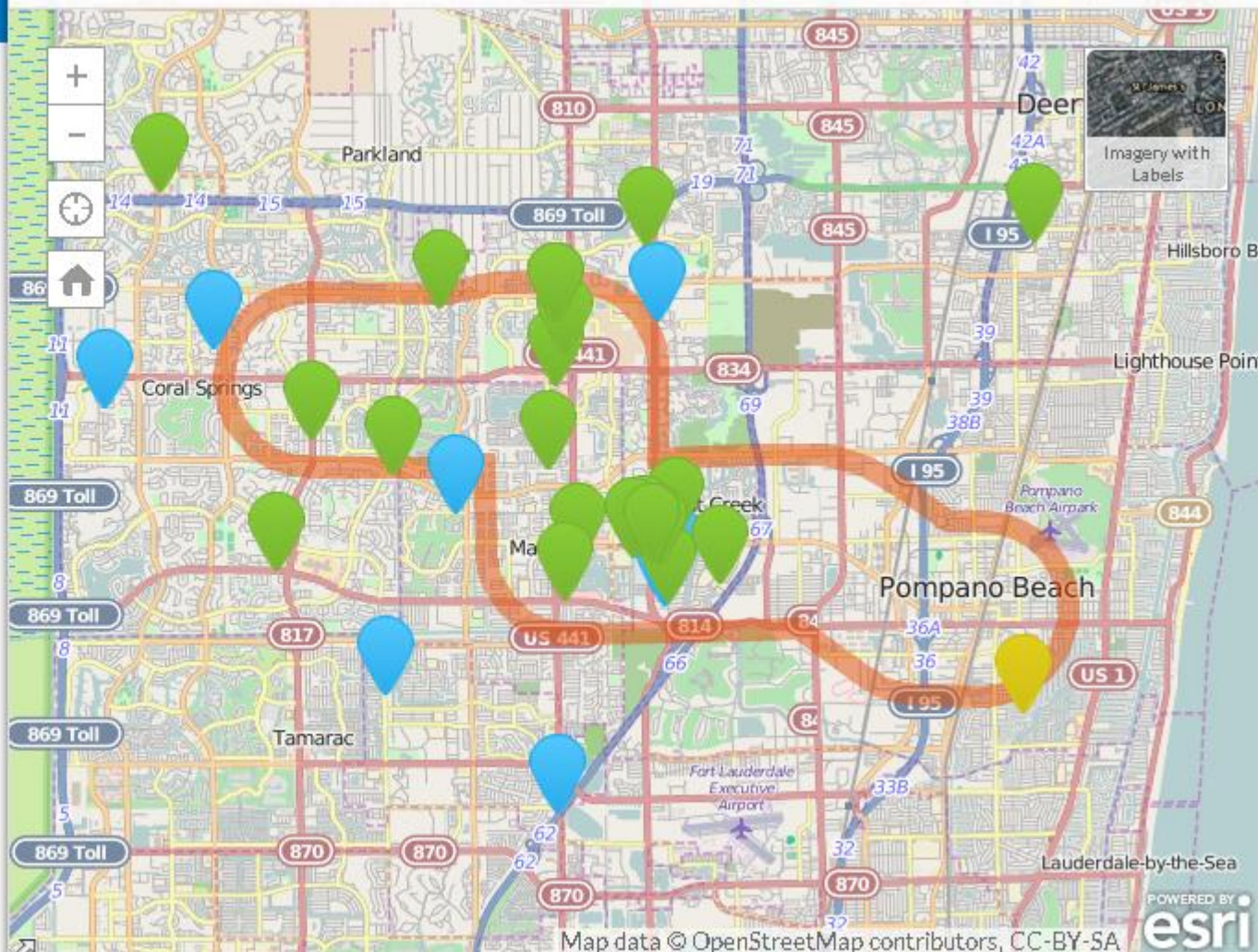
Where do you work



Where do you live



StudyArea



Map data © OpenStreetMap contributors, CC-BY-SA

POWERED BY
esri



Land Use Analysis

- **Purpose of Land Use Analysis**
 - Evaluate existing plans, policies, and land development regulations
 - Recommend changes to increase the compatibility and support for future transit service
- **Accessibility to Education & Employment Opportunities**
 - Study purpose is more about increasing access to opportunities; less about economic development
- **Is TOD Readiness the right tool?**
 - Focused on density and development in half-mile around premium transit station
- **Accessibility Analysis targets most critical areas**
 - Map of 'hot spots' and 'cool spots' where land use policies are most critical for increasing accessibility

UNDERSTANDING OPPORTUNITIES FOR TRANSIT ORIENTED DEVELOPMENT: An Analysis of Readiness

What is the TOD Readiness Tool?

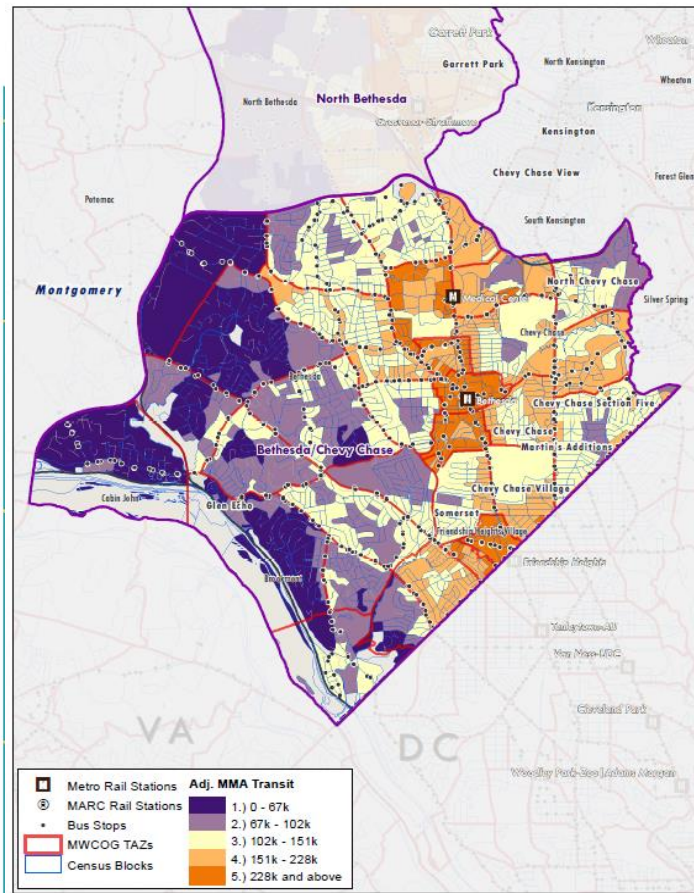
Achieving transit oriented development (TOD) around a transit station is an evolutionary process with many factors, giving readiness for TOD to take place. The TOD readiness tool:

- Provides planners with a **simple assessment** of readiness for any area - urban or rural, large or small, with or without existing or proposed transit service (below)
- Helps planners **determine strategies** to increase readiness in response to the assessment (see below)

LEGEND:

Station Area

Station Area Name: **TODille**
Station Area Type: **Neighborhood Center**
Future Transit Type: **Heavy Rail**



ASSESSMENT
DRAFT

STRENGTHS:
TODille has the basic factors necessary - a strong compelling vision, supportive regulations, and appropriate public investment.

WEAKNESSES:
TODille needs to work more on providing more financial incentives, increasing income levels, enhancing community places, and increasing bikeable facilities.

Framework for TOD in Florida: www.fdot.com

July 2015



Next Steps

- **Wrap up survey; document and analyze responses**
- **Finalize tech memos 2 and 3**
- **Complete Land Use Analysis**
- **Evaluation of Circulator Options**
- **Next meeting scheduled for August 27**