Beach Corridor Rapid Transit Project Alternatives Workshops

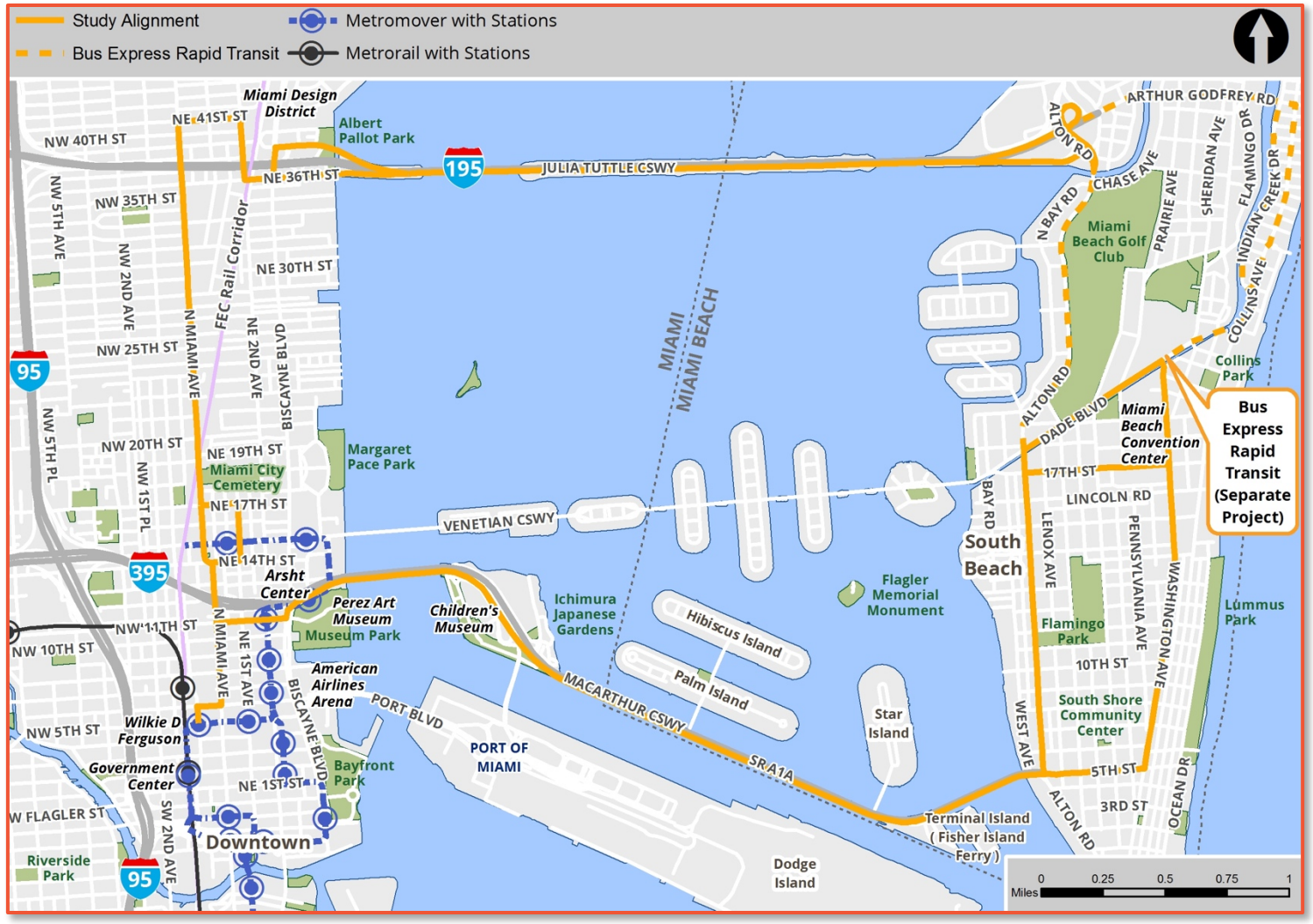
Department of Transportation and Public Works

September 12 and 16, 2019

Meeting Agenda

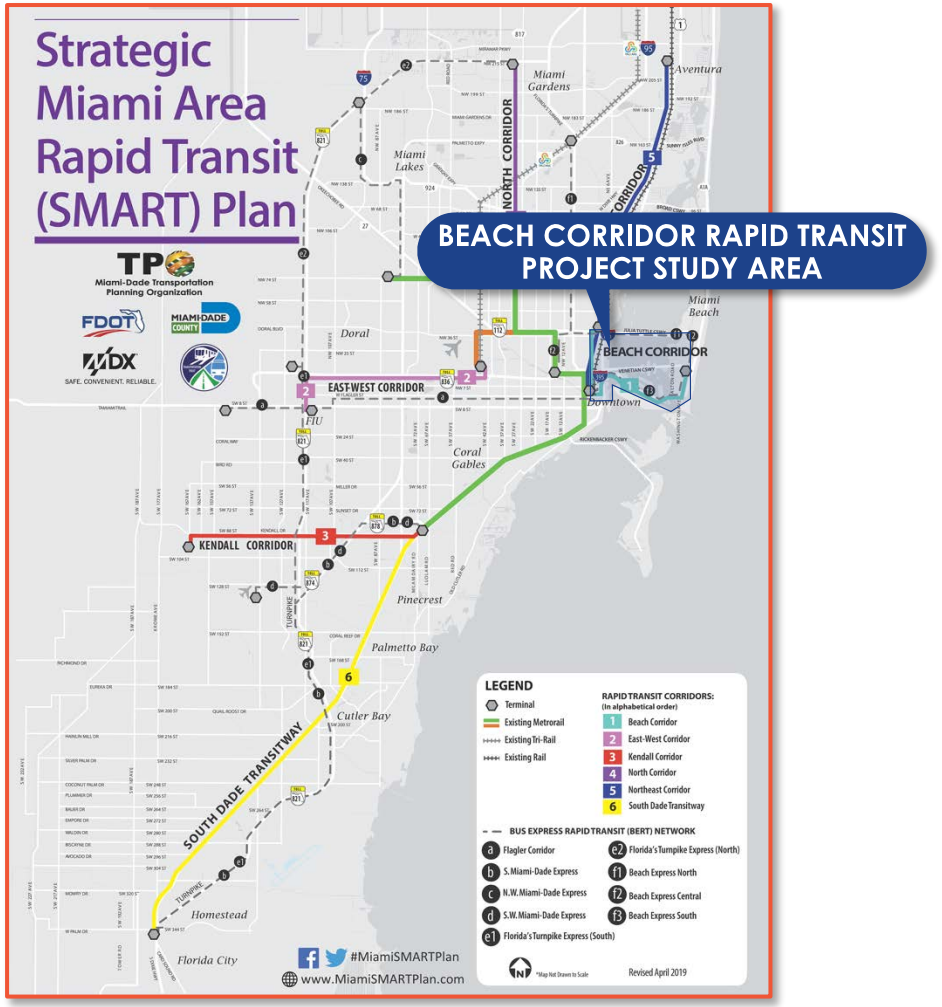
- Introductions
- Project Overview
- Project Milestones
- Transit Modes Comparison
- Alternatives Analysis Process
- Evaluation Criteria and Methodology
- Project Alignments and Evaluation Results
- Evaluation Summary
- Next Steps
- FTA Capital Investment Grant Rating
- Project Schedule
- Public Engagement

Project Overview – Project Location



Project Overview – Purpose and Need

- Selected as one of the six SMART Plan Rapid Transit Corridors
- Major east-west connection
- High levels of traffic congestion
- Need to serve major regional economic engines



Project Overview – Project Goals

- Provide direct, convenient and comfortable rapid transit service to existing and future planned land uses
- Provide enhanced transit connections
- Promote pedestrian and bicycle-friendly solutions

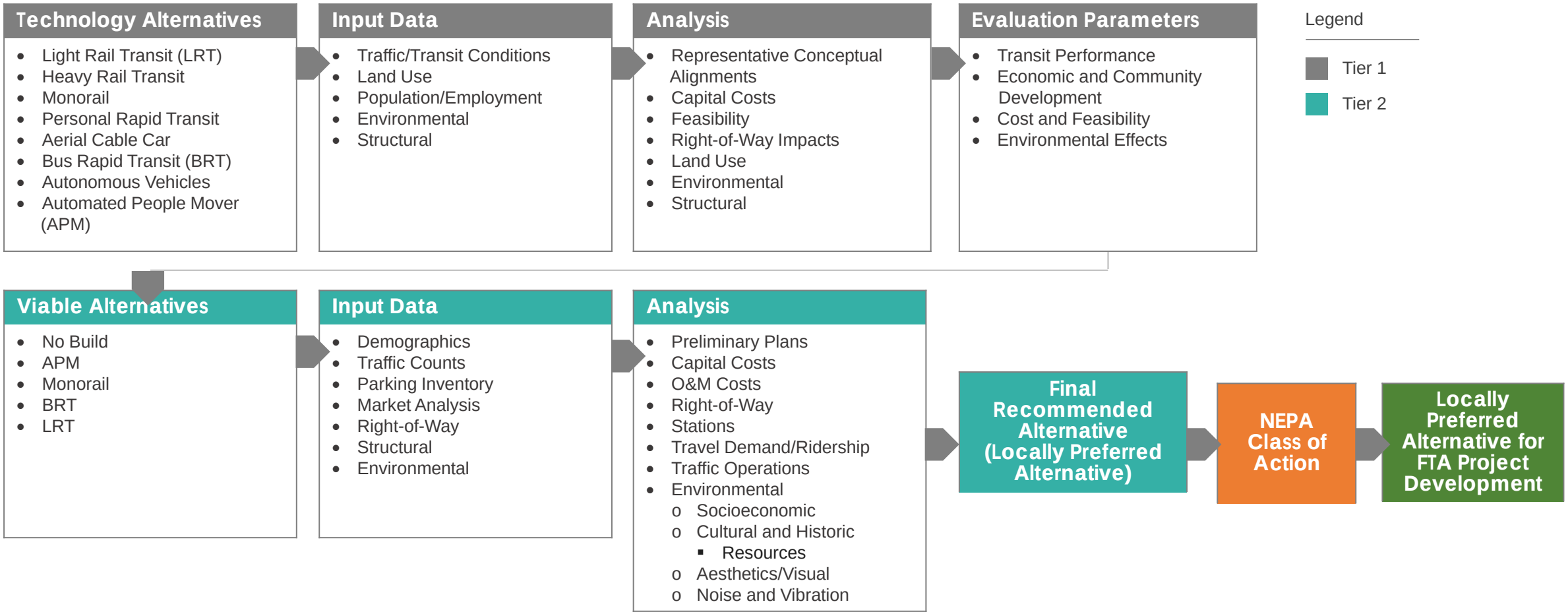
Project Milestones

- Tier 1 Analysis Completed
- Tier 2 Analysis of Alternatives
  - Automated People Mover (APM)- Metromover extension
  - Monorail
  - Light Rail Transit (LRT)/Streetcar
  - Bus Rapid Transit (BRT)
- Public Involvement in Tier 2
  - December 2018 Miami Beach Kick-off
  - May 2019 Project Advisory Group Meeting
  - June 2019 Alternatives Workshops
  - August 29, 2019 Project Advisory Group Meeting No. 2
  - September 12 and 16, 2019 Alternatives Workshops

Transit Modes Comparison

	Automated People Mover (APM)	Light Rail Transit (LRT)/Streetcar	Monorail	Bus Rapid Transit (BRT)
				
Average Operating Speed	30 MPH	20 MPH (Semi-Exclusive)/ 30 MPH (Exclusive)	30 MPH	20 MPH (Semi-Exclusive)/ 30 MPH (Exclusive)
Passenger Capacity	210 / Train	240 / Train	180 / Train	100 / Bus
Right of Way	Exclusive	Semi-Exclusive & Exclusive	Exclusive	Semi-Exclusive & Exclusive
Typical Stop Spacing	0 .5 1.0 1.5 0.25 - 0.75 miles	0 .5 1.0 1.5 0.25 - 0.50 miles	0 .5 1.0 1.5 0.25 - 0.75 miles	0 .5 1.0 1.5 0.25 - 1.0 miles
Guideway	Elevated Guideway	Embedded Tracks at Street Level & Elevated Guideway	Elevated Guideway	Dedicated Lanes
Other Infrastructure	Elevated Stations	Stop Platforms at Street Level & Elevated Stations	Elevated Stations	Stop Platforms at Street Level & Freeway Median Stations
System Example	Miami-Dade Metromover Jacksonville Skyway	Houston METRO Nice, France Tramway	Seattle Monorail Las Vegas Monorail	Cleveland Healthline BRT Orlando LYNX LYMMO

Alternatives Analysis Process



Evaluation Criteria and Methodology: Project Alternatives

- Evaluation for trunk line and extensions:
  - Trunk line (Bay Crossing from Museum Park to Washington Avenue and 5th Street)
  - Miami Extension through Midtown/Design District
  - Miami Beach Extension from Washington Avenue/5th Street to Miami Beach Convention Center area
- Evaluation of Project Alternatives by mode and trunk line/extensions
  - Trunk line Definition Meets Federal Criteria for:
    - Independent Utility
    - Logical Termini
  - Allows for Mix of Modes and/or Phased Implementation

Evaluation Criteria And Methodology

- Three Categories of Evaluation:
  - Transit and Multimodal Performance
  - Environmental Effects
  - Cost and Feasibility

  Note: Engineering/Cost Estimate To Be Further Refined for Recommended Alternative
- Focused on Measures that Differentiate the Alternatives
- Primary and Secondary Measures

Evaluation Criteria And Methodology

Transit and Multimodal Performance

- Ridership
- Travel Time
- Interoperability/Modal Integration
- Passenger Capacity (Secondary Measure)

Environmental Effects

- Natural Resources
- Cultural Resources (Historic/Archaeological)
- Aesthetics and Visual
- Noise and Vibration
- Traffic Impacts
- Construction Impacts (Secondary Measure)

Cost and Feasibility

- Capital Cost
- Operations and Maintenance Cost
- Lifecycle Cost (Secondary Measure)
- Resiliency (Secondary Measure)
- Time to Construct (Secondary Measure)

Evaluation Methodology: Ridership Forecasting Model

- Ridership estimated using STOPS model V2.5
  - Software developed by Federal Transit Administration; used across USA
  - Travel time, station locations, and transfers are key model inputs
  - Calibrated for SMART Plan (MD TPO)
  - Consistent with other SMART Plan corridors

Evaluation Methodology: Ridership and Capacity

- Estimated ridership level in matrix reflects Base Year (2015)
- Forecasting model is based on journey to work data, may not capture visitor/culture and recreation travel demand
- Passenger Capacity measure-for consideration of ability to serve ridership growth to 2040 and visitor/culture and recreation ridership

Evaluation Methodology: Capital Cost

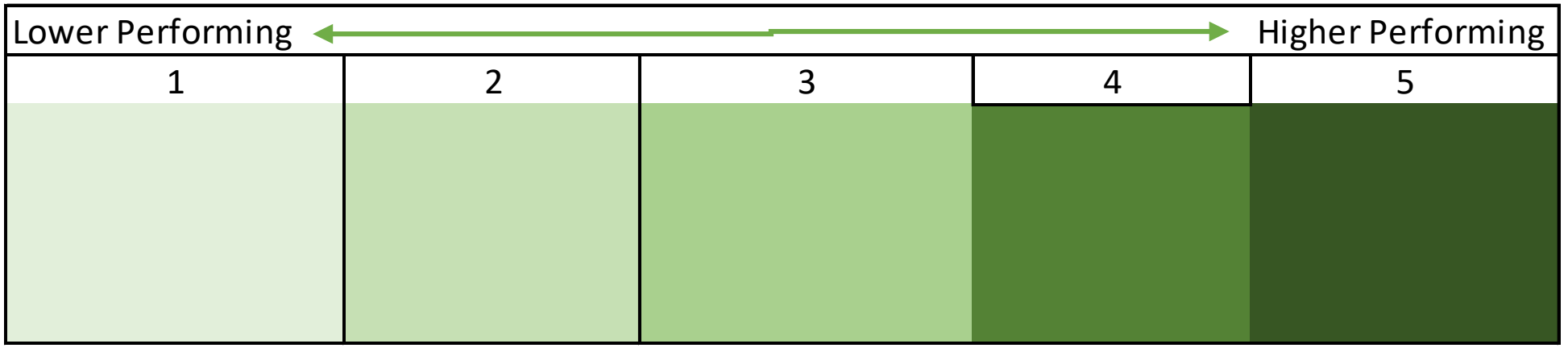
- Costs developed for trunk line and extensions for each mode
  - Unit costs based on FDOT and FTA data
  - Cost components:
    - Guideway/Structures and Track
    - Stations
    - Systems
    - Maintenance Facility
    - Right of Way
    - Site Work
    - Rolling Stock (Transit Vehicles)
    - Professional Services and Contingencies
    - Switches as Needed for APM Connection to Existing Metromover

Evaluation Methodology: Operations And Maintenance Cost

- Service Plan Assumptions for cost estimation:
  - Service every 5 minutes during Peak Periods
  - Service every 10 minutes Off Peak
  - Same Service Plan applied to each mode
- Costs determined based on:
  - Number of revenue hours
  - Number of revenue miles
  - Number of peak vehicles
  - Number of guideway miles
- Costs includes use of applicable national and local cost data

Evaluation Criteria And Methodology

- Detailed Evaluation Results—*See Boards*
- All Criteria Rated from Lower Performing to Higher Performing
  - Lower Cost/Impact = Higher Performance
  - Higher Environmental Impact = Lower Performance
  - Higher Ridership = Higher Performance
  - Slower Travel Time = Lower Performance



Project Alignments – Automated People Mover (APM)

5.6 miles/10 stations

Evaluation Results - APM

Transit and Multimodal Performance

- High Ridership for trunk line and total project
- Sufficient Capacity for Future Growth

Environmental Effects

- Similar for APM and Monorail
- More cultural resources and visual impacts in Miami/Midtown extension as compared with LRT

Cost and Feasibility

- Lower Bay Crossing Cost Per Rider
- Extension of existing system

Project Alignments – Monorail

Monorail

3.3 miles/4 stations

Evaluation Results - Monorail

Transit and Multimodal Performance

- High ridership for trunk line and total project
- Sufficient Capacity for Future Growth

Environmental Effects

- Similar for Monorail and APM

Cost and Feasibility

- Capital and Operating Cost of Bay Crossing trunk line similar to APM

Project Alignments – Light Rail/Streetcar (LRT)

Light Rail Transit

7.5 miles/17 stations

Evaluation Results - LRT

Transit and Multimodal Performance

- High ridership for trunk line and total project
- Longer Travel Time for Miami Extension
- Sufficient Capacity for Future Growth

Environmental Effects

- Most Impact to Traffic in Miami/Midtown and Miami Beach
- Most Construction Impacts
- Most impact to cultural resources, noise/vibration and seagrass

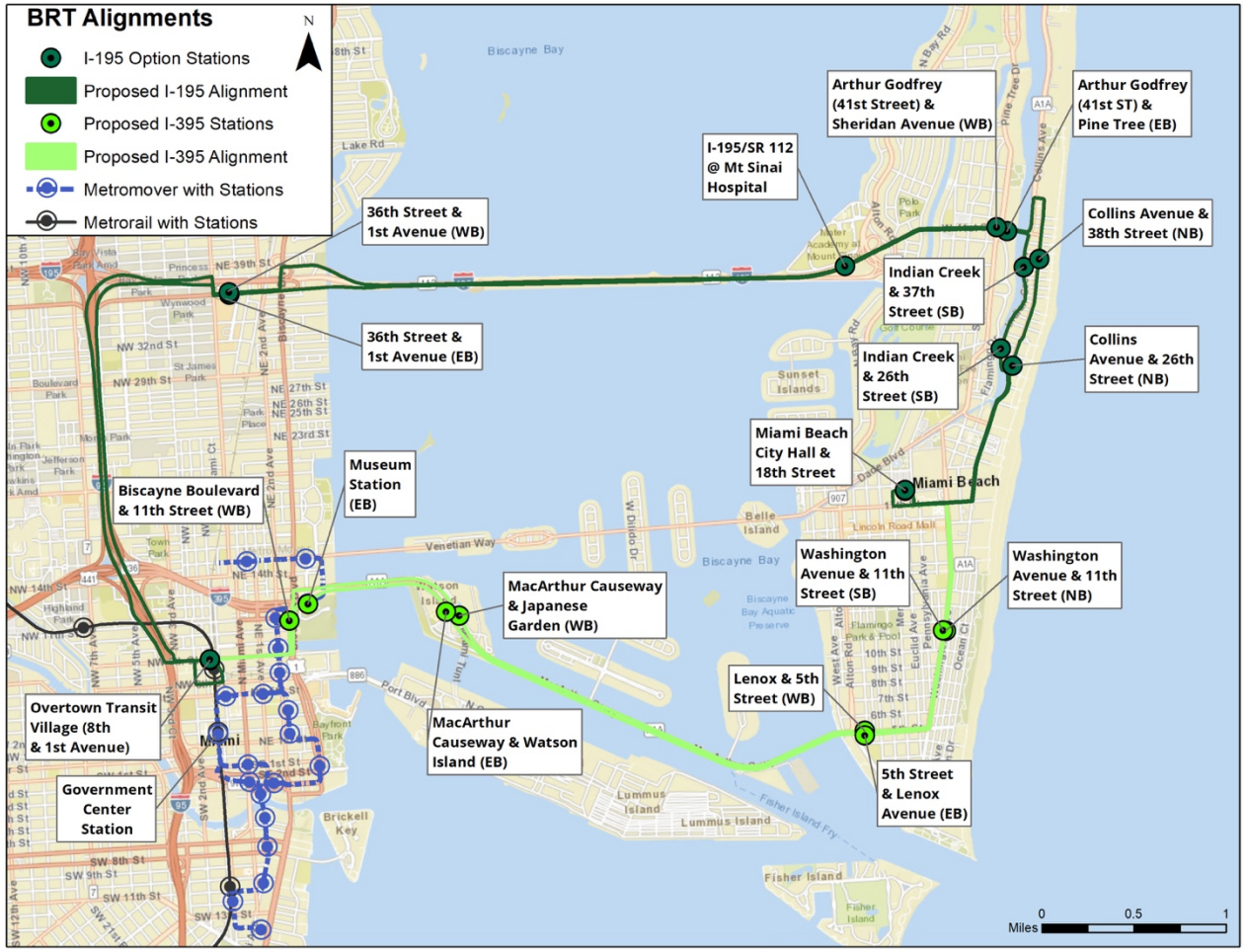
Cost and Feasibility

- Highest Bay Crossing trunk line cost
- Longest Construction Duration

Project Alignments – Bus Rapid Transit

Bus Rapid Transit

I-195 option 10.8 miles/11 stations
I-395 option 6.6 miles/10 stations



Evaluation Results - BRT

Transit and Multimodal Performance

- Lowest Capacity/Lowest Ridership
- May not meet Purpose and Need for Project

Environmental Effects

- Widening I-395 for BRT: Highest Impact to Natural Resources
- May not be able to permit and/or mitigate for impacts

Cost and Feasibility

- Lowest Capital and Operating Cost
- No Mitigation of Vulnerability to Sea Level Rise

Evaluation Summary-Key Differentiators

Transit and Multimodal Performance

- Rail options have similar ridership, capacity, speed and cost for Bay Crossing
- BRT options have lower ridership and capacity due to travel time and attractiveness of mode
- LRT has the highest vehicle capacity and highest cost

Environmental Effects

- Monorail and APM modes are similar for the Bay Crossing
- BRT on widened MacArthur Causeway has greatest impact to natural resources
- LRT has more traffic, noise and construction impacts in Miami/Midtown
- APM and Monorail have more visual and cultural impacts in Miami/Midtown

Cost and Feasibility

- APM and Monorail costs approximately equal
- LRT cost higher but similar range
- BRT is significantly lower cost

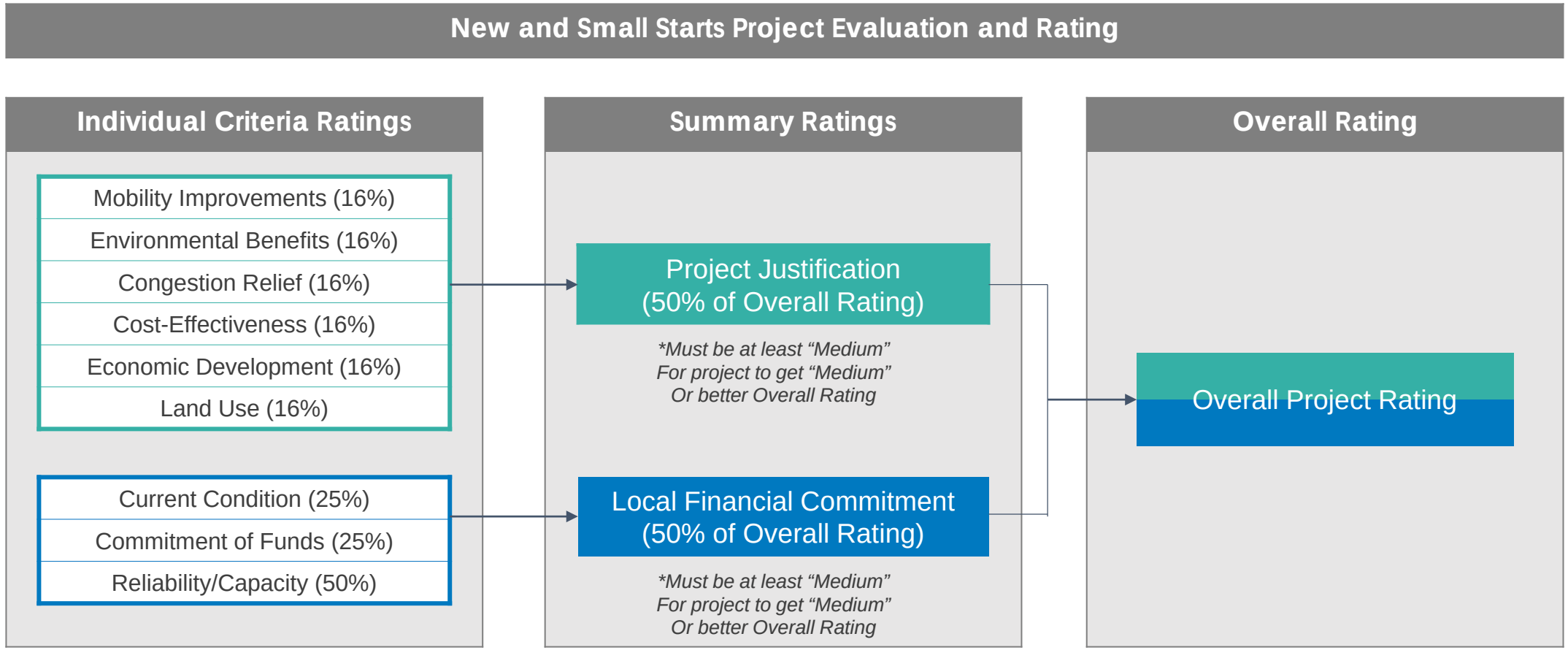
Evaluation Summary-Results

- Rail Modes Are Higher Performing and Higher Cost Than BRT
- BRT Capacity and Ridership May Not Meet Purpose and Need
- LRT Impacts Are Higher Than APM/Monorail
- APM/Monorail-Similar Bay Crossing trunk line performance
- Funding Potential May Be Key Consideration Given Similar Performance

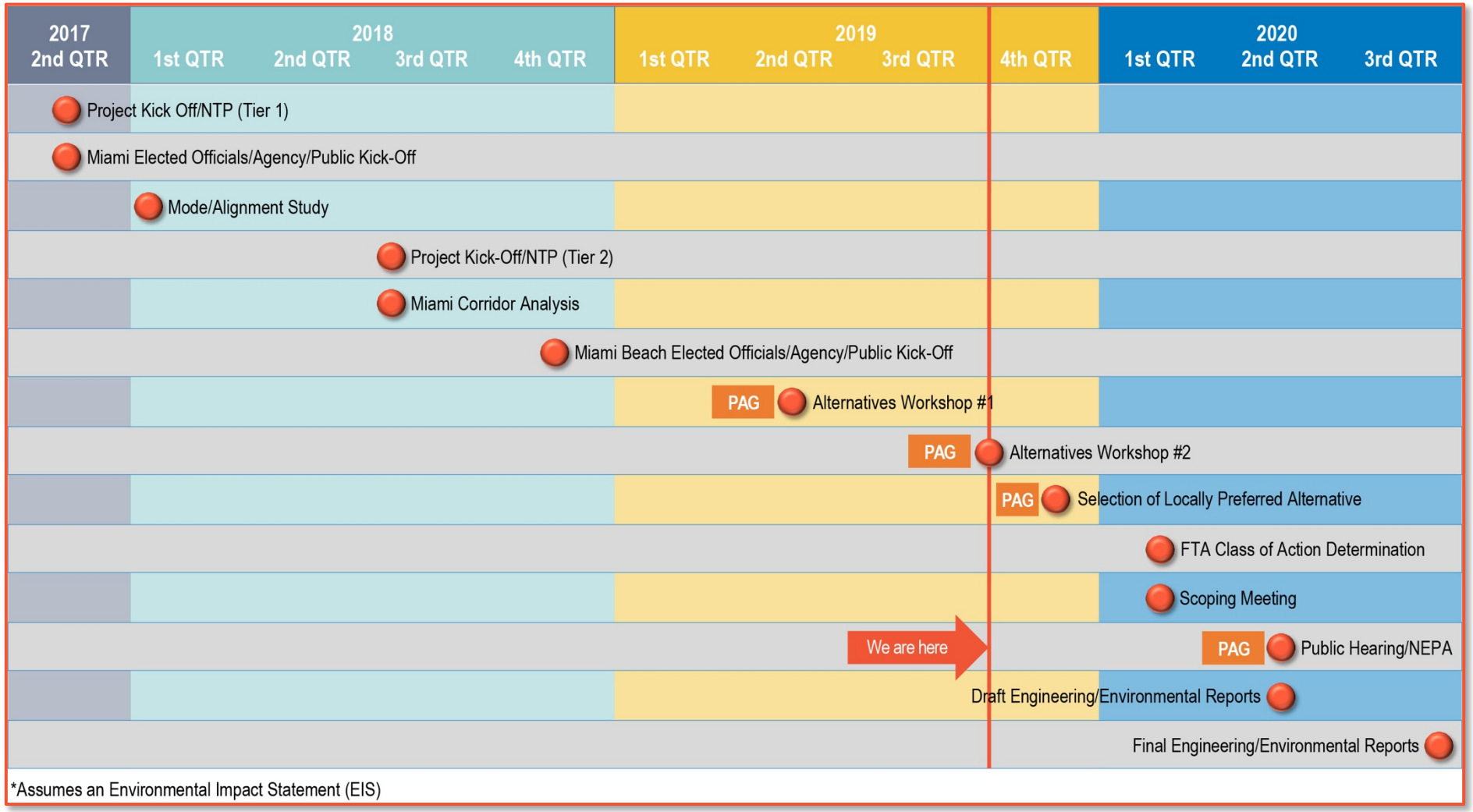
Next Steps

- Identify recommended solutions thru a Locally Preferred Alternative
  - Can be a mix of modes within total alignment
- Endorsement from Transportation Planning Organization Governing Board
- Prepare a Class of Action determination request for Federal Transit Administration
- Complete environmental document
- Enter into FTA process

FTA Capital Investment Grant Rating



Project Schedule



Public Engagement

For more information:

Kiranmai Chirumamilla, E.I., DTPW Project Manager
Phone: 786-469-5283
Email: Kiranmai.chirumamilla@miamidade.gov

Odalys Delgado, AICP, Consultant Project Manager
Phone: 305-507-5583
Email: Odalys.Delgado@parsons.com

Yvette Holt, Consultant Public Information Officer (PIO)
Phone: 305-335-0924
Email: Yvette@Holtcommunications.net

Your feedback is important!