Congestion Management Options for Miami Freeways

Integrated Mobility Solutions

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Important Disclaimer

Material included in the presentation about specific routes and agencies is purely for purposes of illustrating a unique integrated mobility solution for urban freeway congestion that makes use of strategically deployed express bus service, possibly in conjunction with express toll lanes. It is easier to communicate the idea using a hypothetical project example(s).

However, neither the Miami-Dade Expressway Authority (SR 836), nor the Florida Department of Transportation (I-95), have endorsed, adopted or currently intend to actually implement the expanded operations shown. MDX is developing one major park and ride facility and plans to support some express bus along SR 836 in the future, and FDOT does currently operate some express bus service in its 95 Express toll lanes.

The illustrative impacts and benefits shown have been prepared using sketch level analysis and, while reasonable and representative of potential results, are subject to more detailed analysis before actual implementation.

Strategic Integrated Mobility Solutions to Manage Congestion

- It is becoming increasingly difficult to expand many congestion urban freeways, both on and off the interstate system.
  - Right-of-way limitations
  - Sometimes cost-prohibitive
- Tolled express lanes provide a good option and offer new travel choices
  - But maturing ETLs may face challenges over the long term
- The long term congestion solution: Find a way to get at least some of the people out of their cars
  - At least for part of their journey where congestion is most concentrated

The Basic Concept

- Strategic “integrated mobility solutions”
  - Aggressive express bus service – especially where free flow express lanes offer high speed, non-stop express bus operations
  - Integrated park-n-ride transfer points
  - Destination distributor options
- Incentivize peak period drivers to leave their cars where they enter congested freeways – not at their destination
  - Let travelers drive the “first mile” to common drop off locations at major points of entry to the freeway
  - Low cost, secure parking at remote locations
  - Use dedicated, high frequency non-stop express bus to “line haul” travelers to downtown distribution systems; preferably in free flow express lanes, thru the congested segments
- Reduces congestion – preserves acceptable future operations without additional widening

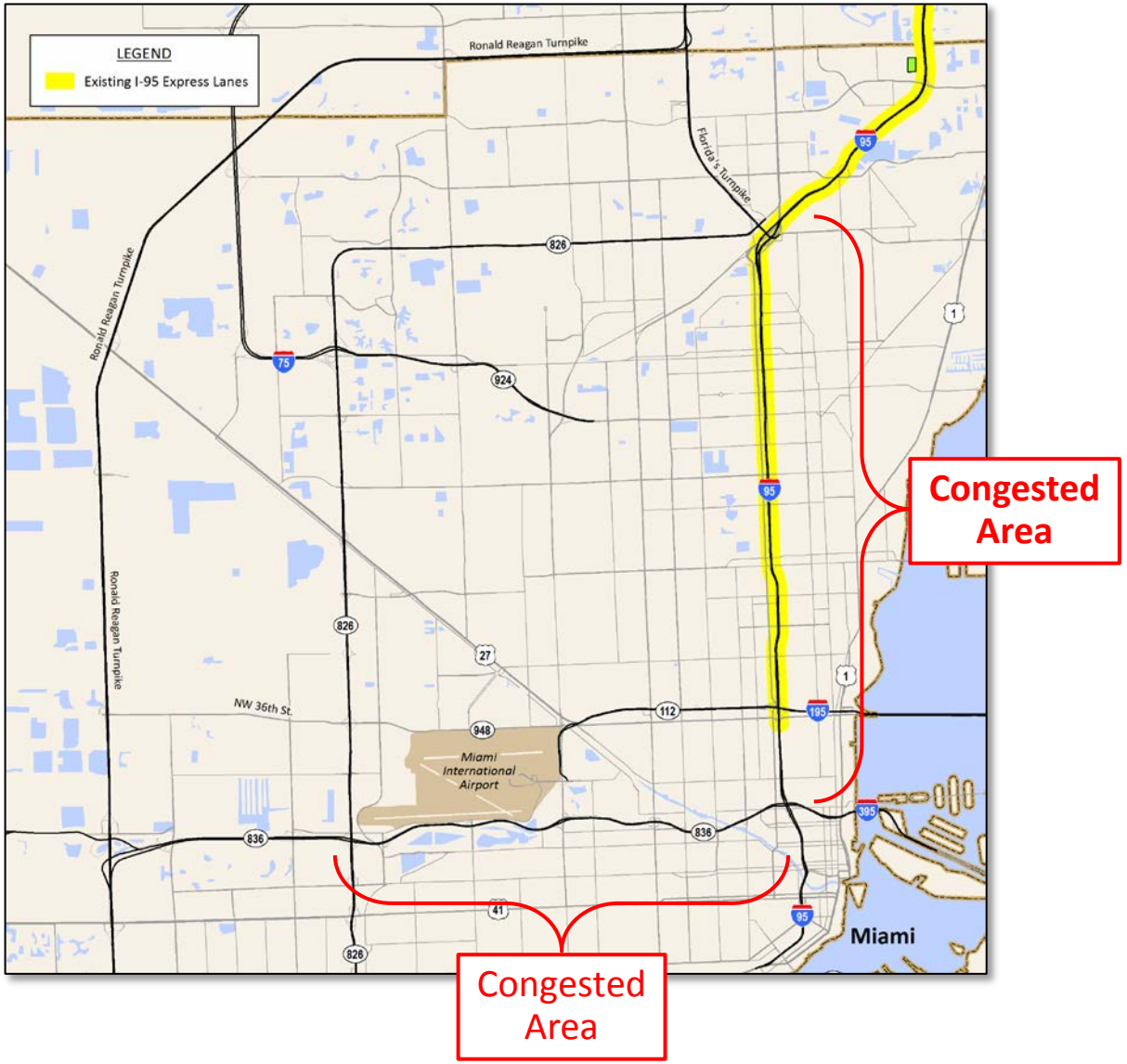
So What's New About That?

- Strategic investment in parking, bus and distribution systems to truly incentivize people to leave their cars before hitting congested sections
- A new way of looking at the benefits – investing in bus specifically to reduce congestion for cars and trucks
  - Primarily accrue to people not on the buses -- but people still on the road
  - Significant change in the ROI equation for express bus
  - Reduced toll levels needed to manage demand in express toll lanes
- Integrated pricing strategies and payment technologies to change behavior
  - Not just providing the buses – but doing it in a coordinated, convenient, smart, and tech savvy way

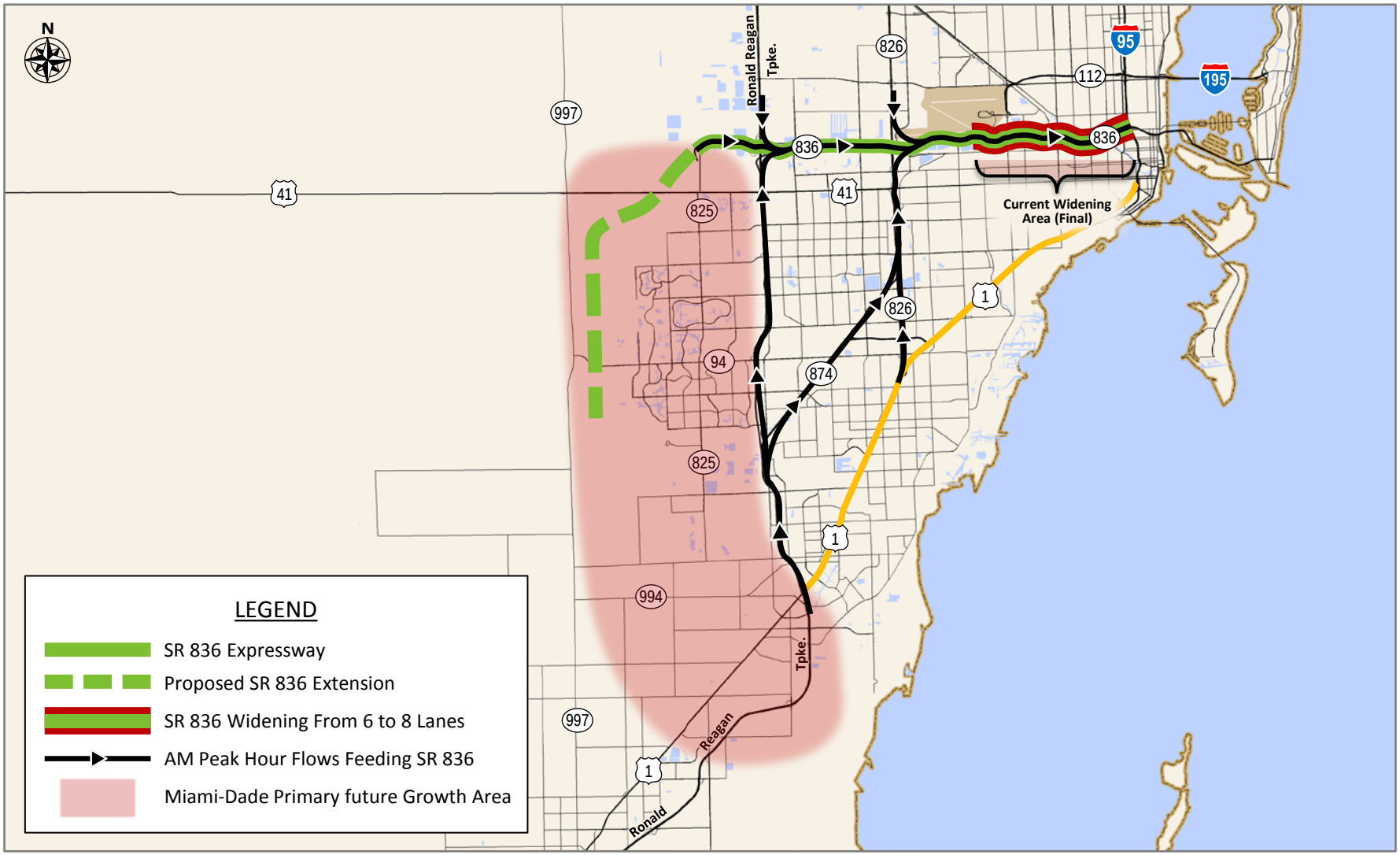
Managed Lanes: Strangling from Their Own Success

- The most successful managed lanes may fail in the long run as they "mature"
  - Peak hour toll rates continue to rise to "keep the promise" of congestion free travel
  - At some point this becomes a sensitive issue for elected officials
- Some projects have maximum rate policies, which frequently need to be increased … or not
  - Even those without maximums rates may eventually reach price levels which are not "politically feasible"
- Unless rates continue to increase; the managed lanes will eventually fail operationally
- In most cases the best (perhaps only) solution will be to "get some of the people out of their cars"
  - To limit future growth in peak hour congestion and the corresponding need to keep raising rates

A Couple of Miami area Examples

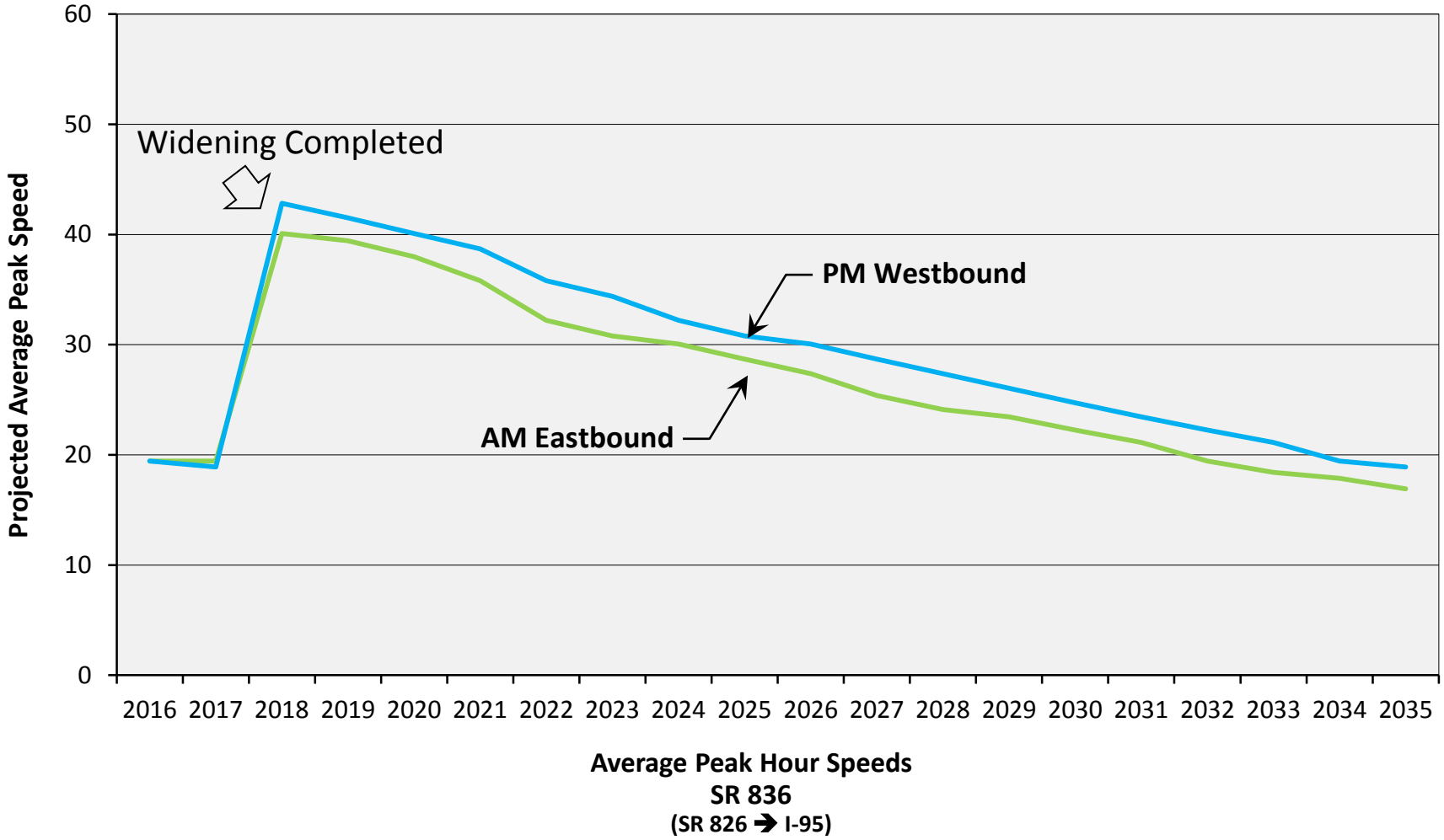


SR 836 Expressway Corridor

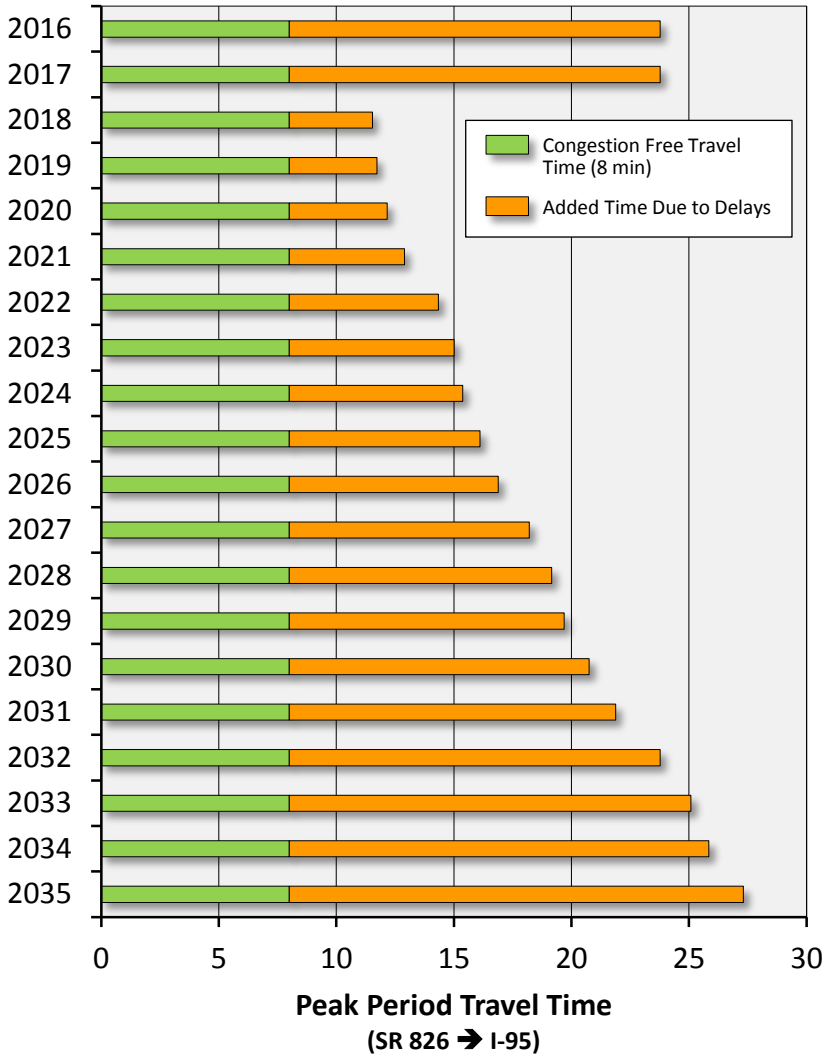


Projected SR 836 Peak Hour Speeds

(Between SR 826 and I-95)



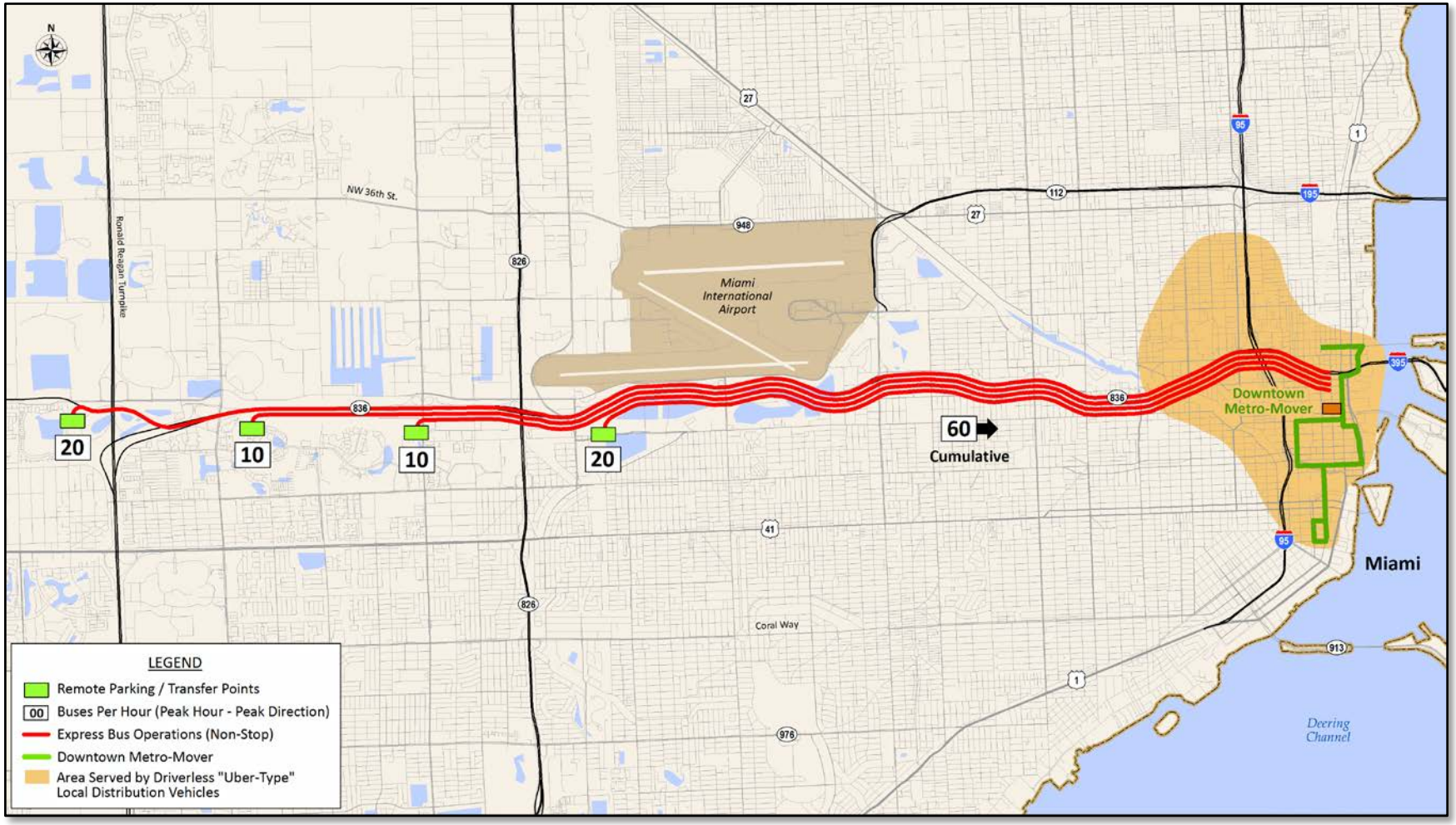
Projected Travel Times By Year
(Approx. 8 miles)



Dynamic Shoulder Usage Options on SR 836

- As part of final widening projects, SR 836 will include a continuous "hard" inside shoulder in both directions
  - In short term planned for use by express bus
- MDX / FDOT also constructing major park-n-ride at jct. of SR 836 and Fl. Turnpike (west end)
- Strategic question: how should the new dynamic shoulders be used?
  - Limited express bus only?
  - Increased investment in aggressive express bus with multiple western remote parking facilities?
  - As a combined demand managed express toll lanes / express bus lanes?
- SR 836 is already a toll road
  - Provides potential funding support options (or challenges)
  - Makes ETL option more sensitive (toll within a toll)

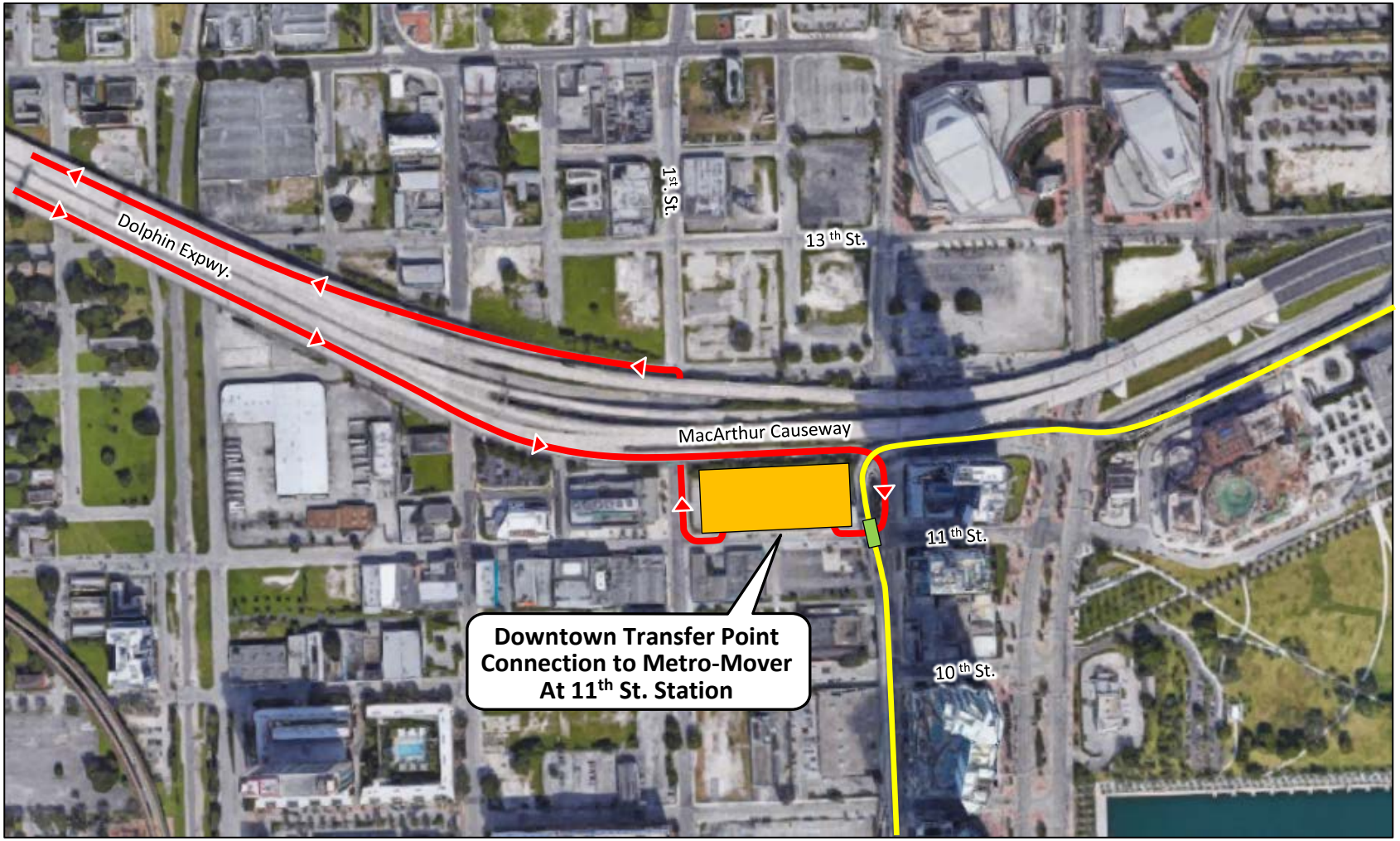
SR 836 Strategic Express Bus Concept



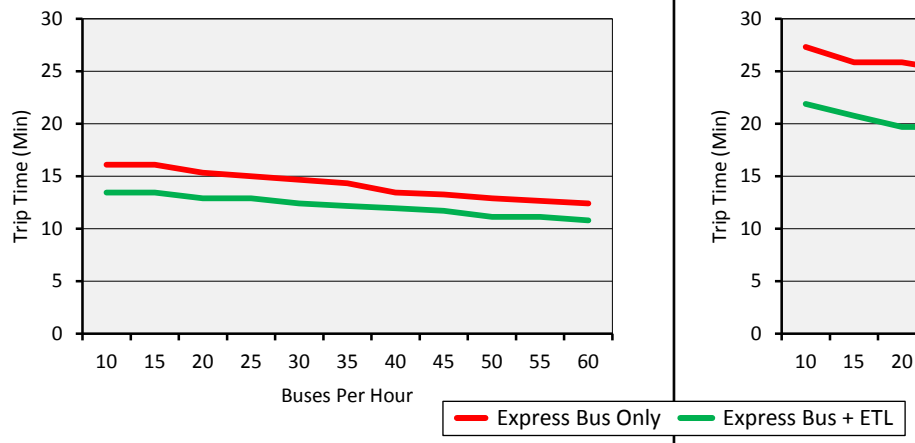
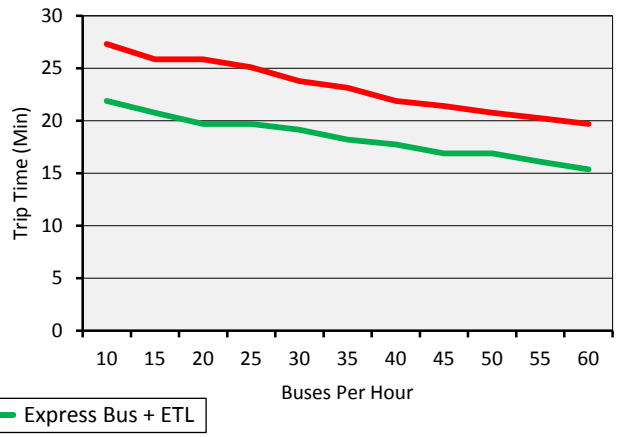
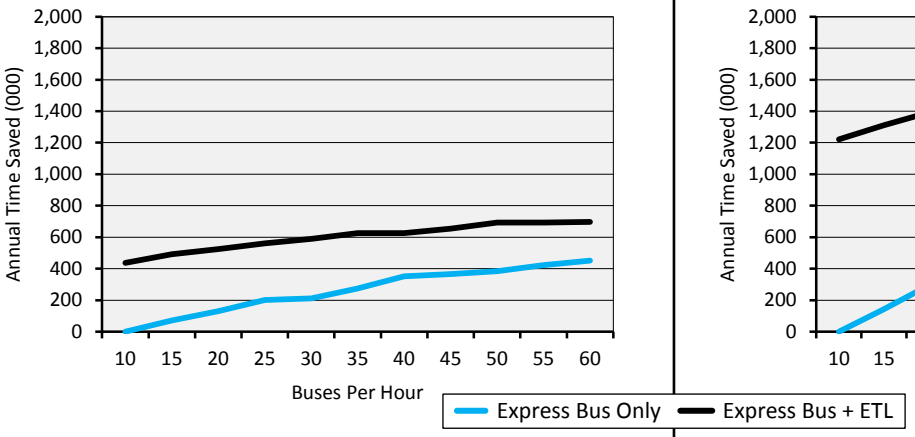
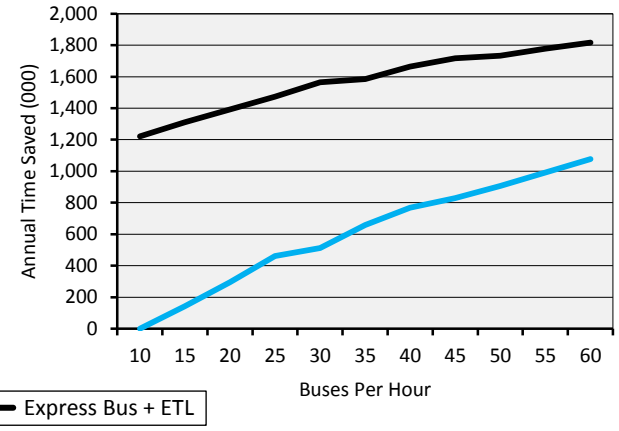
Key Features

- Four remote lots/garages at major western access points to SR 836
  - With non-stop express buses leaving every 3-6 minutes from each location
  - Less frequent multi-stop (four lots only) service in off peaks
- Downtown transfer point immediately adjacent to freeway
  - Direct access to existing “Metro-Mover” distribution people mover
  - Driverless MAAS vehicles for expanded area local distribution
- Level “platform” loading and unloading of buses at all end points
- Parking and bus payment system linked to existing “Sunpass” electronic toll system accounts

Hypothetical Downtown Transfer Point



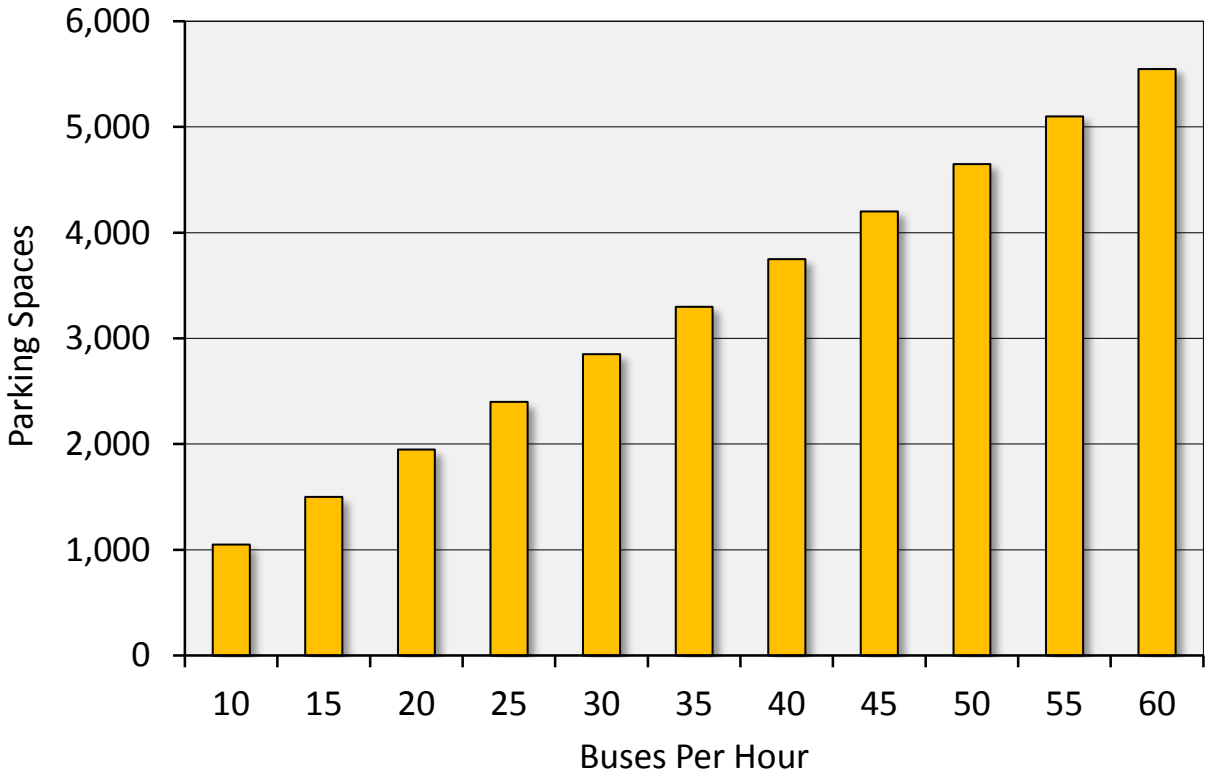
Comparison of Travel Time Savings

	2025 Levels	2035 Levels
Average Trip Time (SR 826 To I-95)		
Annual Time Savings vs. Base Case		

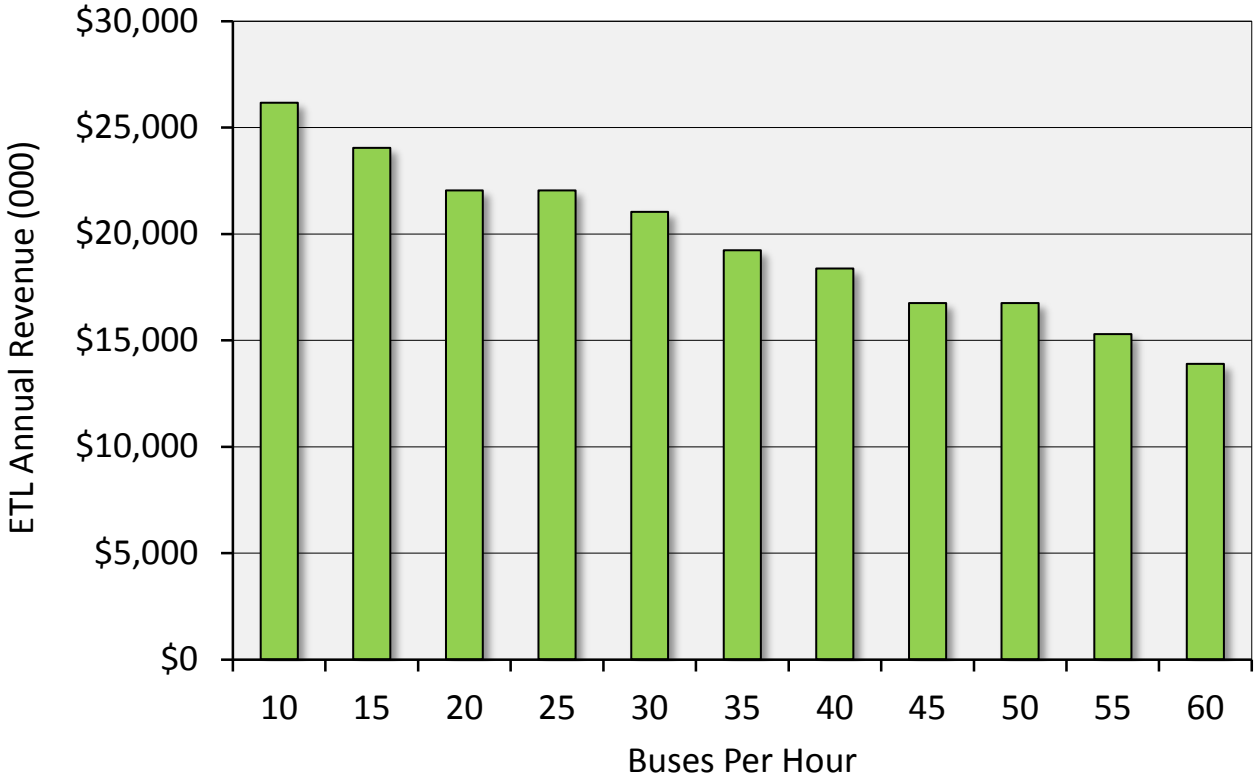
Key Points

- As the number of express buses per hour increases, travel times decrease (provided people leave cars and use them)
  - Even without ETL option, trip times (2035) decrease from 28 minutes with 10 buses per hour to 19 minutes with 60 buses/hour
  - Adding the ETL option reduces trip time another 5-7 minutes
- In 2035, aggressive EB and ETL can save **1.6 to 1.8 million** hours of annual travel time
  - Majority of which is to people not on the buses and in the general purpose lanes
  - Even at $20/ hour that's worth $30-35 million per year, pretty good ROI for one express bus corridor

Remote Parking Space Demand



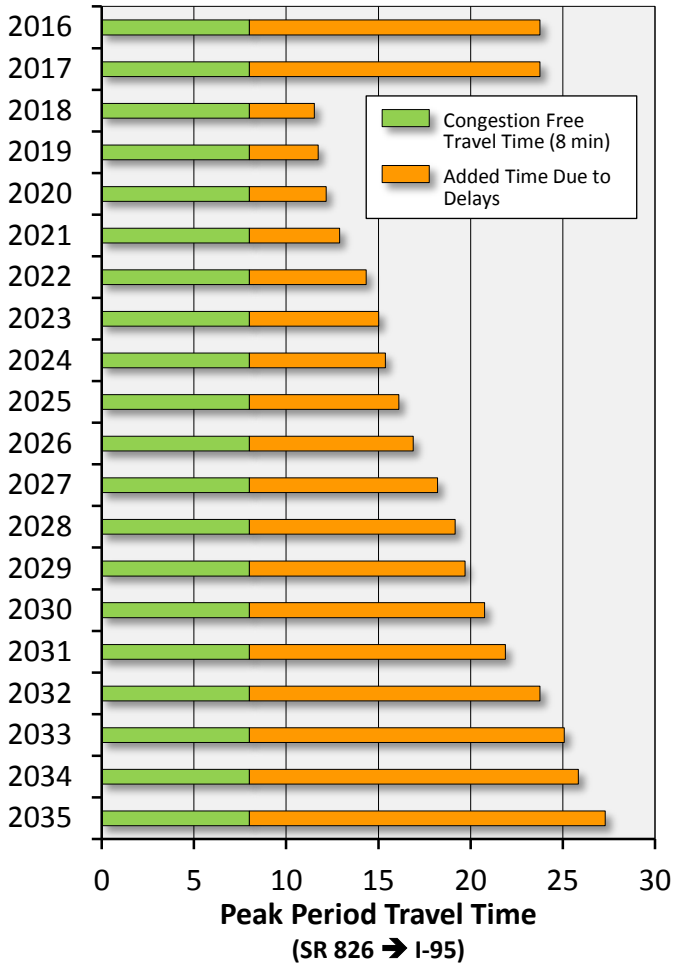
ETL Revenue Potential
(Increment Above Base SR 836 Toll)



Comparison of Projected Peak Hour Travel Times on SR 836

(With and Without Express Bus and ETL Strategies)

Assumes 10 Express Buses Per Hour



Assumed Service Changes

10 buses per hour

Incr. buses: 25/hr

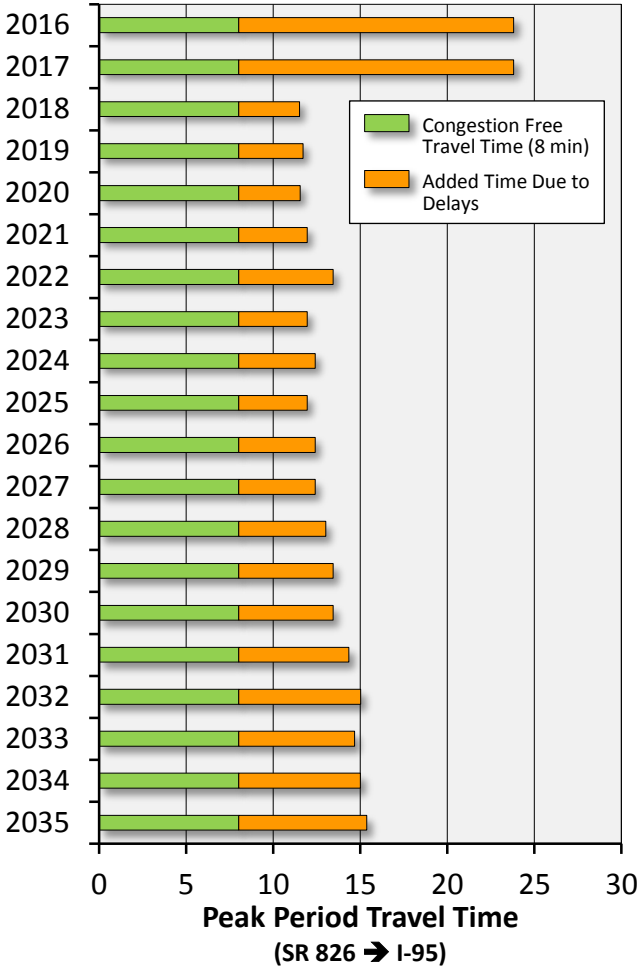
Open ETL use

Incr. buses: 40/hr.

Incr. buses: 50/hr.

Incr. buses: 60/hr.

With Assumed Service Increases Shown

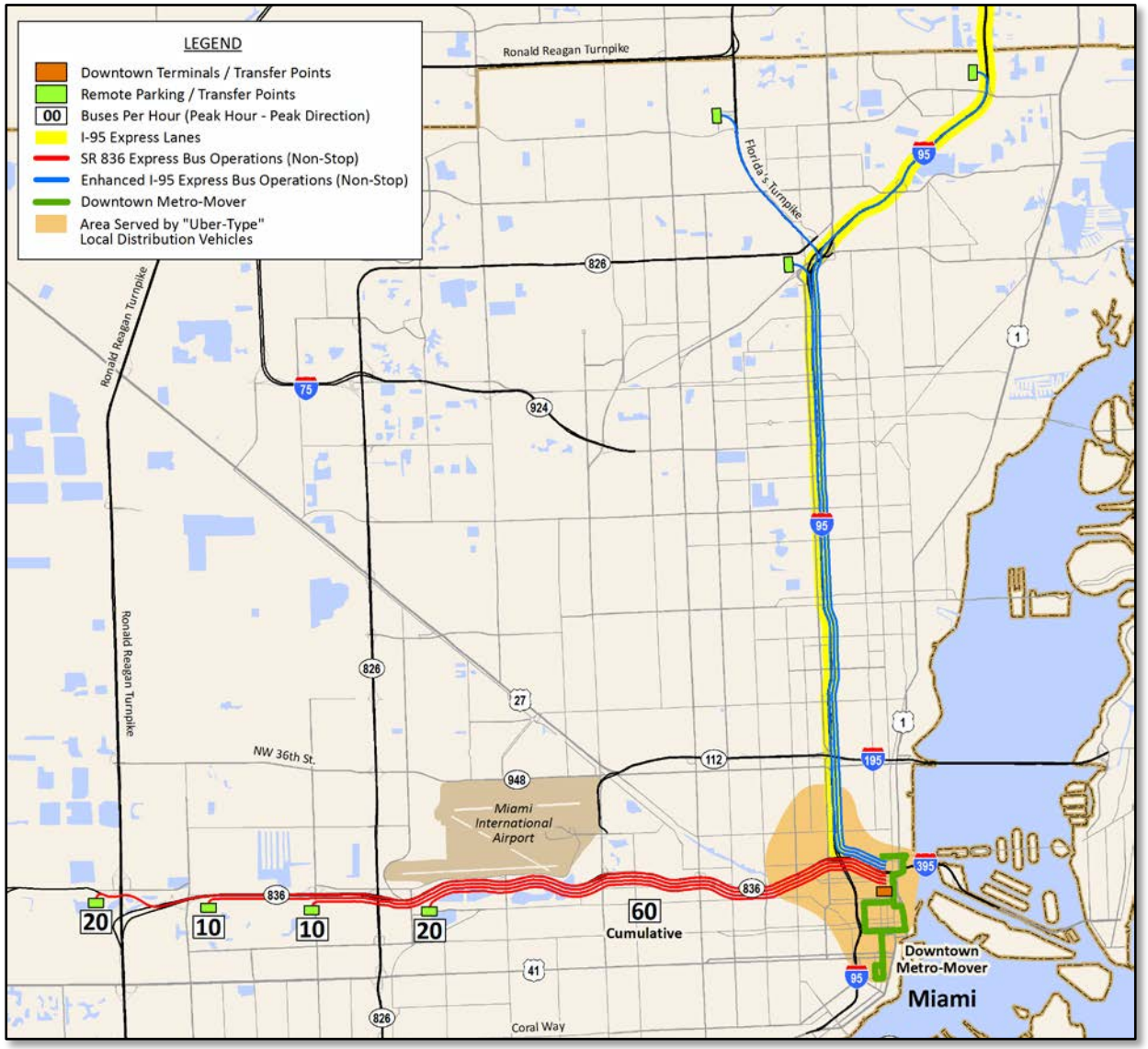


No Difference in road capacity – only differences in how MDX uses the shoulder lane

95 Express: Keeping the Promise

- 95 Express Lanes are among the most successful ETLs in the U.S.
  - Opened in phases over the last five years; originally under a Federal UPA program grant
  - Now generates around $50 million revenue per year
- Had huge benefits in terms of reduced congestion on most congested parts of I-95
  - Speeds before and after express lane conversion (PM Peak)
    - HOV lane – 21 MPH >> 53 MPH
    - GP lanes – 19 MPH >> 41 MPH
  - By late 2016, GP lane speeds in pm peak (NB) have dropped to 26-30 MPH
- Typical NB PM peak tolls:
  - In 2012 -- $1.80-$2.50
  - In 2016 -- $7.34 -$7.87
- Maximum section rate of $10.50 (7-8 miles) is reached almost every weekday during pm peak conditions
  - Increasing challenge to keep lanes free flowing in pm peak

Increasing Strategic Express Bus on I-95 Corridor



Thank you

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