FLORIDA DEPARTMENT OF TRANSPORTATION - DISTRICT VI
TRANSPORTATION SYSTEMS MANAGEMENT & OPERATIONS (TSM&O)

FDOT District Six
Adaptive Signal Control Technology (ASCT) Pilot Project on SR 90/SW 8th Street

Florida Section Institute of Transportation Engineers (FSITE) Conference 2018

October 31, 2018

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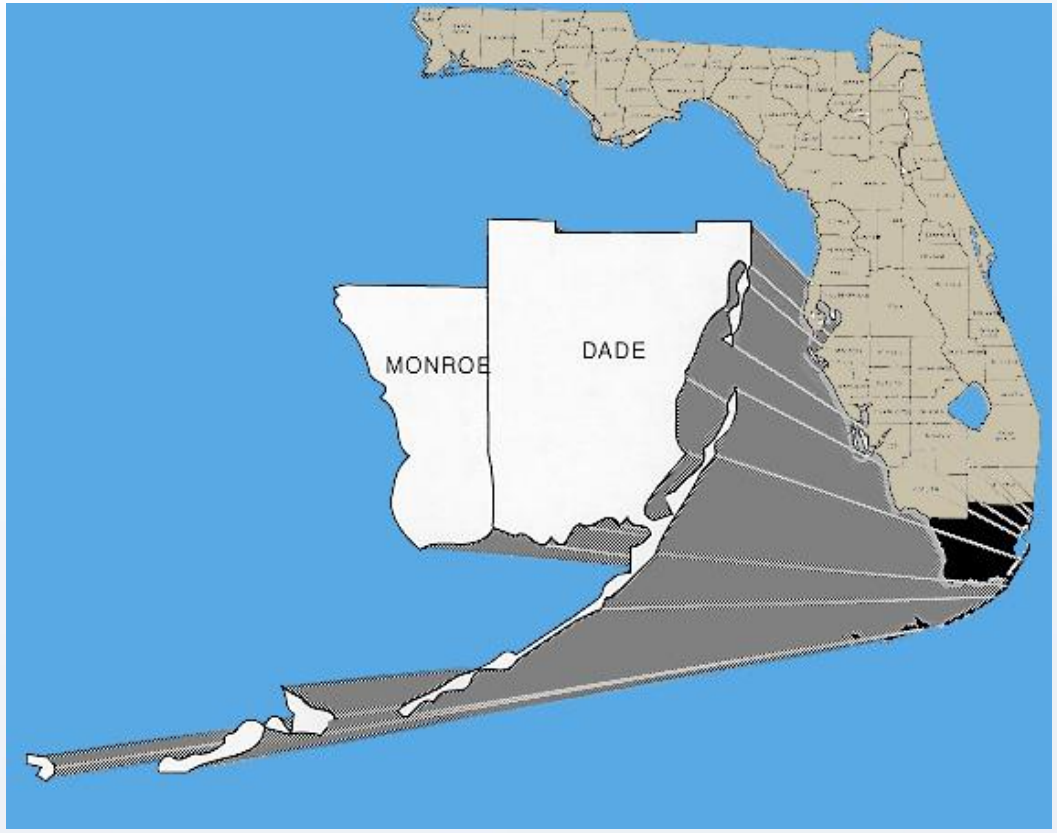
Agenda

- About FDOT District Six
- Project Overview
- Adaptive Signal Control Technology (ASCT)
- Operations
- Maintenance
- Before/After Evaluations

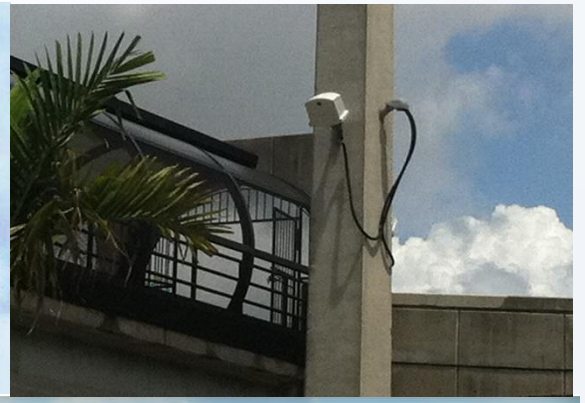
About FDOT District Six

- **Miami-Dade and Monroe Counties**
  - 700 centerline miles
  - 270 centerline miles of ITS coverage
- **Miami Dade is One of the Most Congested Counties in the U.S.**
  - 2.75 million residents in 2017
  - 15.86 million visitors in 2017



District Six TSM&O Program

- **SunGuide® Transportation Management Center**
  - 32,000 square foot facility
  - Multi-agency co-location
  - 7 Actively Managed Limited Access Facilities and Roadways



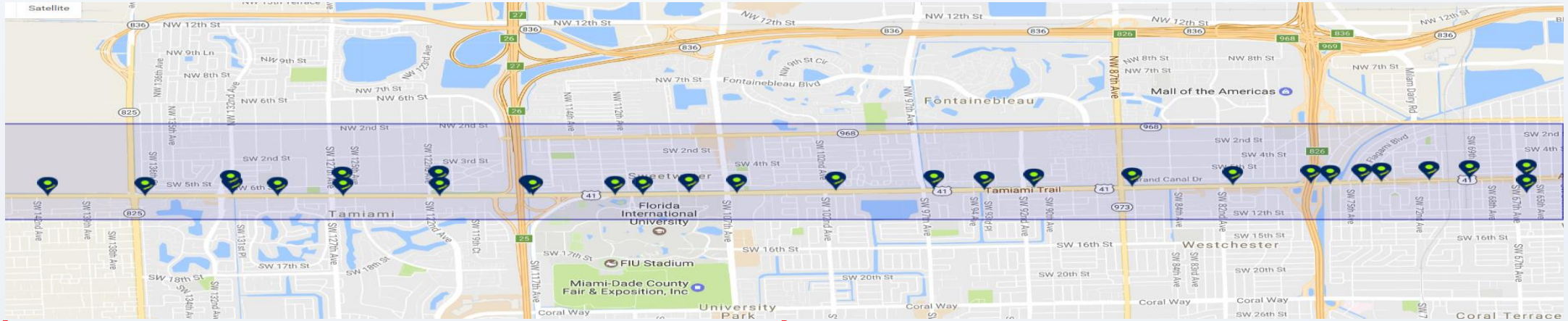
- **Major Services**
  - Incident Management
  - Traveler Information
  - Traffic Management
  - Arterial Management

District Six TSM&O Program

- **Infrastructure**
  - Closed Circuit TV (CCTV) Cameras - 331
  - Dynamic Message Signs – 177
  - Detector Stations – 394
  - Ramp Signals – 22
  - Traffic Signal Devices – 53
  - ASCT Devices – 29 Intersections

SR 90/SW 8 ST ASCT Pilot Project Overview

- **First Project of its Kind in District Six**
  - 29 signalized intersections
  - Approximately 7.5 miles (SW 67th Avenue to SW 142nd Avenue)
  - Construction Ended/Operations Began: April 2017
  - Construction Cost: $3,877,962.73
  - Operations Cost: $358,279.60 per year (2 year pilot)

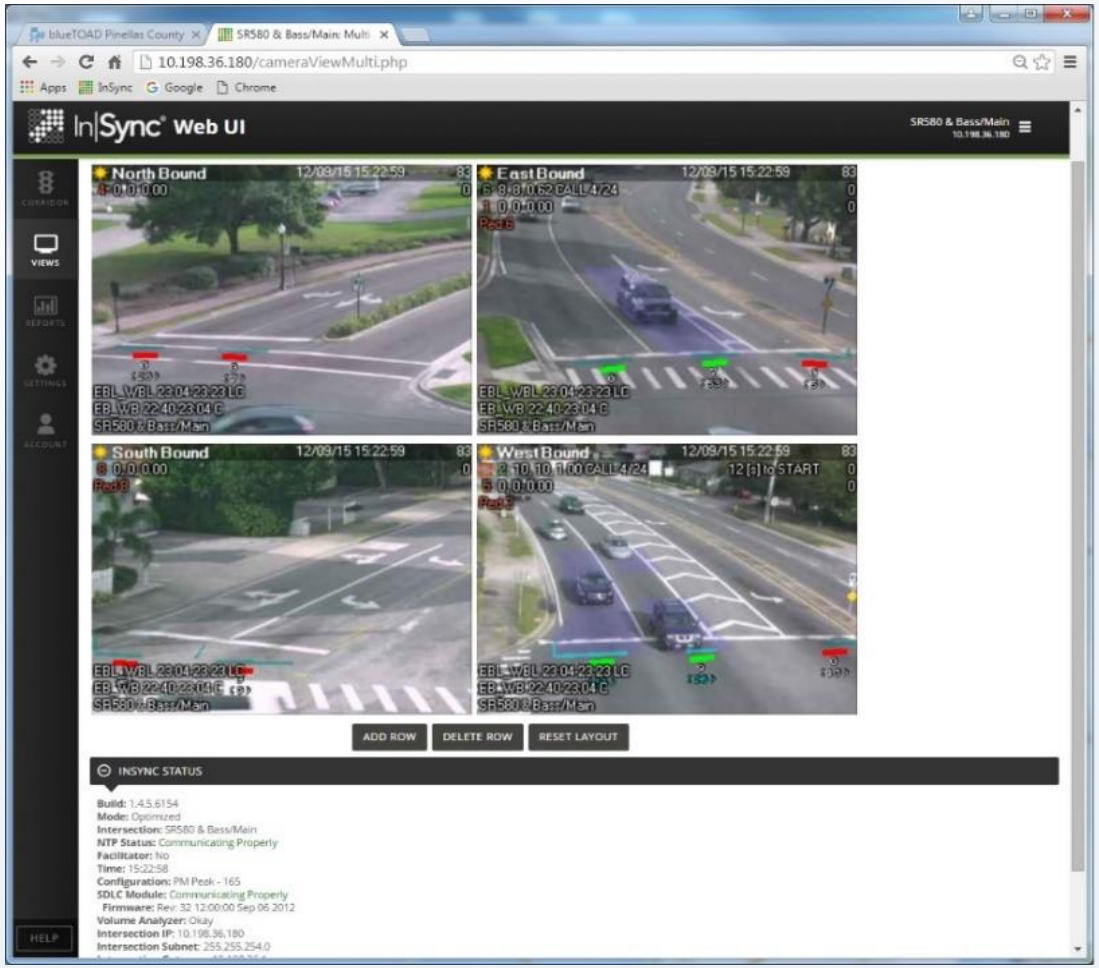


InSync SEGMENT 1

InSync SEGMENT 2

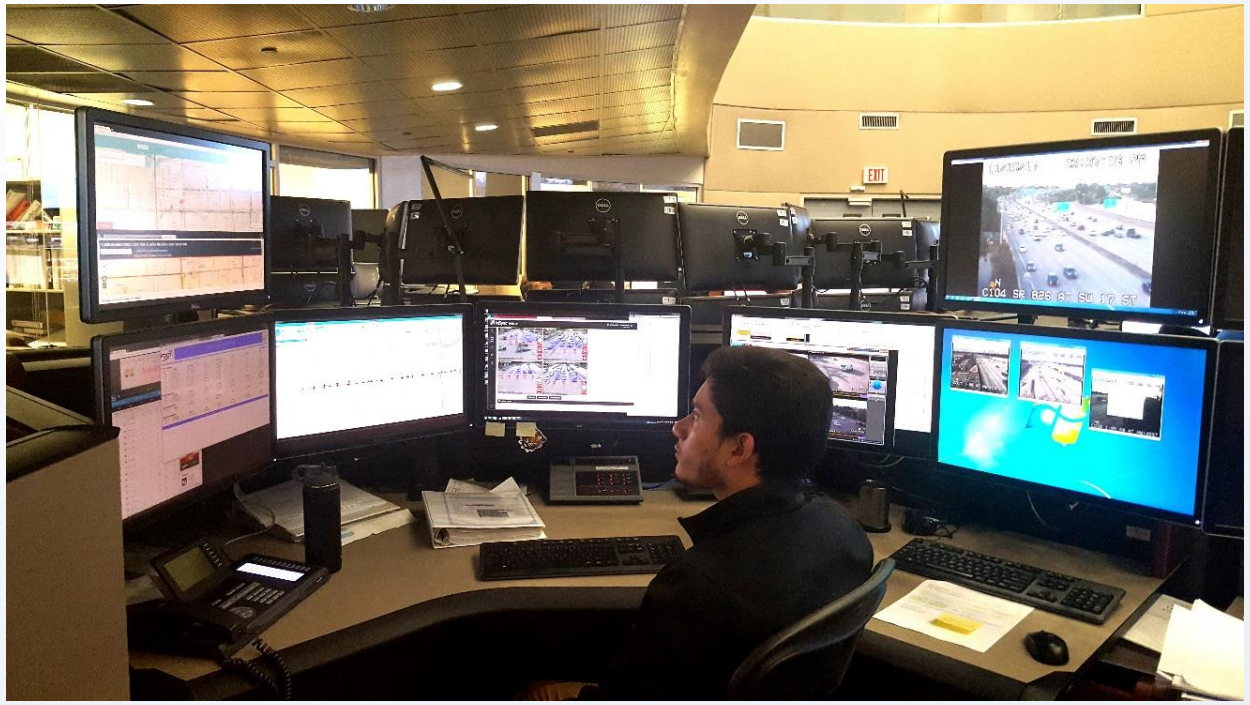
Adaptive Signal Control Technology (ASCT)

- Uses real-time data to adjust signal timing based on demand & operational needs.
- Rhythm Engineering's **InSync** ASCT software:
  - Operates within 'Fixed' Period
    - 140 – 190 seconds
  - Prioritizes the main street (SW 8th St) for signal coordination.
  - Serves various green phase pairs based on real-time demand.



Operations

- **SunGuide TMC**
  - Two Arterial Operators
    - Monday – Friday, 6 a.m. – 7 p.m.
    - Special/Weather Events
  - Arterial Operations Program Manager
    - Monday – Friday, 9 a.m. – 6 p.m.
    - On-Call
  - Freeway Operators
    - Night/weekend coverage

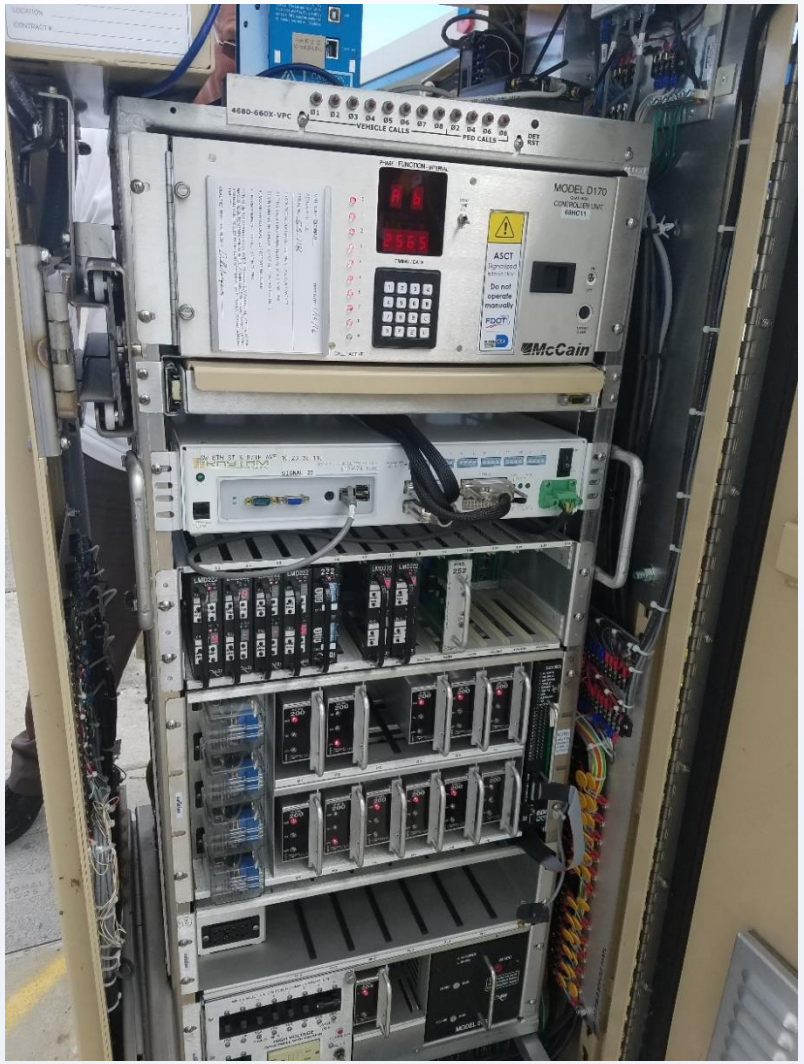


Operations

- **Monitor Daily Operations Using:**
  - InSync Software
  - Miami-Dade County (MDC) Signal Software System (KITS)
- **Troubleshooting Failure/Issue Resolution**
  - ASCT Devices and Software
- **Coordination**
  - MDC Traffic Operations Center (planned/unplanned traffic events)
  - District 6 ITS Maintenance Contractor
  - Rhythm Engineering
- **Performance Reporting**

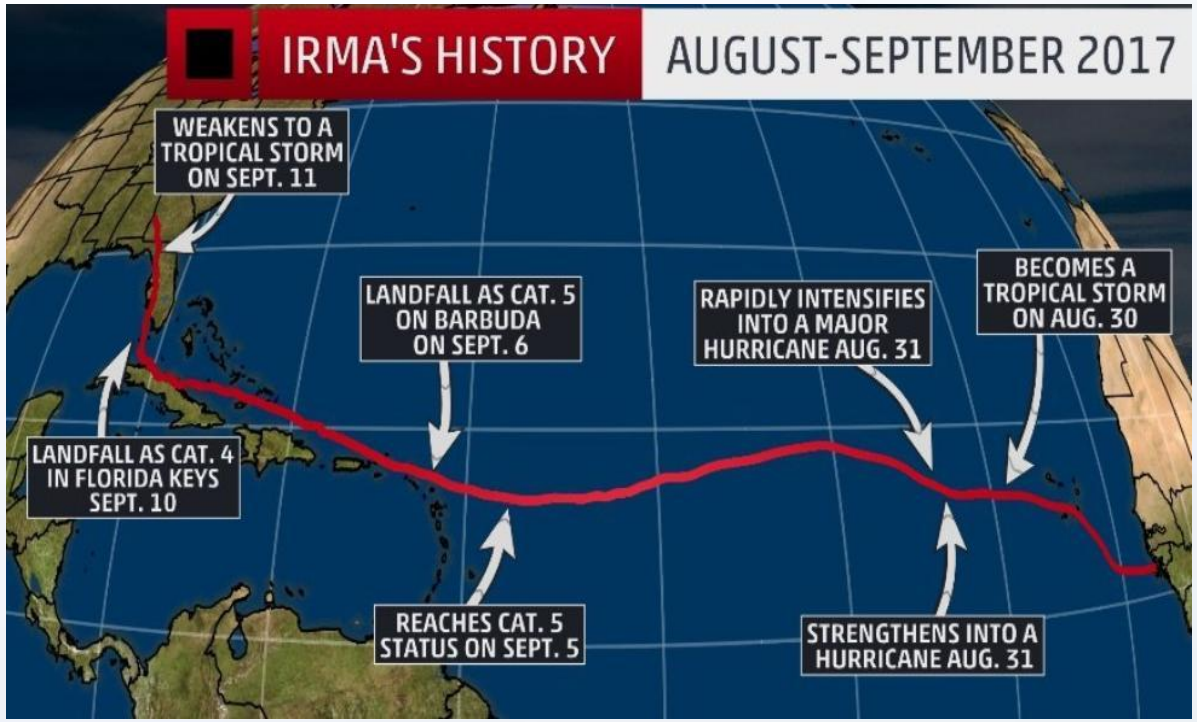
Maintenance

- **Joint Effort between FDOT D6 TSM&O and Local Maintaining Agency**
  - FDOT D6 ITS Maintenance Contractor (ASCT Components)
  - MDC DTPW Traffic Signal and Signs Division (Signalization)



Hurricane Irma

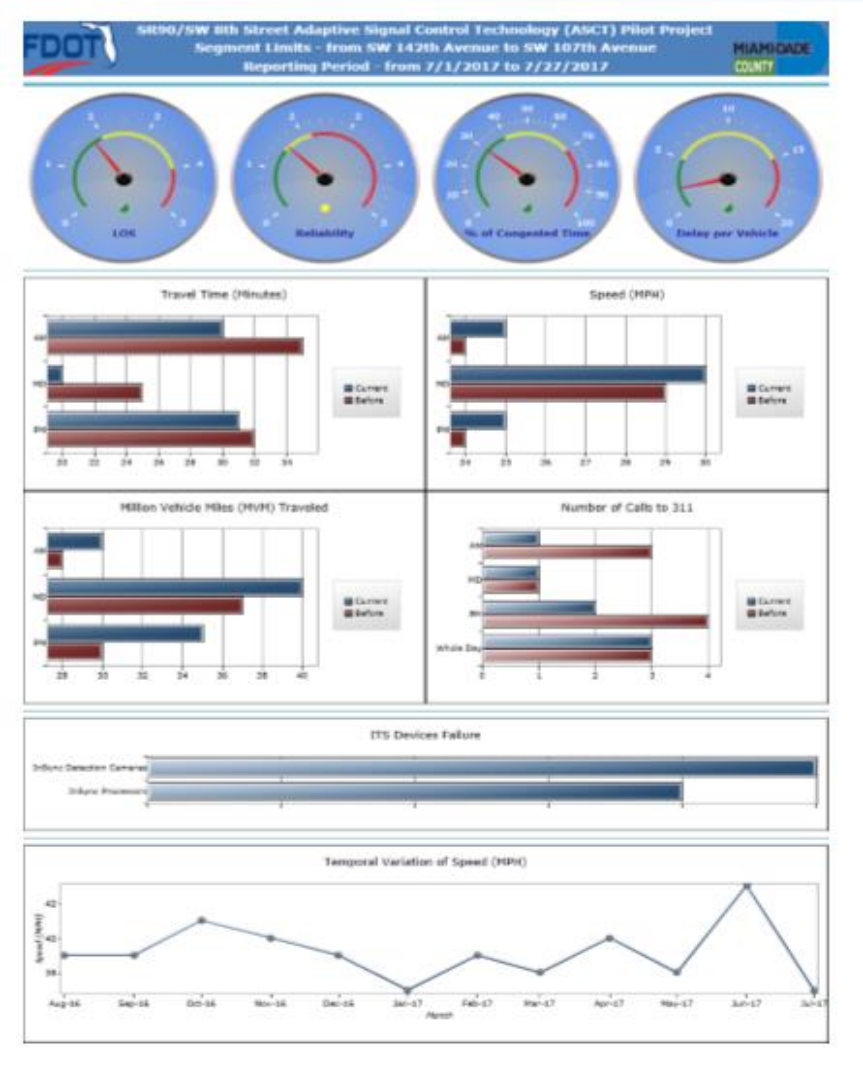
- **Adaptive Operations stopped prior to landfall**
  - Time of Day operation during and after hurricane
- **ASCT components repairs completed April 2018**
- **Adaptive Operations restarted May 2018**



Source: https://weather.com

Before/After Evaluation

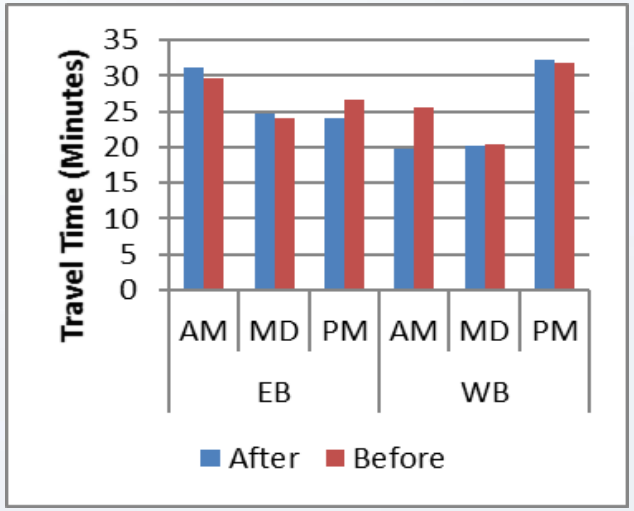
- **Ongoing (FIU)**
  - Data Collection
  - Performance Dashboards
  - Interim Evaluation Report (6 months)
  - Year 1 Report (July 2019)



Before/After Evaluation

Interim Evaluation Report Findings

- Cross Street and Off-peak Directions Improved Significantly
  - 12.2% Overall Reduction in Total Delay (for both cross street and main street)
  - ~ 5.8 mins (30%) Travel Time Decrease – WB, AM Peak
  - ~ 2.5 mins (10.4%) Travel Time Decrease – EB, PM Peak
- Small Deterioration in Peak Direction Performance
  - ~ 0.43 mins (1.3%) Travel Time Increase – WB, PM Peak
  - ~ 1.5 mins (5%) Travel Time Increase – EB, AM Peak



Segment ALL (entire corridor) Travel Time

Lessons Learned

- **Dedicated Arterial Operations Staff is Critical**
  - Active Monitoring by Arterial Operators
- **Inter-agency Coordination is Key**
  - Miami-Dade County Traffic Signals and other partners
- **Traffic Engineering Support by Vendor is Necessary**
  - Configuration Adjustments to address operational issues

Contact Information

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