

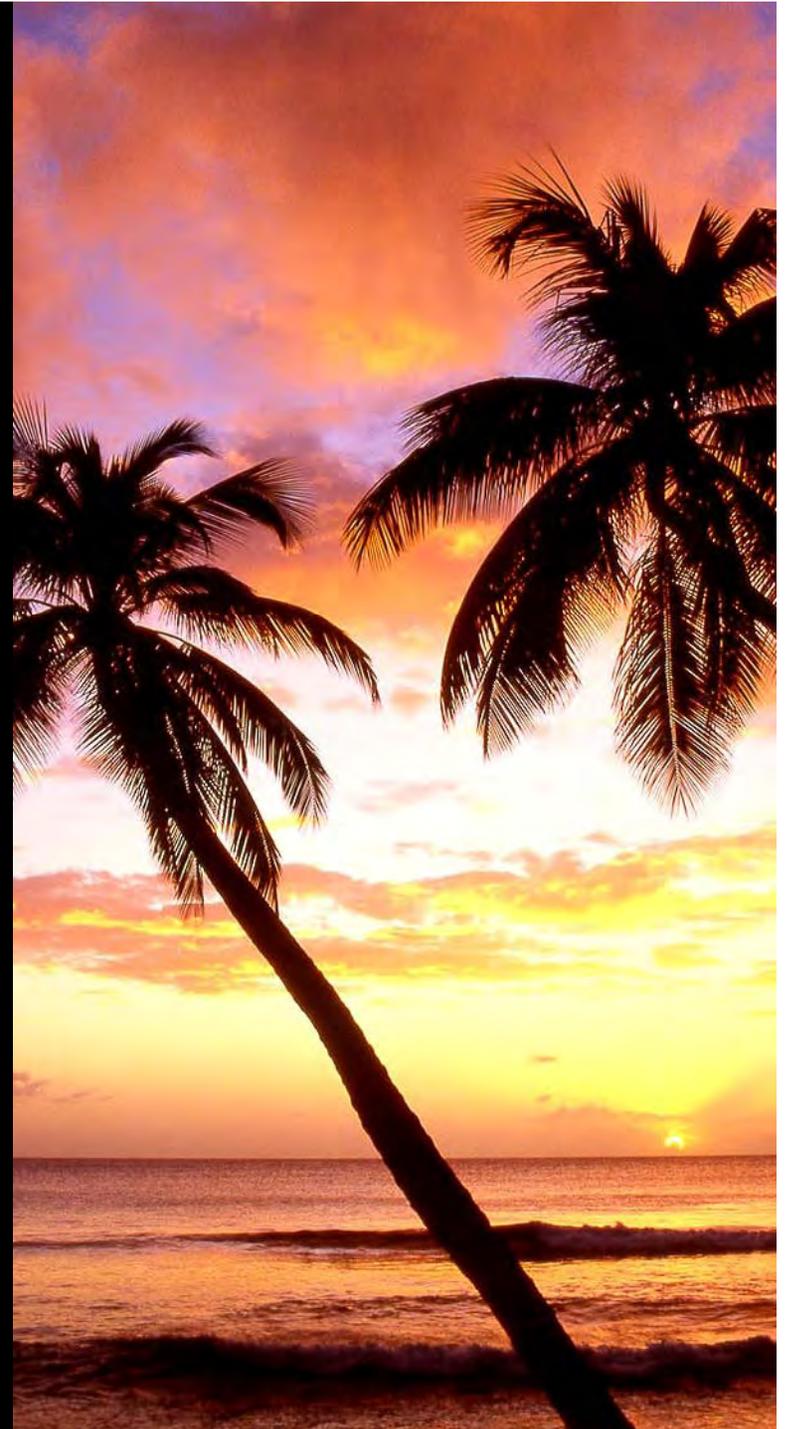
City of Key West

Carrying Capacity Traffic Study Presentation of Findings



an Employee-Owned Company

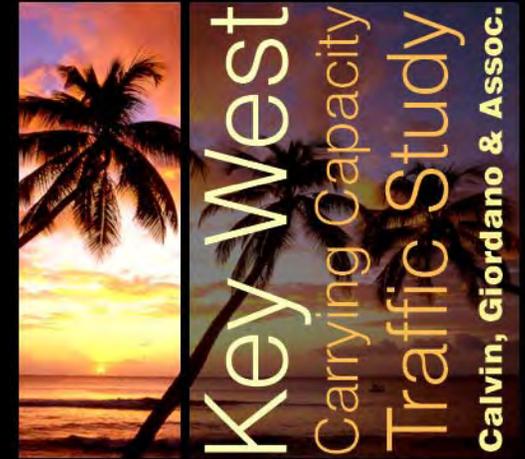
Calvin, Giordano & Associates, Inc.
EXCEPTIONAL SOLUTIONS



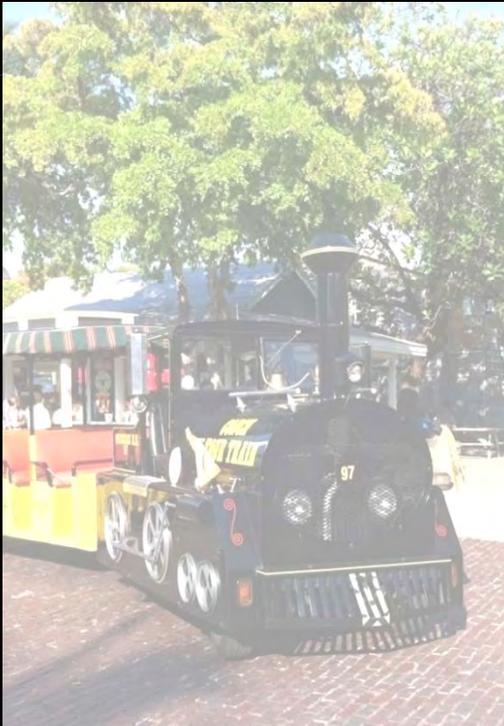
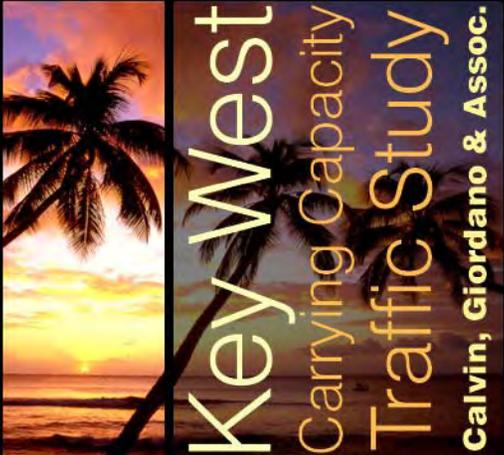
SCOPE OF SERVICES

“The Carrying Capacity Traffic Study will assess the capacity of City streets and related transportation infrastructure.

The Study will address specialized vehicles and their impacts to roadways and adjacent land uses, including impacts associated with mobility, noise, and air quality...”

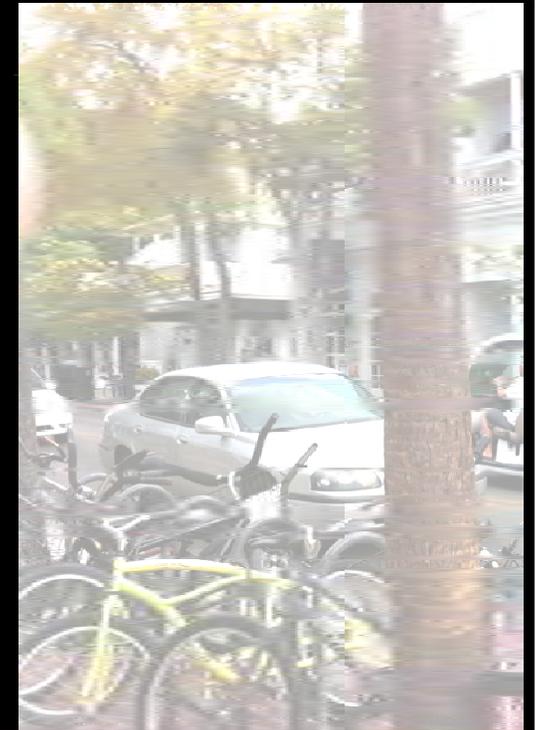
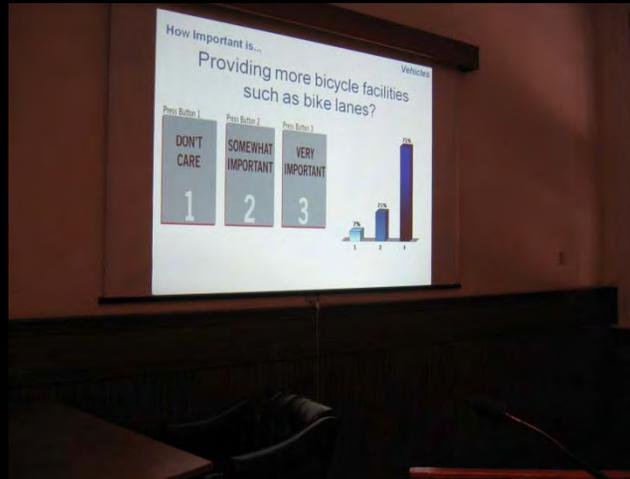
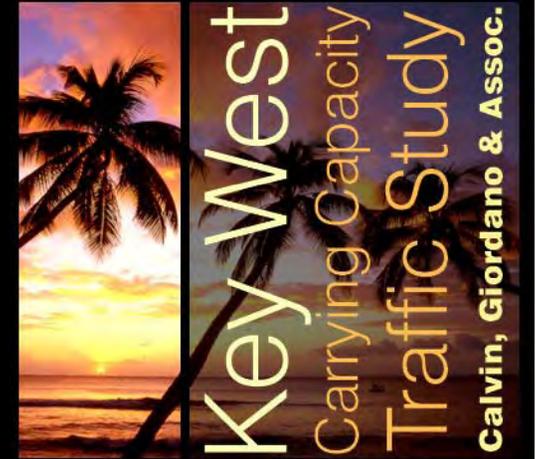


Public Open House



PUBLIC OUTREACH

Community Values Meeting



PUBLIC OUTREACH

TRAFFIC CARRYING CAPACITY VALUES STUDY

The City of Key West wishes to gather information from its Citizens in order to complete the Carrying Capacity Study. The survey will take approximately 5-minutes and all responses are anonymous.

- How important is minimizing noise from vehicles in residential neighborhoods?
 - Don't Care
 - Somewhat Important
 - Very Important
- How important is increasing average travel speeds on congested roadways in order to minimize travel time?
 - Don't Care
 - Somewhat Important
 - Very Important
- How important is providing more bicycle facilities such as bike lanes?
 - Don't care
 - Somewhat Important
 - Very Important



PUBLIC OUTREACH

PUBLIC OUTREACH RESULTS

Residents felt most strongly about the following topics:

- Improving pedestrian and bicycle facilities
- Providing an accommodating atmosphere for tourists
- Preferred new off-street parking facilities rather than on-street parking facilities
- Limiting the number of cruise ship passengers disembarking simultaneously

Travel time and speeds on congested roadways were only of moderate importance to residents

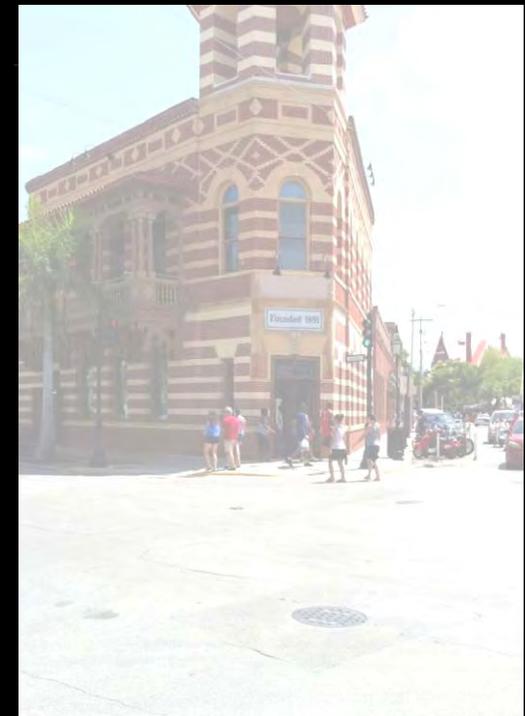
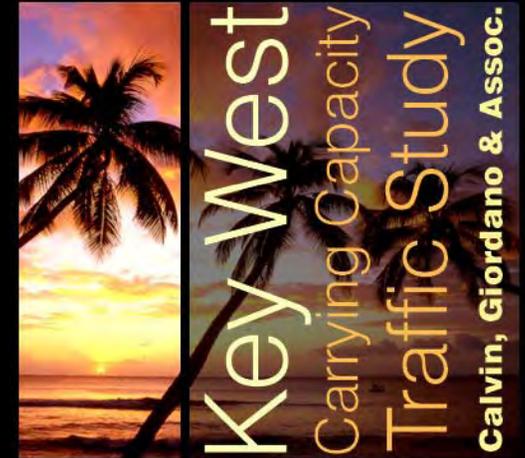
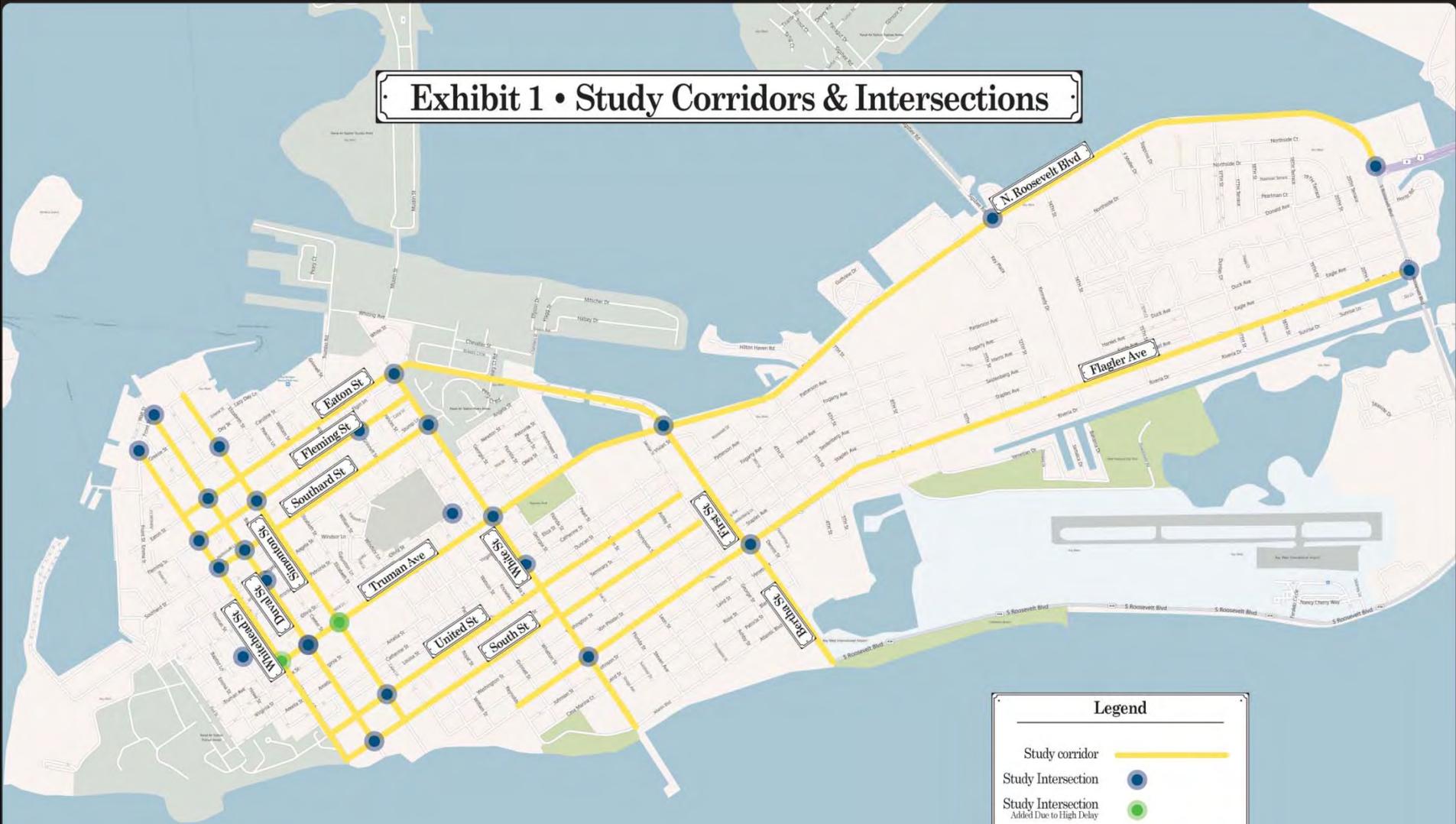


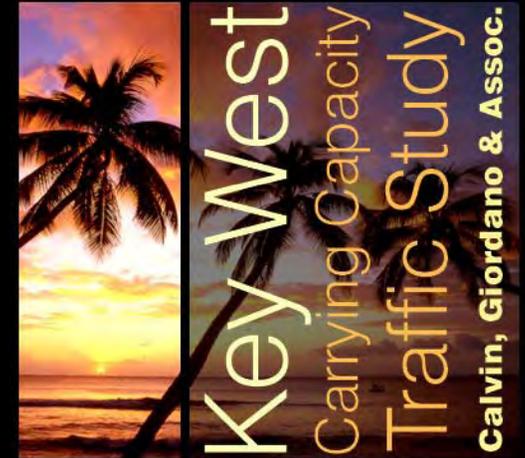
Exhibit 1 • Study Corridors & Intersections



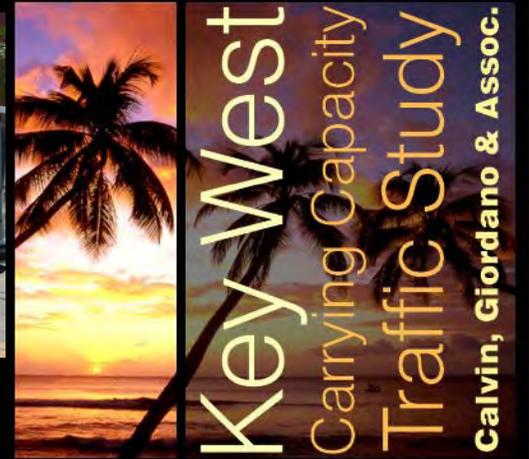
Legend	
Study corridor	
Study Intersection	
Study Intersection Added Due to High Delay	

Data Collection included:

- Travel time runs
- 24-hour daily traffic volumes
- Speed counts
- Turning movement counts
- Pedestrian counts
- Vehicle classification counts
- Multi-modal vehicle attributes
- Roadway characteristics and geometry constraints
- Speed limit inventory
- Parking inventory
- Parking violations
- Pedestrian and bicycle facilities
- Sound level inventory
- Cruise ship data
- Historical traffic data and trends
- Population growth projections



DATA COLLECTION



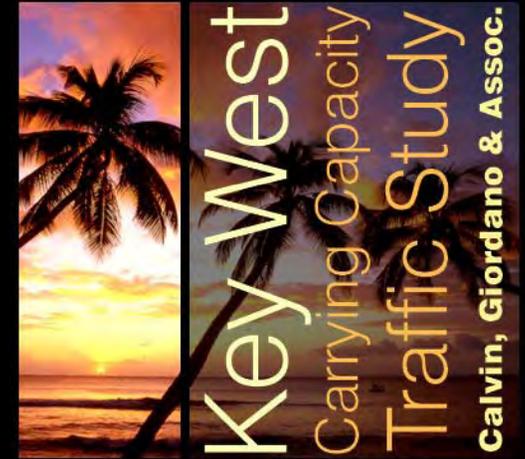
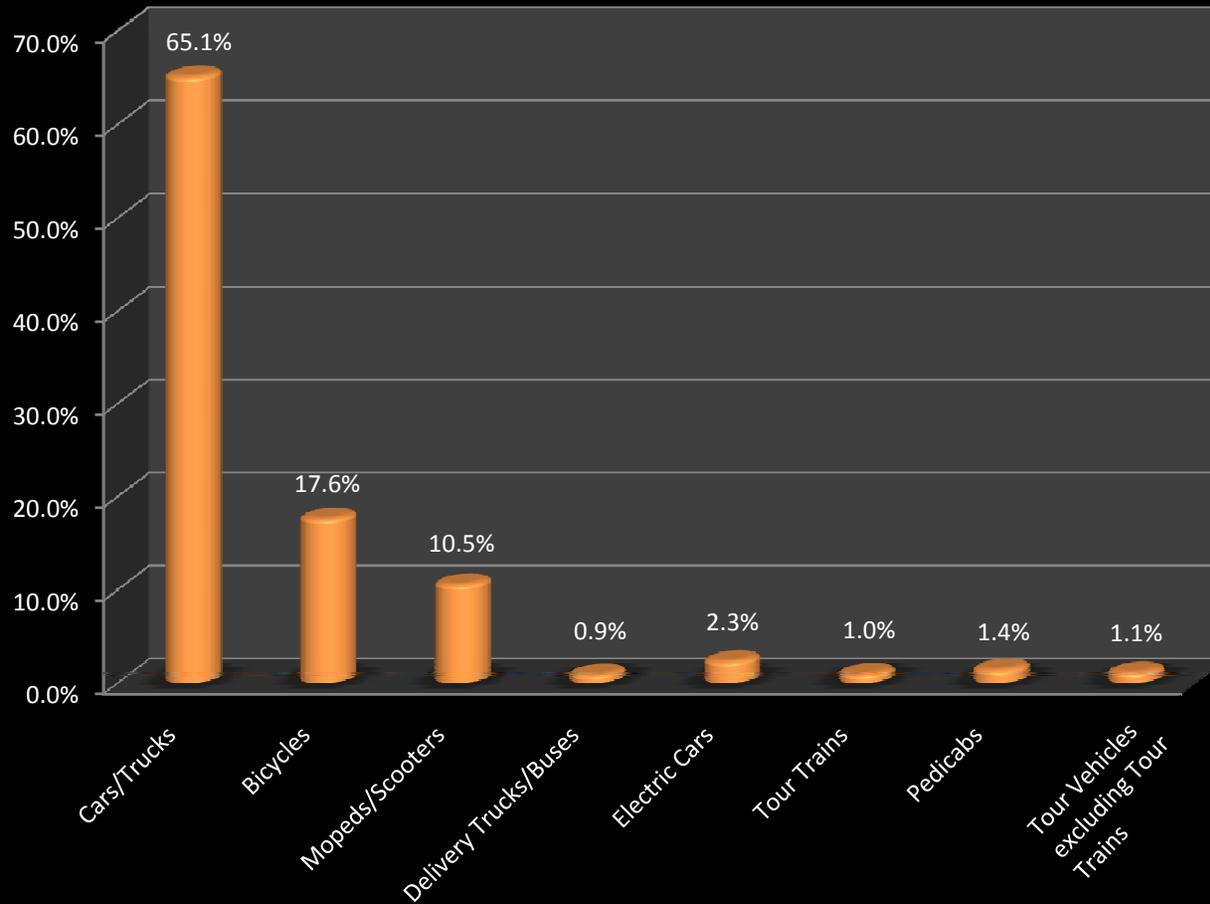
Multi-Modal Classifications:

- Scooters
- Electric Cars
- Tour Buses
- Tour Trains
- Bicycles
- Pedestrians
- Delivery Trucks/ Buses
- Pedicabs
- Cars



DATA COLLECTION – TURNING MOVEMENT COUNTS

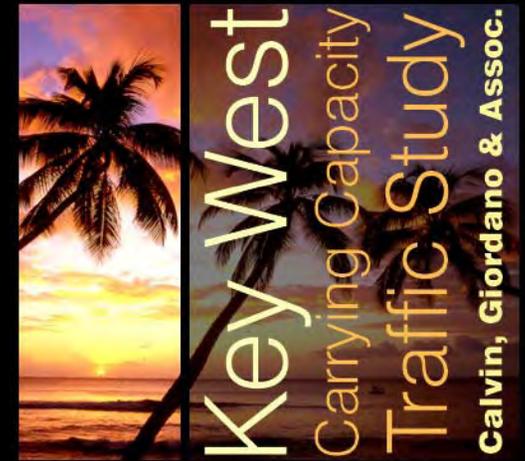
Traffic Composition - Old Town



DATA COLLECTION

TRADITIONAL CARRYING CAPACITY MEASURES

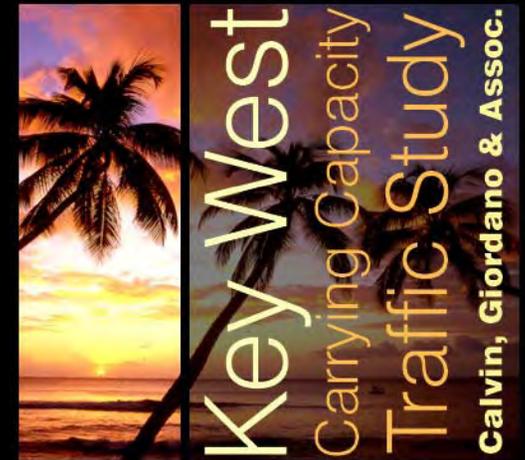
- Volume to Capacity (V/C) Ratios
(FDOT, General Planning Analysis)
- Level of Service based on Average Speed
(Highway Capacity Manual, Key West Comprehensive Plan)
- Level of Service based on Intersection Delay
(Highway Capacity Manual)



EXISTING CONDITIONS ANALYSIS

CHARACTERISTICS UNIQUE TO KEY WEST

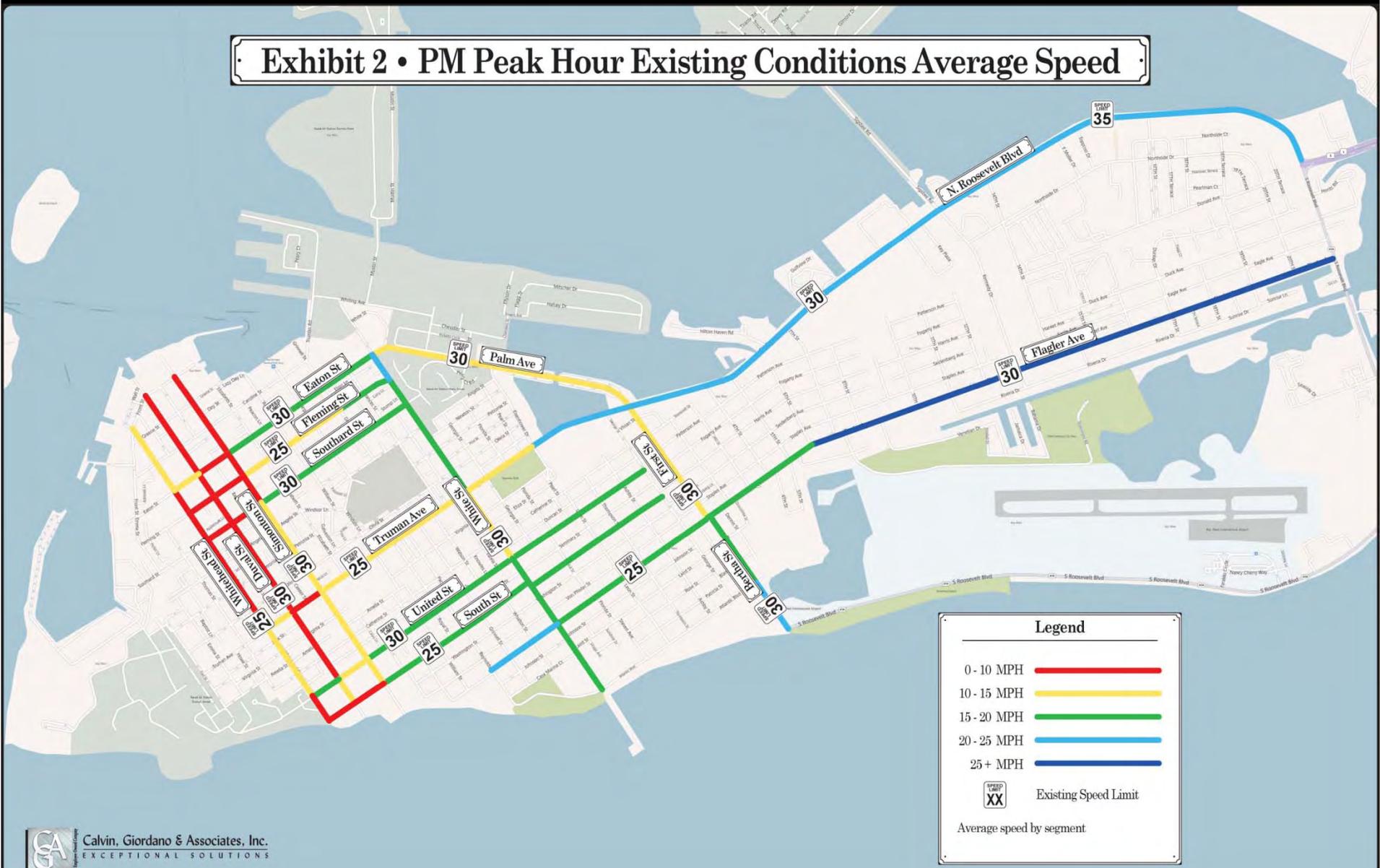
- VISSIM traffic microsimulation model utilized to incorporate specialized vehicles unique to Key West
- Calibrated to 3% of the existing conditions
- Model Network consists of over 15 corridors and 50 intersections
- New roadways and intersections can be easily added
- Infinite future scenarios possible including:
 - New franchises/tours
 - New bicycle/pedestrian facilities
 - New development
 - Roadway modification from two-way to one-way
 - Signal timing changes
 - New bus routes



TRAFFIC SIMULATION MODEL

Run Video

Exhibit 2 • PM Peak Hour Existing Conditions Average Speed



Legend

- 0 - 10 MPH —
- 10 - 15 MPH —
- 15 - 20 MPH —
- 20 - 25 MPH —
- 25+ MPH —
-  Existing Speed Limit

Average speed by segment

Exhibit 5 • Existing Conditions PM Peak Hour V/C Ratio

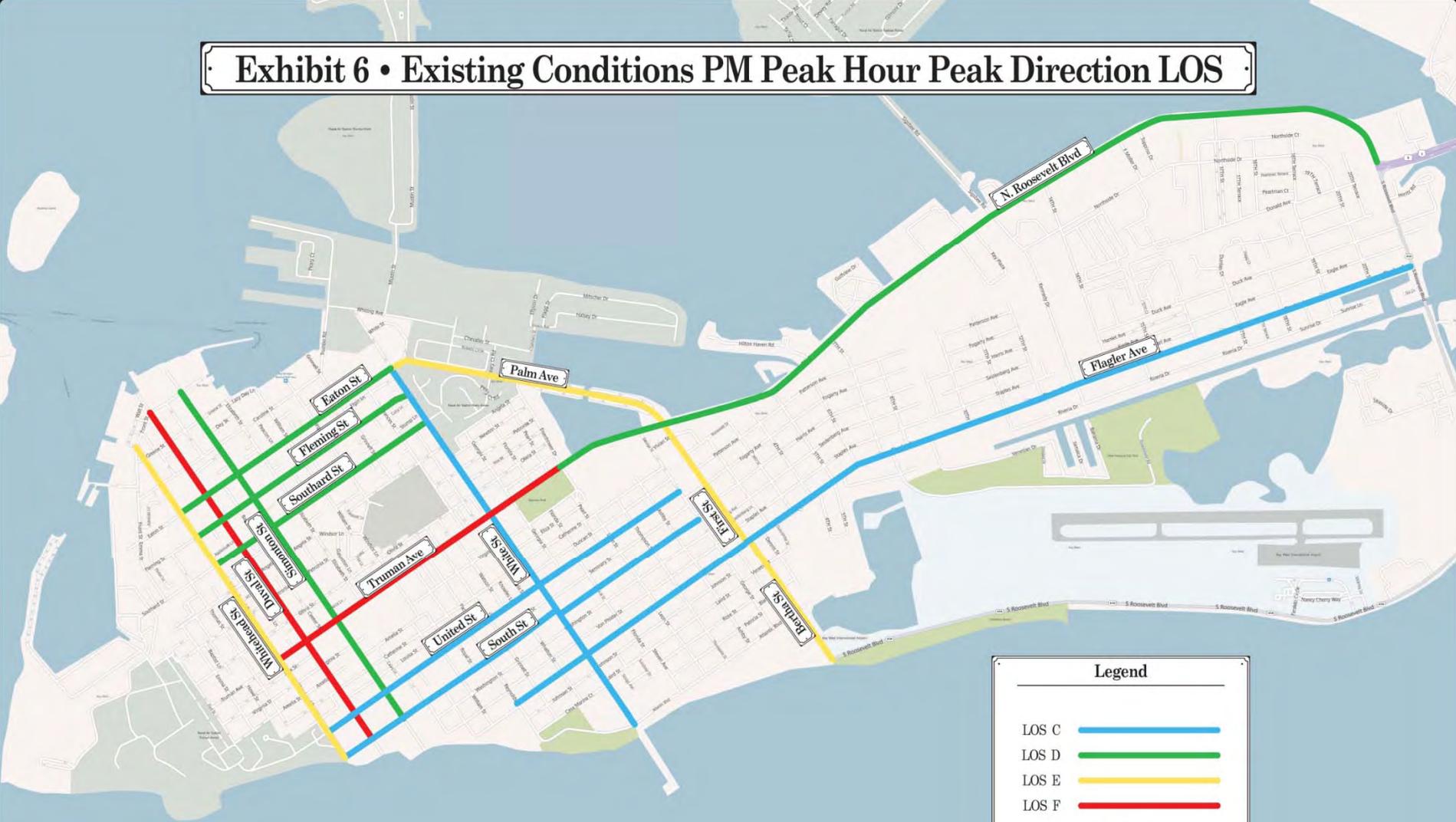


Legend

Traffic volume/roadway capacity ratio (V/C)

V/C Ratio	
0 - 0.5	Blue line
0.5 - 0.75	Green line
0.75 - 1.0	Yellow line
Over capacity	Red line

Exhibit 6 • Existing Conditions PM Peak Hour Peak Direction LOS

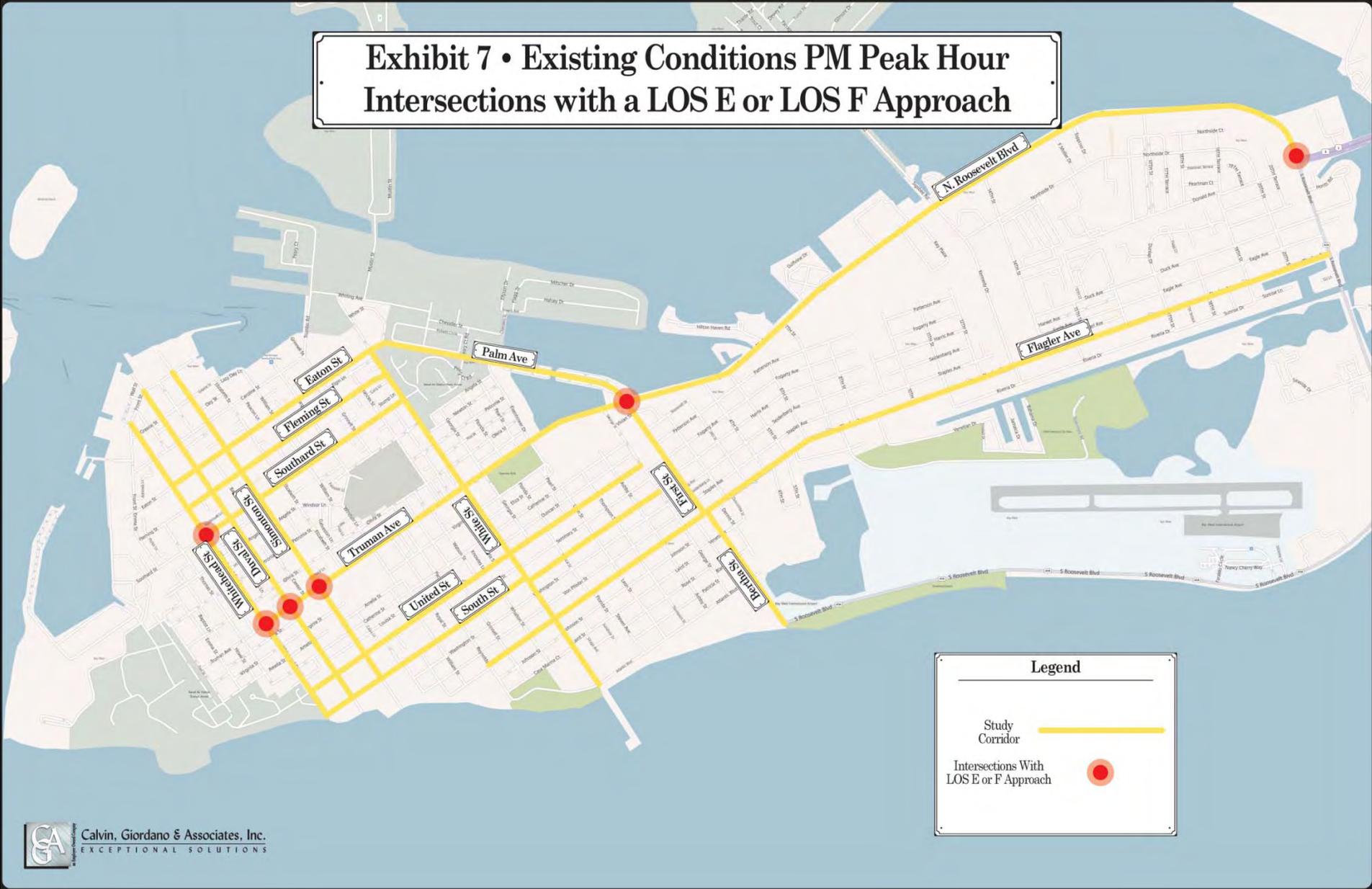


Legend

- LOS C █
- LOS D █
- LOS E █
- LOS F █

LOS based on average speed methodology.
 Key West comp plan identifies LOS C + 5% for US-1
 and LOS D for all other roadways.

Exhibit 7 • Existing Conditions PM Peak Hour Intersections with a LOS E or LOS F Approach



Legend

Study Corridor ———

Intersections With LOS E or F Approach ●

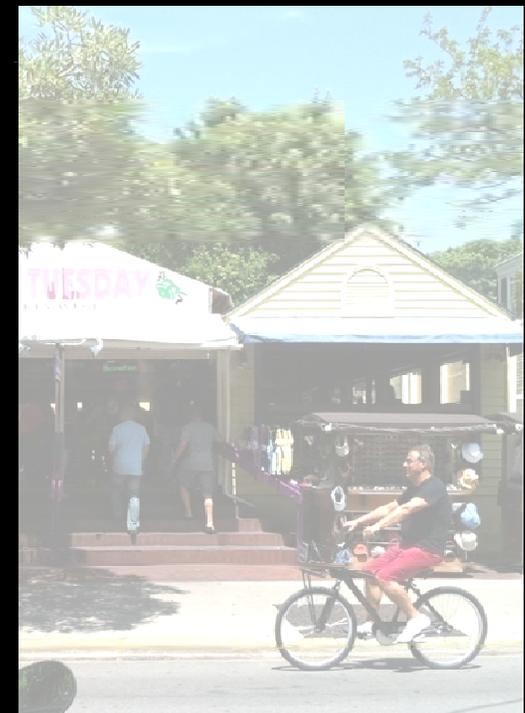
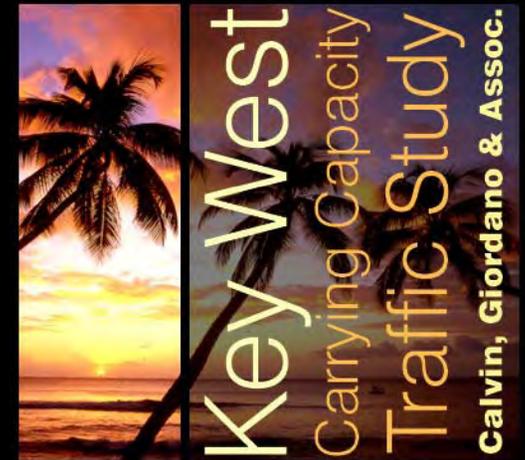
TRAFFIC SIMULATION – OPTIMIZED CONDITIONS

Traffic Signal Improvements:

- Signal timing optimization
- Installation of vehicle detection systems
- Installation of pedestrian detectors and signal heads
- Coordinated signal timing along corridors

Roadway Improvements:

- Extension of the southeast bound left turn lane on Palm Avenue at N. Roosevelt Boulevard



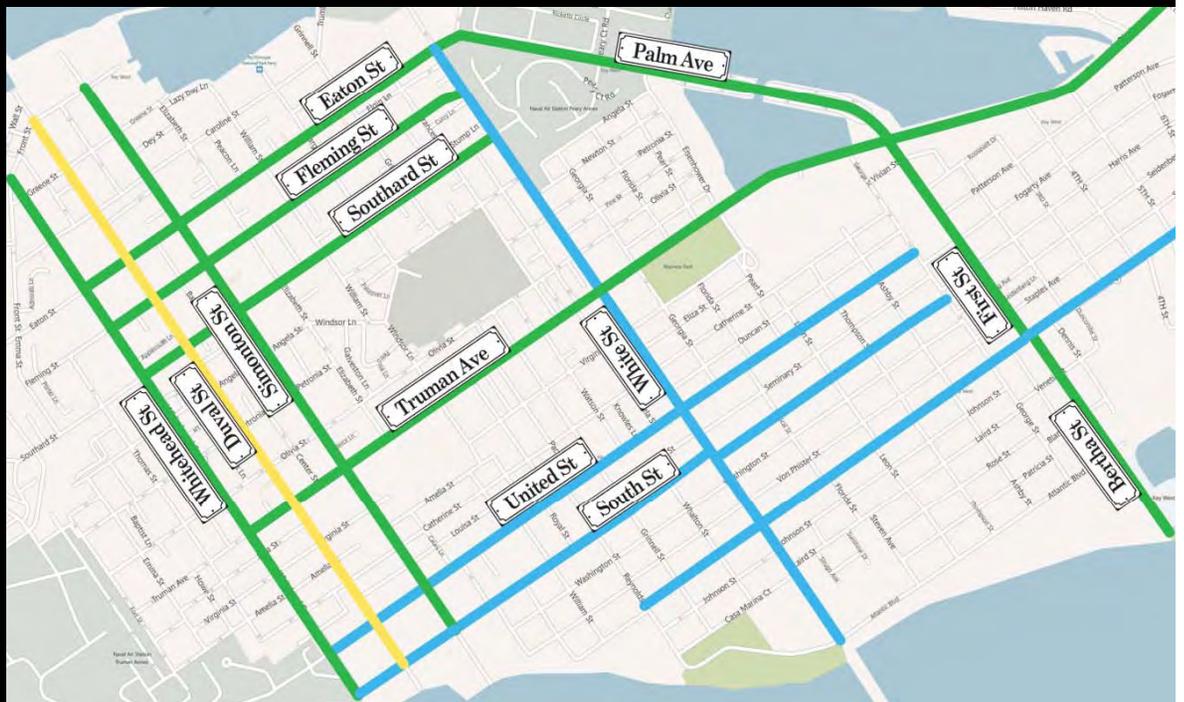
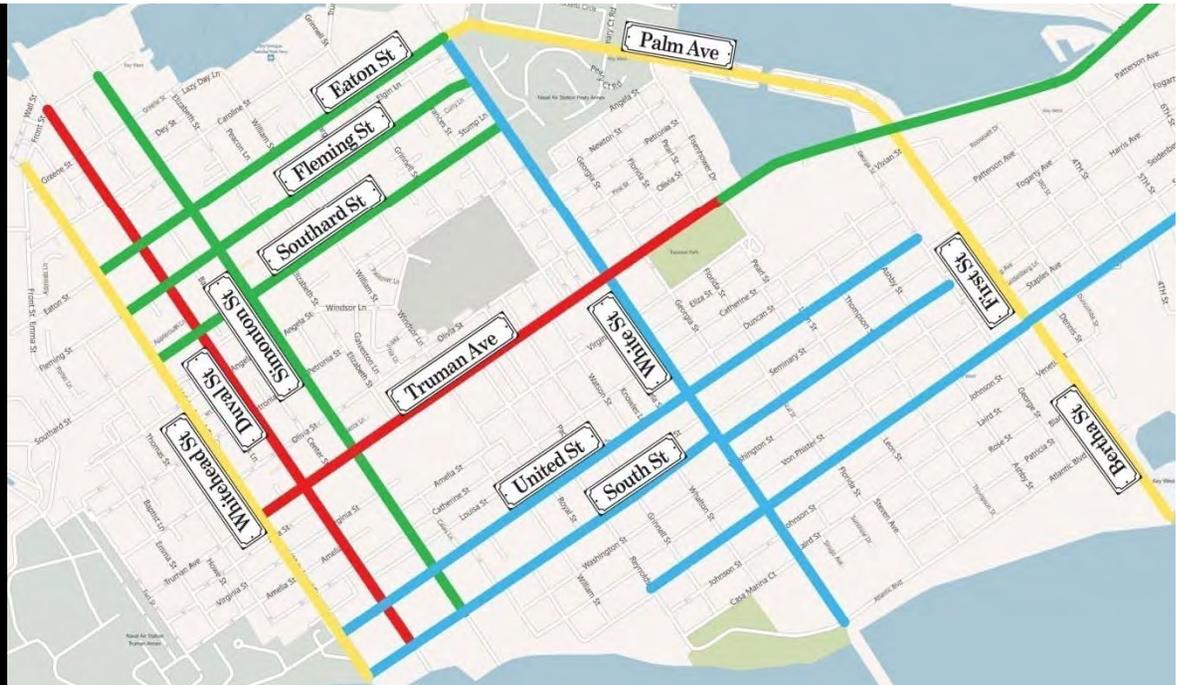
Existing Conditions

Legend

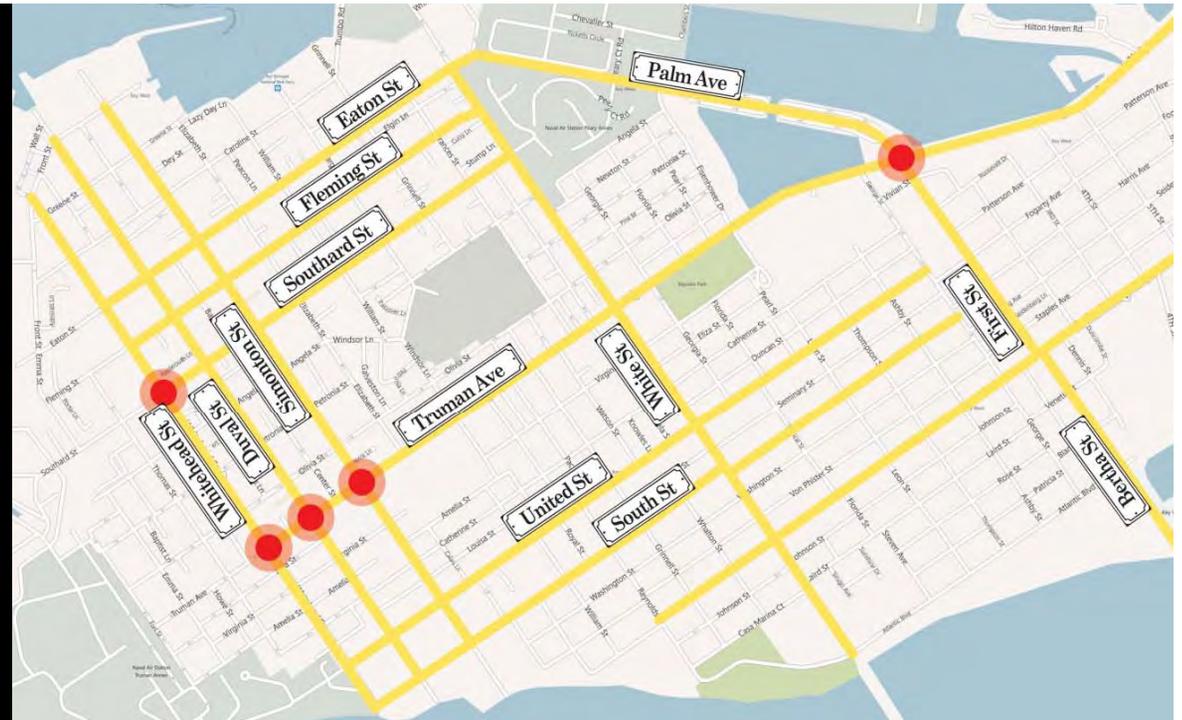
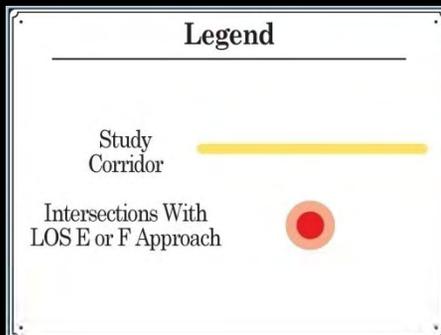
LOS C	
LOS D	
LOS E	
LOS F	

LOS based on average speed methodology.
Key West comp plan identifies LOS C + 5% for US-1
and LOS D for all other roadways.

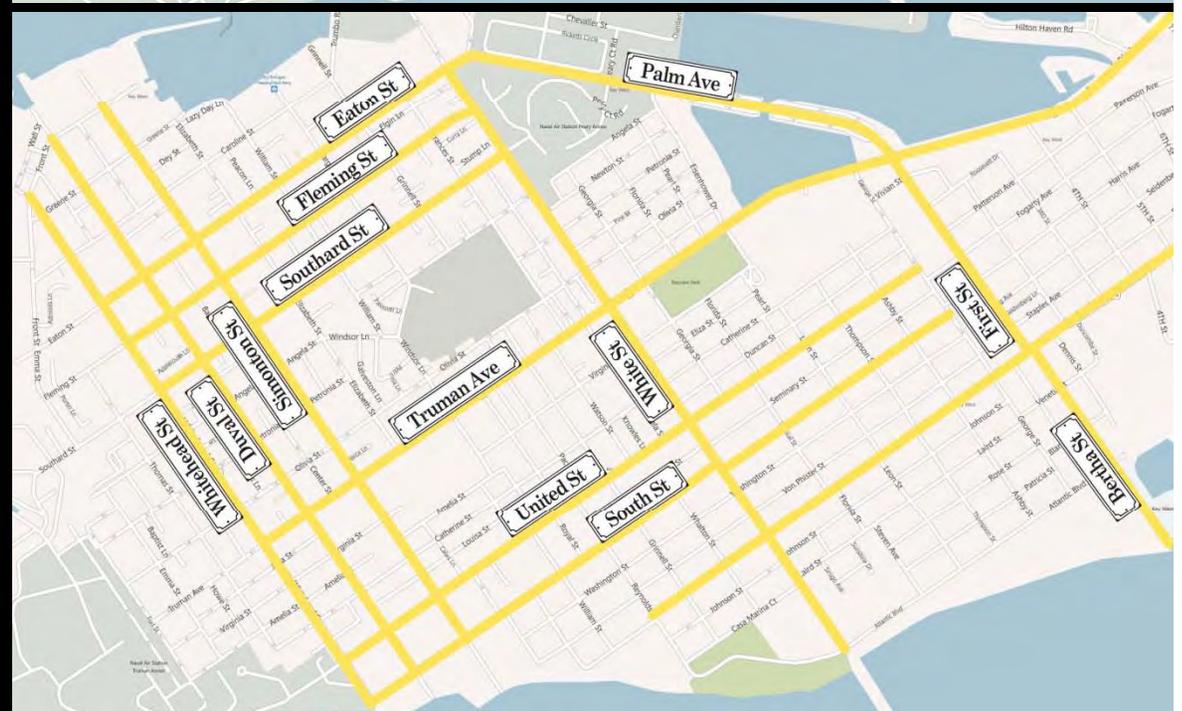
Optimized Conditions



Existing Conditions

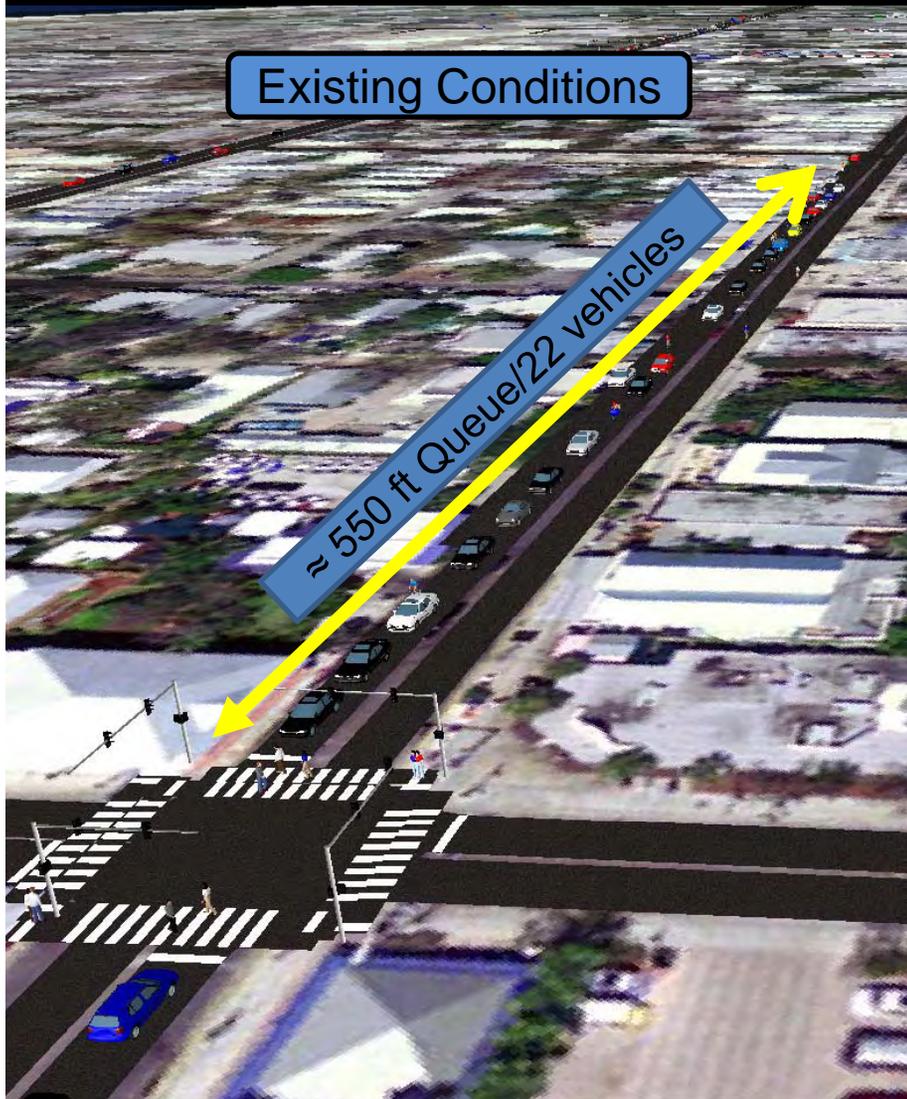


Optimized Conditions



Traffic Simulation Model

Duval St at Truman Ave – Southeast Bound Approach



Traffic Simulation Model

Whitehead St at Truman Ave – Southeast Bound Approach



Traffic Simulation Model

Truman Ave at Simonton St – Southwest Bound Approach



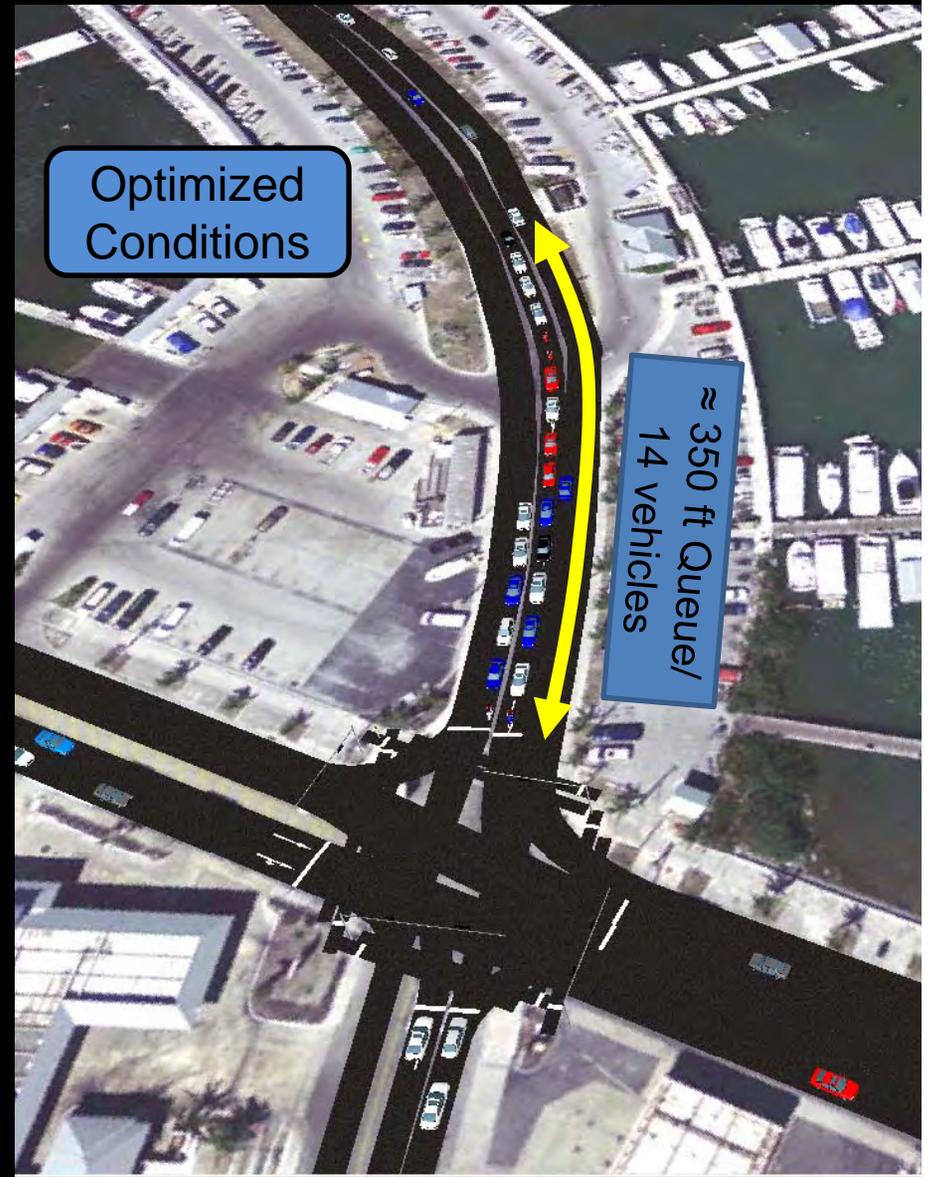
Traffic Simulation Model

Southard St at Whitehead St– Northeast Bound Approach



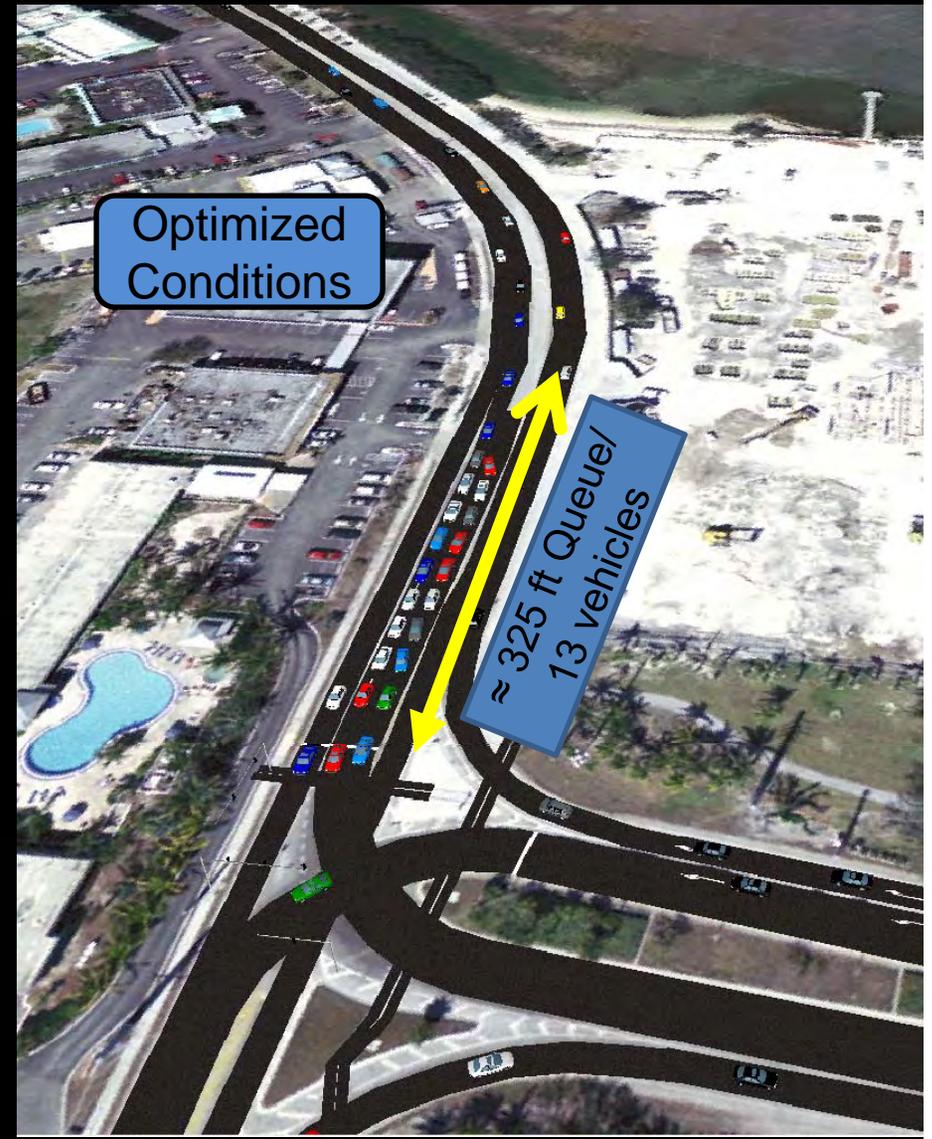
Traffic Simulation Model

Palm Ave at N. Roosevelt Blvd – Southeast Bound Approach



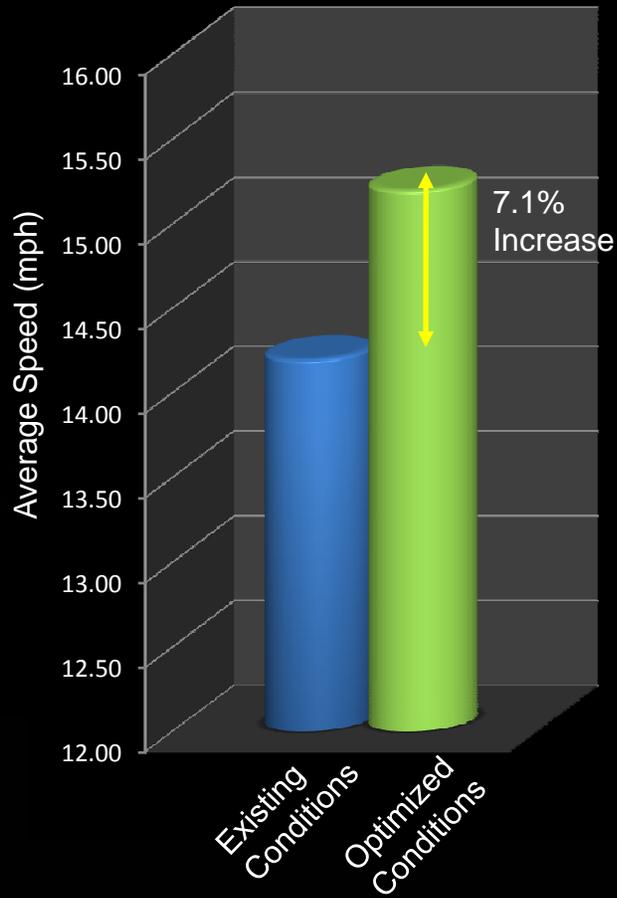
Traffic Simulation Model

N. Roosevelt Blvd at Overseas Hwy – South Bound Approach

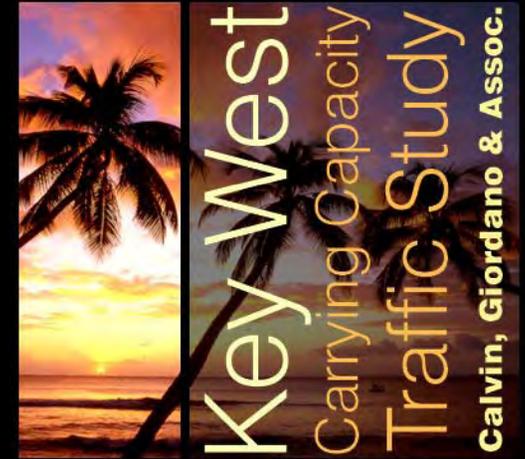
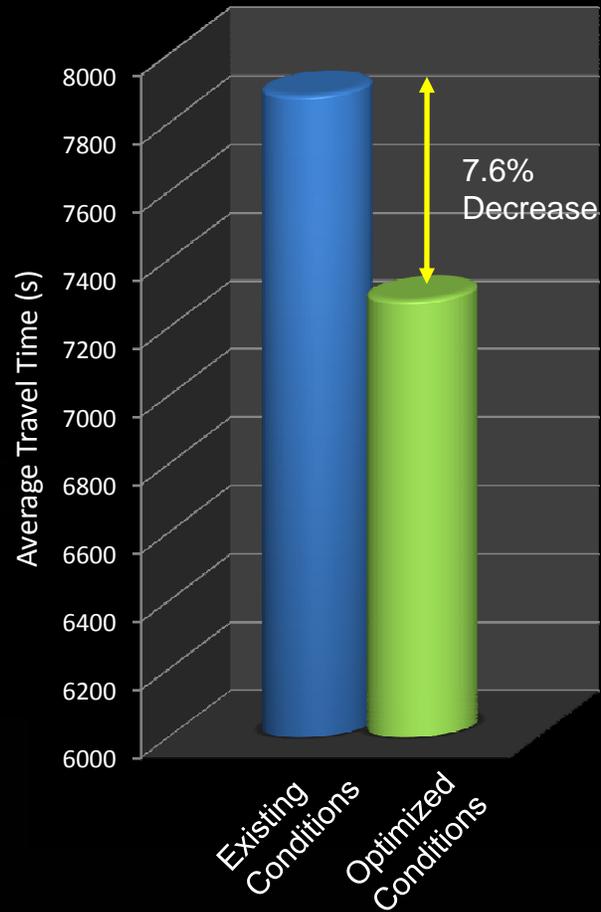


OPTIMIZED CONDITIONS ANALYSIS

Average Speed Comparison



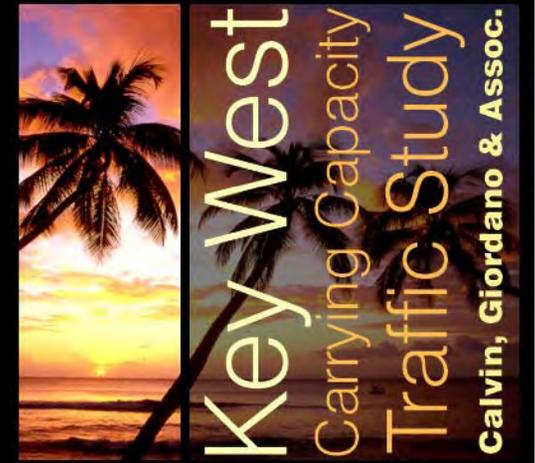
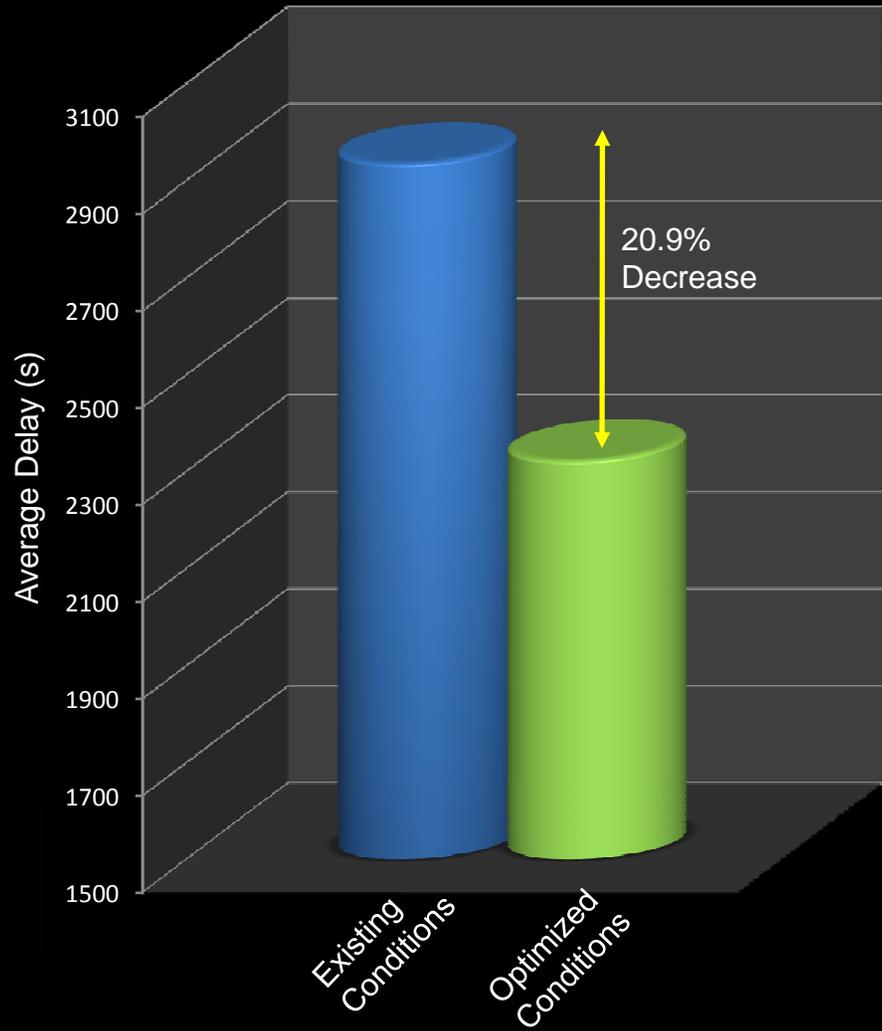
Average Travel Time Comparison



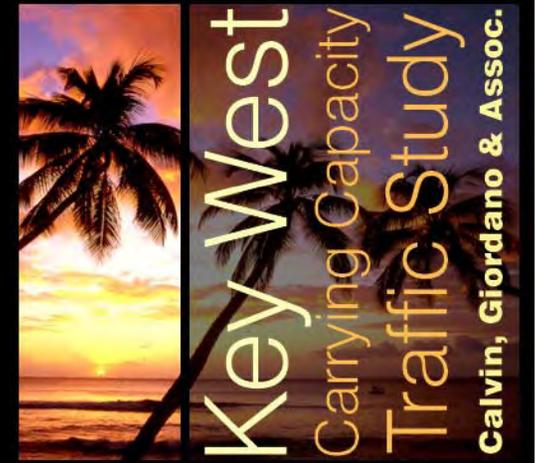
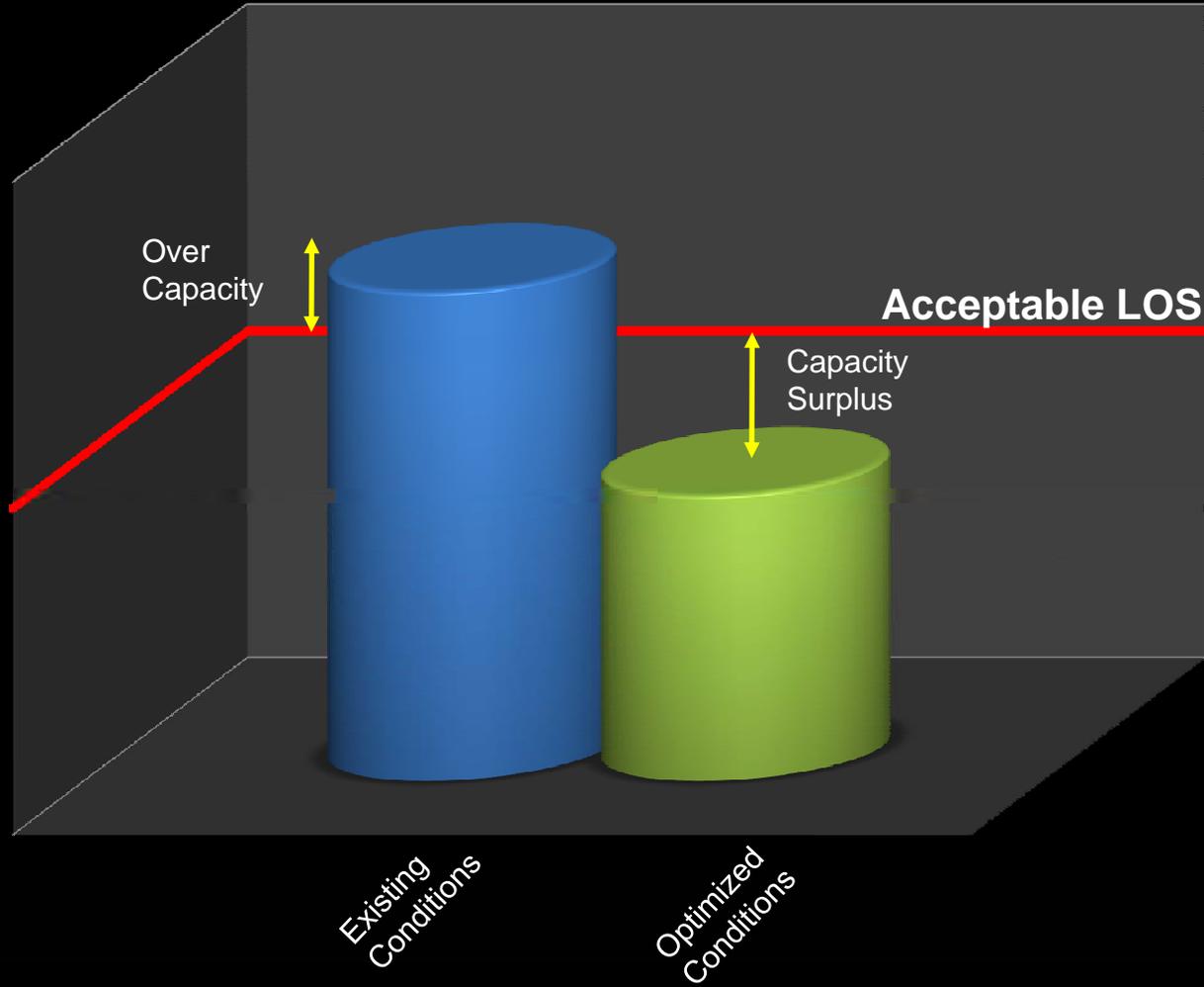
OPTIMIZED CONDITIONS ANALYSIS

OPTIMIZED CONDITIONS ANALYSIS

Average Travel Delay Comparison



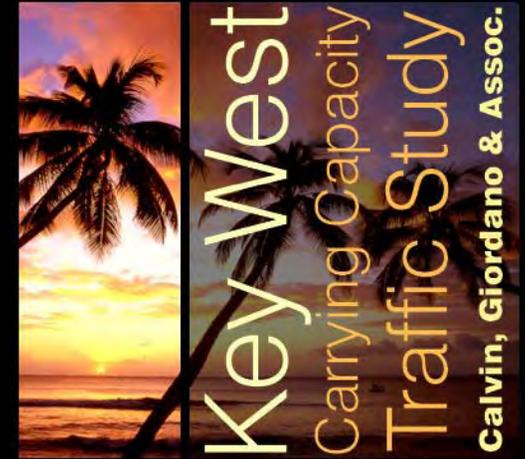
CITY ALTERNATIVES



LOCAL TRANSPORTATION CONCURRENCY UTILIZING THE TRAFFIC SIMULATION MODEL

The Traffic Simulation Model developed for the Carrying Capacity study can be utilized as a baseline and updated to simulate future traffic conditions such as:

- Proposed franchise vehicle operations
- Proposed land development projects
- Proposed modifications to intersection and roadway operations such as one-way streets
- Future construction projects and associated detours



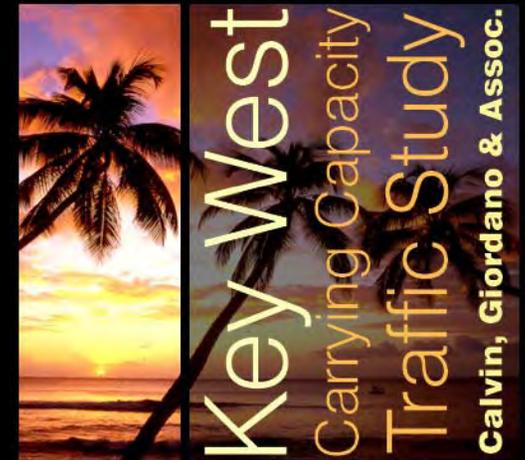
CONCURRENCY MANAGEMENT SYSTEM

LOCAL TRANSPORTATION CONCURRENCY UTILIZING THE TRAFFIC SIMULATION MODEL

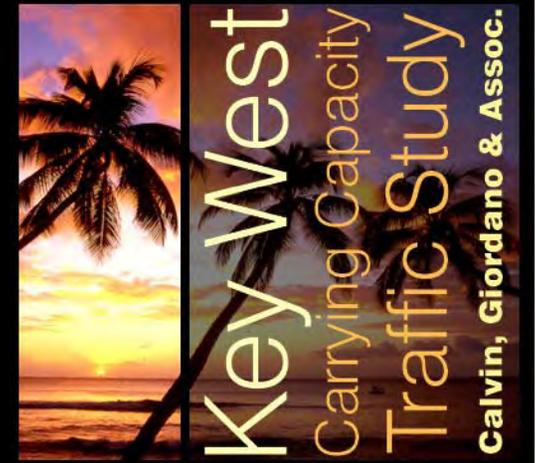
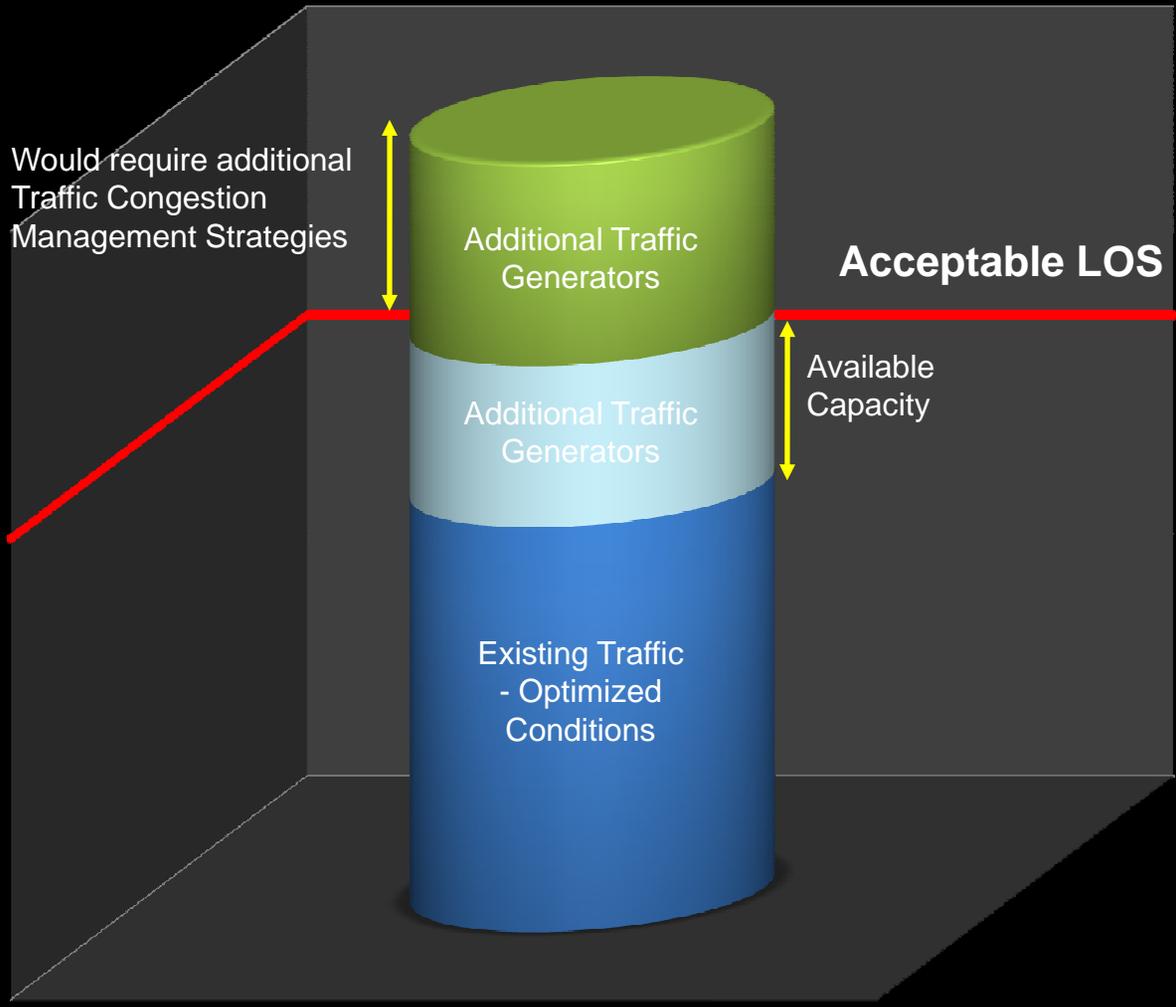
The Traffic Simulation Model can also provide a baseline for a city-wide Transportation Concurrency system. Transportation Concurrency is a planning tool utilized by municipalities throughout Florida and Nationwide.

A Local Transportation Concurrency system will afford the opportunity to:

- Monitor available roadway capacity
- Track the effects of new traffic generators on roadway capacity
- Develop a proportionate fair share mitigation strategy for new traffic generators
- Allow applicants an opportunity to demonstrate their ability to minimize traffic impacts

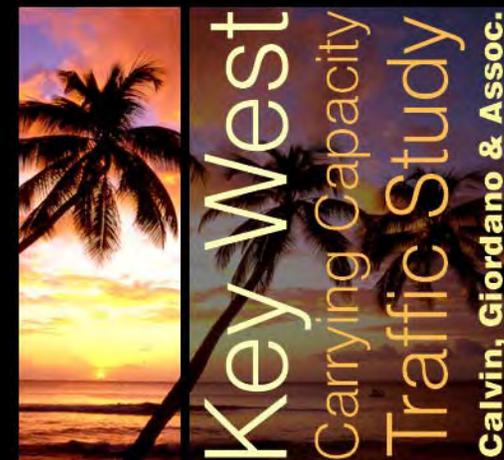


CONCURRENCY MANAGEMENT SYSTEM



Next Steps

- Final Report will be submitted to the City within 2 weeks.
- Final report will be delivered in hard copy format and on DVD.
- VISSIM model files will be delivered to the City on DVD.
- CGA staff will provide a day of on-site training to City staff on how to use the VISSIM software.
- CGA staff will attend an additional City Commission meeting to address any questions regarding the final report.



NEXT STEPS