

National Naval Medical Center – BRAC Intersections Analyses

Synchro / SimTraffic Simulation Demo

Montgomery County
BRAC Implementation Committee
September 16, 2008



Presentation Outline

- Introduction
- Calibrating the Existing Model
- Existing and No Build Results
- Model Demonstration
- Next Steps

Introduction

- What is Synchro/SimTraffic?
 - A computer model that simulates traffic operations
 - More-detailed assessment than Critical Lane Volume (CLV) analysis
 - Includes signal timing data
 - Interaction between adjacent intersections
 - System-level measures of effectiveness (MOE's)
 - Visual representation of queuing / congestion

Introduction

■ Model Limits

- MD 355 from Pooks Hill Rd to Woodmont Ave
- Cedar Lane from MD 187 to MD 355
- Jones Bridge Rd from MD 355 to MD 185
- Includes all four priority SHA design intersections

■ Analysis Periods

- Existing AM Peak Hour
- Existing PM Peak Hour
- 2011 No Build AM Peak Hour (with BRAC)
- 2011 No Build PM Peak Hour (with BRAC)

Introduction



Model Calibration

- Calibrate the model to ensure that the model replicates existing conditions
 - Volumes (same as in CLV)
 - Signal Timings
 - Lane Configurations
 - Travel Time Runs
 - Queuing / Congestion Locations

Model Calibration

Travel Time Runs

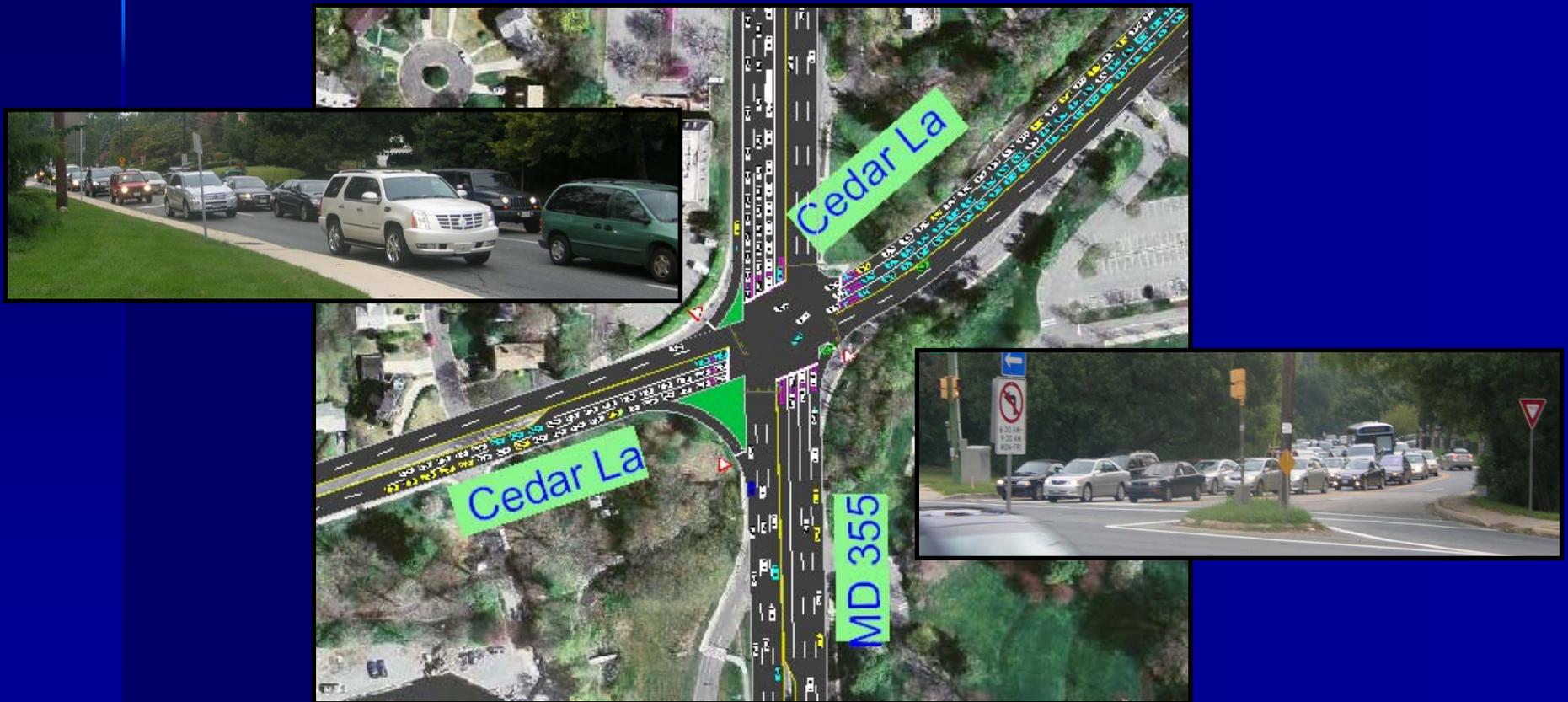
MD 355: Alta Vista Rd to Woodmont Ave

Direction	Peak	Travel Runs	SimTraffic
Northbound	AM	3.6 min	3.8 min
Southbound	AM	4.7 min	4.9 min
Northbound	PM	6.3 min	6.3 min
Southbound	PM	3.4 min	3.6 min

Note: Travel times cover a distance of 1.1 miles.

Model Calibration

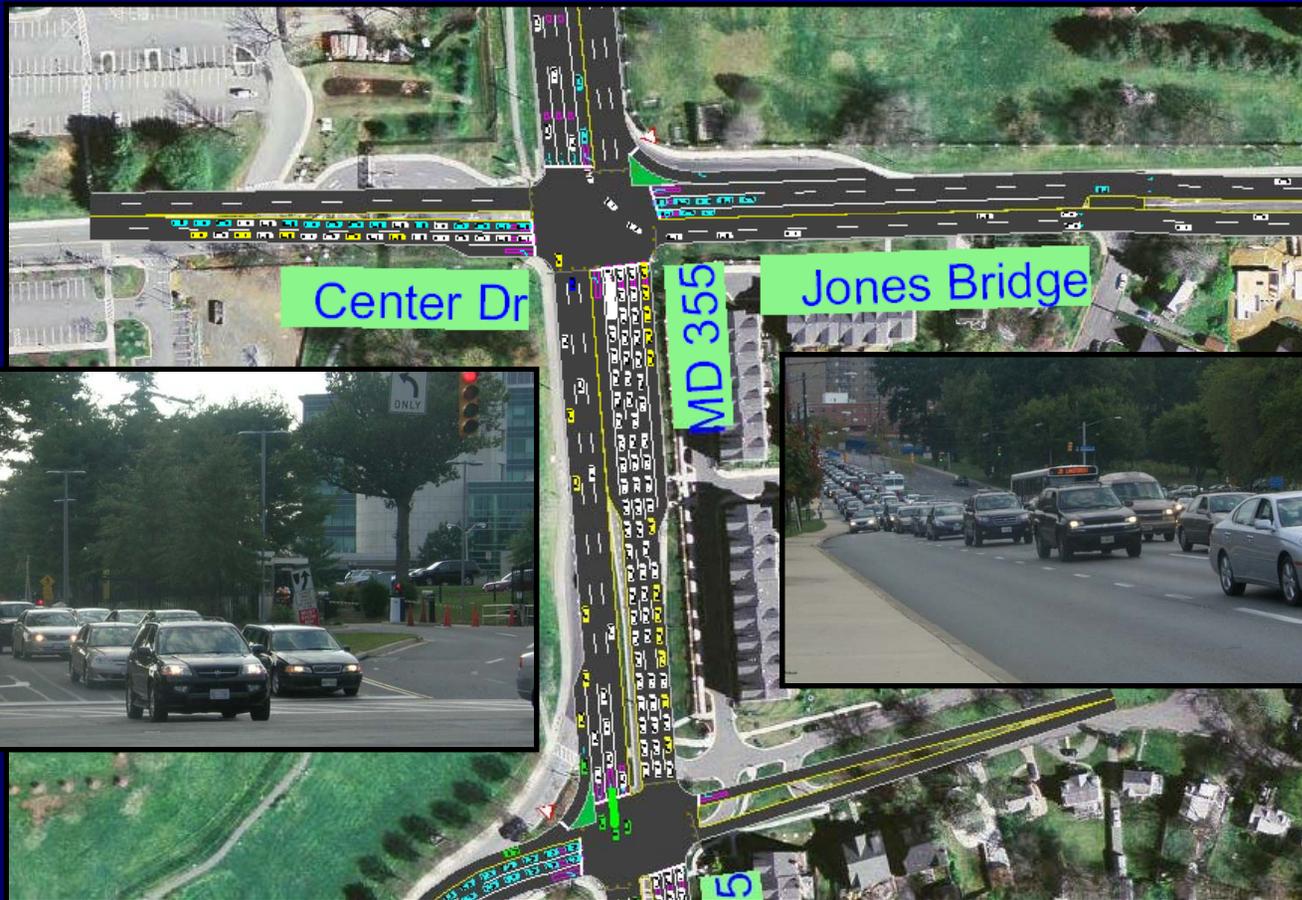
Queuing



MD 355 at Cedar Lane (AM Peak Shown)

Model Calibration

Queuing



MD 355 at Jones Bridge Rd (PM Peak Shown)

Model Calibration

Queuing



MD 187 at Cedar Lane (AM Peak Shown)

Model Calibration

Queuing



MD 185 at Jones Bridge Rd (PM Peak Shown)

Results

Level of Service (LOS)

Synchro LOS		Existing		2011 No Build	
Intersection	Peak	LOS	Delay	LOS	Delay
MD 355 at Cedar Lane	AM	F	91.1	F	122.5
	PM	F	141.7	F	160.1
MD 355 at Jones Bridge Road	AM	E	55.2	E	58.0
	PM	F	85.9	F	108.8
MD 187 at Cedar Lane	AM	C	20.6	C	30.6
	PM	D	41.2	E	78.9
MD 185 at Jones Bridge Road	AM	F	116.5	F	142.4
	PM	F	139.2	F	166.1

Note: Delay is reported in seconds per vehicle (sec/veh). LOS F is reached at 80 sec/veh.

Results

Travel Times

MD 355: Alta Vista Rd to Woodmont Ave

Direction	Peak	Existing	2011 No Bld
Northbound	AM	3.8 min	3.8 min
Southbound	AM	4.9 min	7.7 min
Northbound	PM	6.3 min	6.7 min
Southbound	PM	3.6 min	3.8 min

Note: Travel times cover a distance of 1.1 miles.

Results

System Measures (AM Peak)

Network Measures of Effectiveness (MOE)			
MOE	Existing	2011 No Bld	Increase
Total Delay (hr)	598	814	36%
Total Stops	50,781	83,169	64%
Fuel Consumed (gal)	1,344	1,849	38%
Denied Entry (veh)	1,259	2,456	95%

Note: Values reflect totals in the model during a one-hour run.

Results

System Measures (PM Peak)

Network Measures of Effectiveness (MOE)			
MOE	Existing	2011 No Bld	Increase
Total Delay (hr)	827	1,118	35%
Total Stops	32,413	43,186	33%
Fuel Consumed (gal)	1,355	1,744	29%
Denied Entry (veh)	2,067	3,160	53%

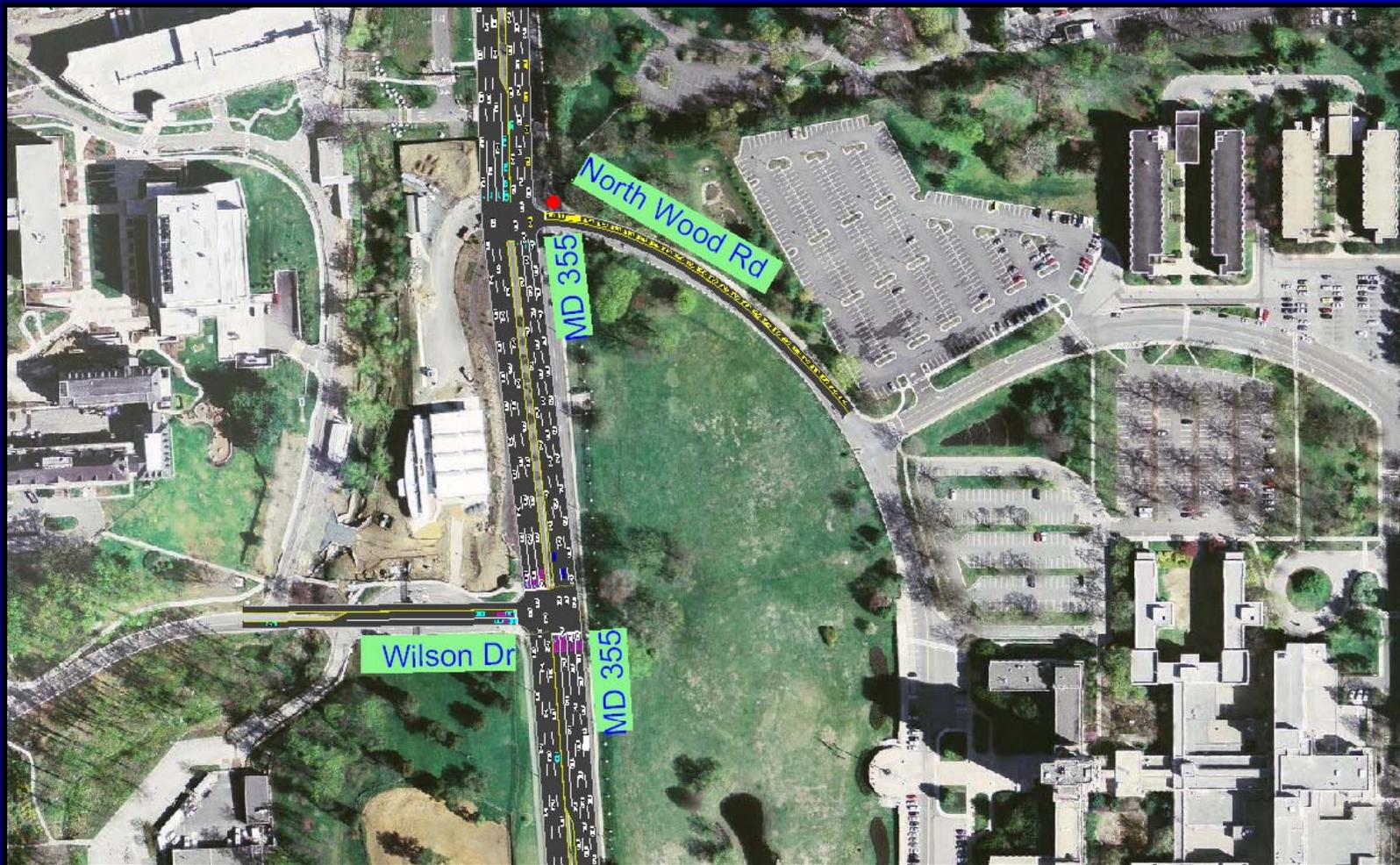
Note: Values reflect totals in the model during a one-hour run.

Results

Summary

- Three signalized intersections already failing (LOS F, average delay > 80 sec/veh)
- Without improvements at the critical intersections, the model results indicate that by 2011:
 - Delay will increase by over 30%
 - Travel times to access the NNMC in the peak direction will be significantly longer
 - Queues will extend farther towards the Beltway during the AM peak period and farther into the District during the PM peak period.

SimTraffic Demo



Next Steps

- Use the model to test design options
- May not be able to achieve desired Level of Service due to constraints
 - Schedule
 - Budget
 - Right of Way
 - Impacts
- Select a combination of improvements that will provide the greatest system-wide benefits