

# **Ashburn Sterling Traffic Study**

As Presented by

**URS Corporation to the Loudoun County Board of  
Supervisors on July 16, 2014**

**Metropolitan Washington Council of Governments  
Travel Forecasting Sub-Committee  
July 18, 2014**

**Jill Kaneff- Demographer (Loudoun County)  
Shweta Dixit- Sr.Transportation Planner (Loudoun County)**



# Loudoun County Travel Demand Model (LCTM)

Previously

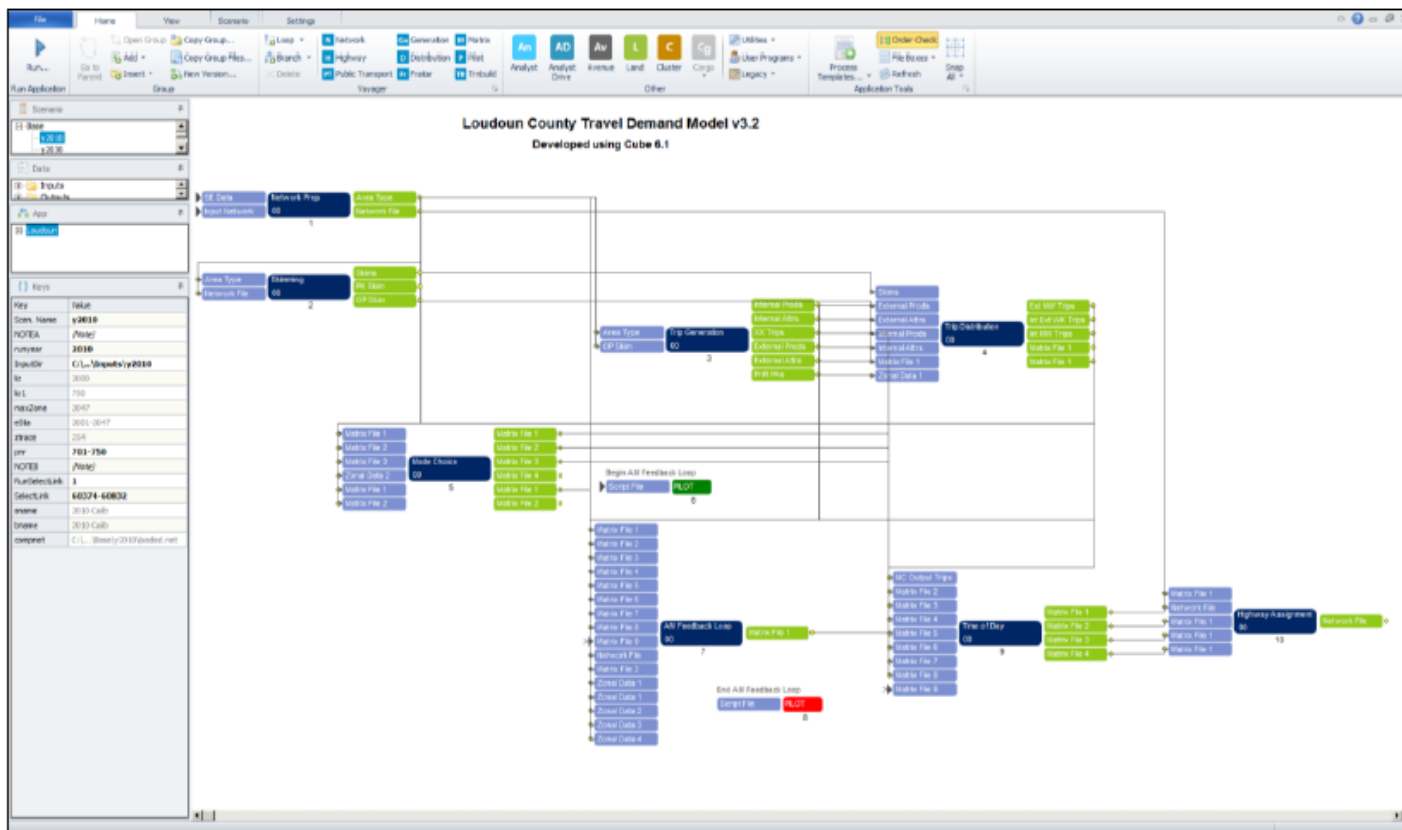
- LCTM based on MWCOCG's TP+/Viper

Now

- Uses CUBE platform
- Consistent with COG's model enhancements and migration to CUBE



# LCTM Application

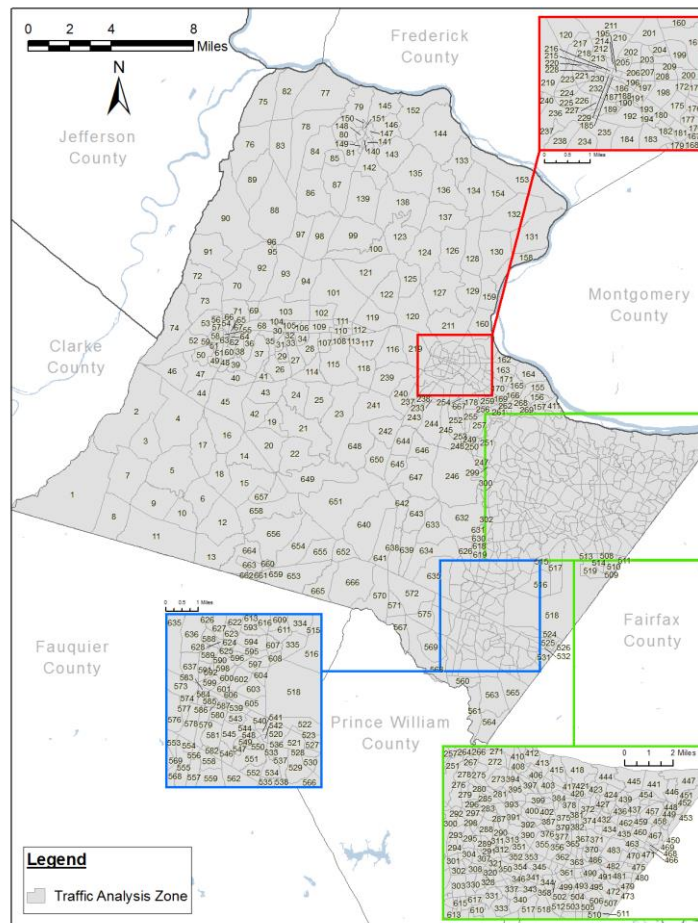


## LCTM

- Finer grained TAZ system within the county (667)
- Includes local and other roads that are not in MWCOG network
- Land Use
  - Loudoun County- Round 8.2
  - Rest of the region- Round 8.0
- Highway Network- As of MWCOG 2.3.39 and modified level of network detail



# Traffic Analysis Zones in Loudoun County



## Ashburn Sterling Traffic Study

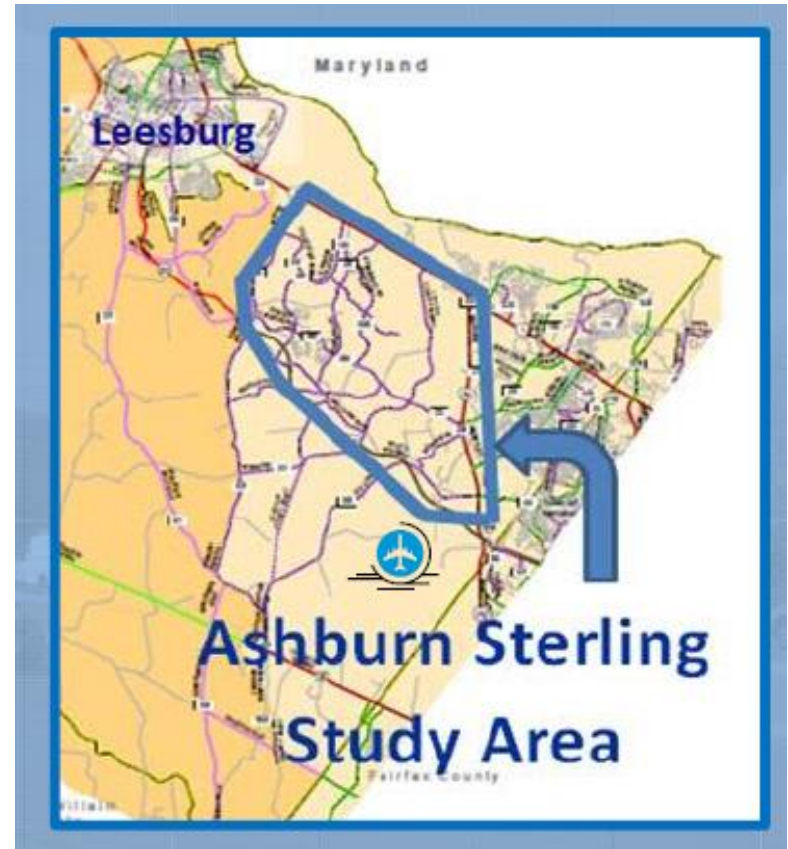
Study area bounded by

- Route 7
- Dulles Greenway
- Atlantic Boulevard
- Belmont Ridge Road

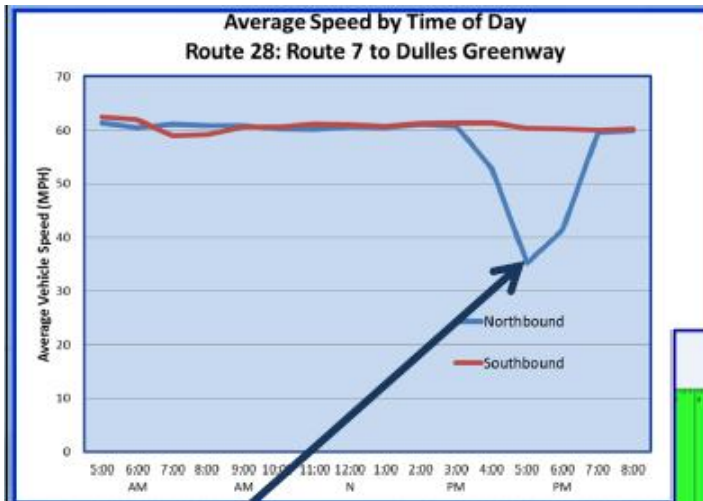
Study Tasks

- Define existing network condition
- Develop-analyze forecasted  
future conditions

Recommend improvements to CTP

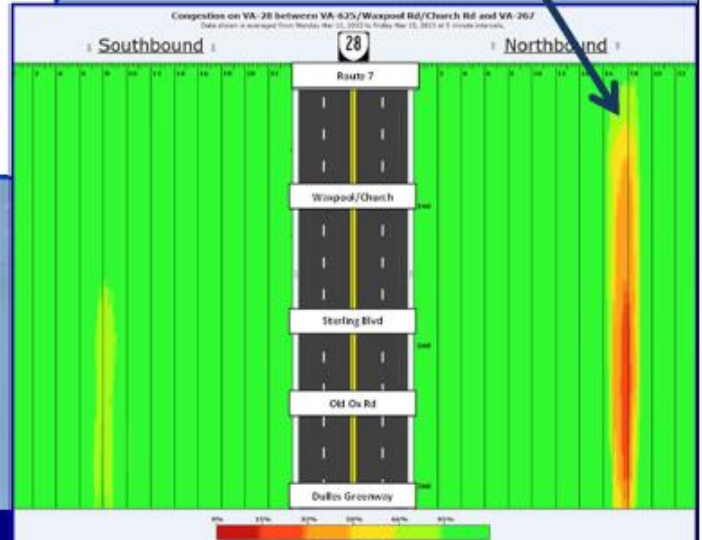


## Existing Transportation Conditions

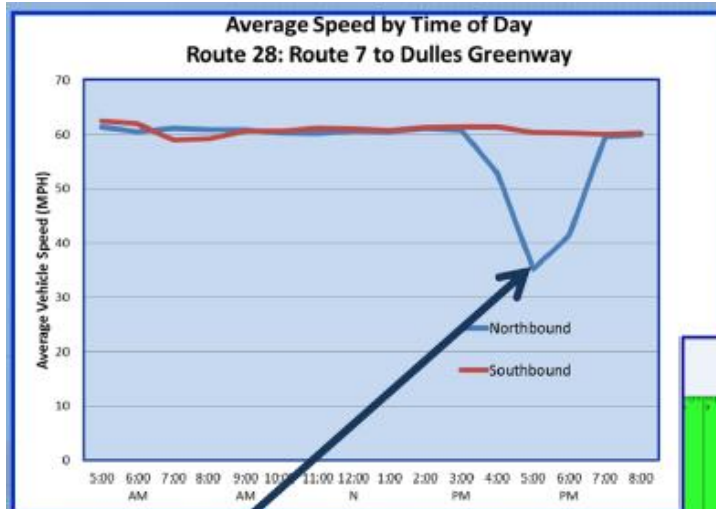


Indicates average northbound speeds decline to as low as 35 mph from 3:00 - 6:45pm

Indicates PM congestion extends from south of Dulles Greenway to Nokes Boulevard

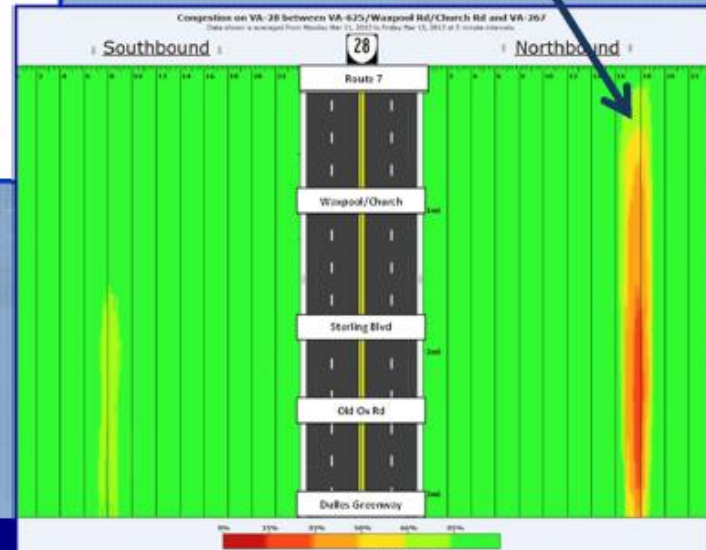


## Existing Transportation Conditions



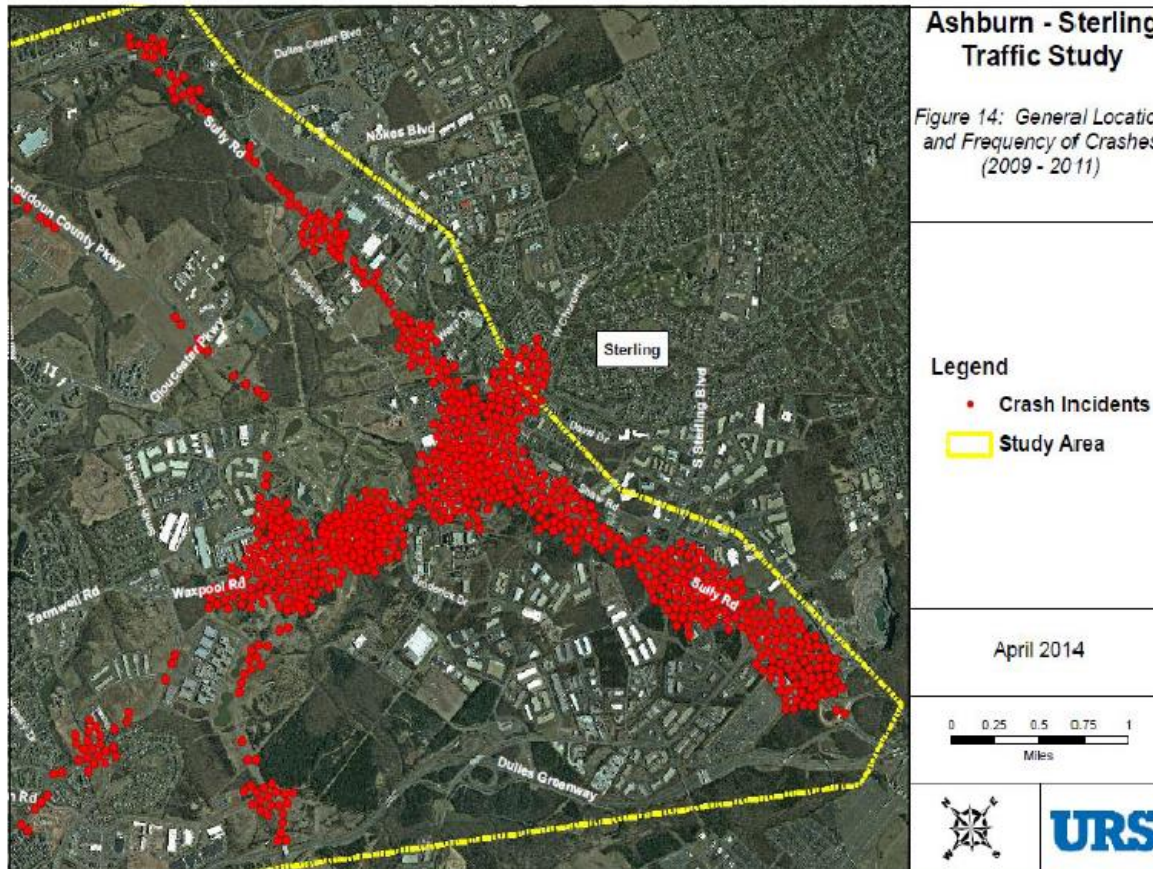
Indicates average northbound speeds decline to as low as 35 mph from 3:00 - 6:45pm

Indicates PM congestion extends from south of Dulles Greenway to Nokes Boulevard





# Location and Frequency of Crashes (2009-2011)



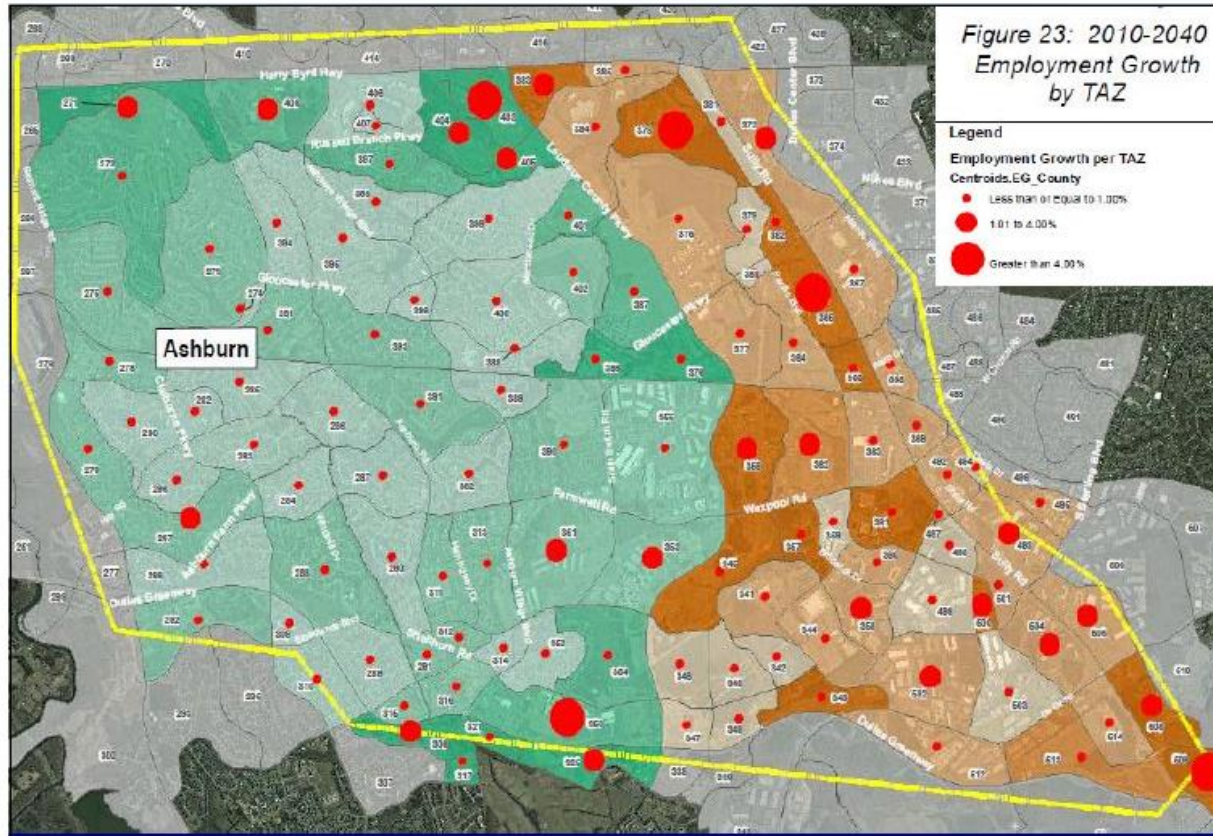
## Population and Employment

**Table 17**  
**Summary of Population and Employment: 2010-2040**  
**Ashburn-Sterling Study Area**

Area	Population				Employment			
	2010	2040	Change (2040-2010)	% Change	2010	2040	Change (2040-2010)	% Change
East of Loudoun County Parkway	453	7,937	7,484	1,652%	23,444	55,383	31,939	136%
West of Loudoun County Parkway	51,871	66,596	14,275	28%	17,864	41,481	23,617	132%
<b>Study Area</b>	<b>52,324</b>	<b>74,533</b>	<b>22,209</b>	<b>42%</b>	<b>41,308</b>	<b>96,864</b>	<b>55,556</b>	<b>134%</b>



# Employment Growth 2010-2040



## Study Scenarios

- 2010 (Existing)
- 2040 No Build (existing plus committed network)
  - Committed network includes CIP and SYIP improvements currently funded for construction
- 2040 Build (incorporates 2030 Countywide Transportation Plan)



Improvements are County CIP and VDOT's  
Six Year Improvement Projects included in No-Build

Improvements included in CTP-Build

Improvement	Segment or Intersection
Ashburn Village Blvd Interchange	With Route 7
Belmont Ridge Road Interchange	With Route 7
Lexington Drive	Route 7 Intersection Reconfiguration
Russell Branch Parkway	Ashburn Rd to Ashburn Village Boulevard
Belmont Ridge Road	Gloucester Pkwy to Hay Rd & Truro Parish Road to Croson Lane
Gloucester Parkway	Loudoun County Pkwy to Pacific Blvd
Claiborne Parkway	Ryan Road to Croson Lane
Route 606	Evergreen Mills Rd to the Dulles Greenway
Riverside Parkway	River Creek Parkway to Kingsport Drive
Mooreview Parkway	Croson Lane to Old Ryan Road (Southern Intersection)
Metro Center Drive (Moorefield Blvd)	Old Ryan Road to Shellhorn Road
Pacific Boulevard	Russell Branch Pkwy to Nokes Blvd
Waxpool Road	Faulkner Parkway to Unbridled Way

Road	Segment or Intersection
Route 7	Leesburg Bypass to Atlantic Boulevard
Route 28	Route 7 to Old Ox Road
Russell Branch Parkway	Claiborne Parkway to Richfield Way
Russell Branch Parkway	Crosstrail Boulevard to Claiborne Parkway
Riverside Parkway	Belmont Ridge Rd to George Washington Blvd
Loudoun County Parkway	Riverside Parkway to Waxpool Road
Gloucester Parkway	Loudoun County Parkway to Atlantic Boulevard
Ashburn Village Boulevard	Michener Drive to Waxpool Road
Old Ox Road	Route 50 to Herndon Town Limits
Pacific Boulevard	Gloucester Parkway to Waxpool Road
Pacific Boulevard	Old Ox Road to Innovation Avenue
Smith Switch Road	Gloucester Parkway to Farmwell Road
Moran Road	Davis Drive to Old Ox Road
Lockridge Road	Smith Switch Road to Moran Road
Farmwell Road	Ashburn Road to Smith Switch Road
Sycolin Road	Tolbert Lane to Belmont Ridge Road
Dulles Greenway	Leesburg Bypass to Mainline Toll Plaza
Shaw Road	Belfort Park Drive to Innovation Avenue
Crosstrail Boulevard	Riverside Parkway to the Dulles Greenway



## Forecast of Future Conditions- No Build

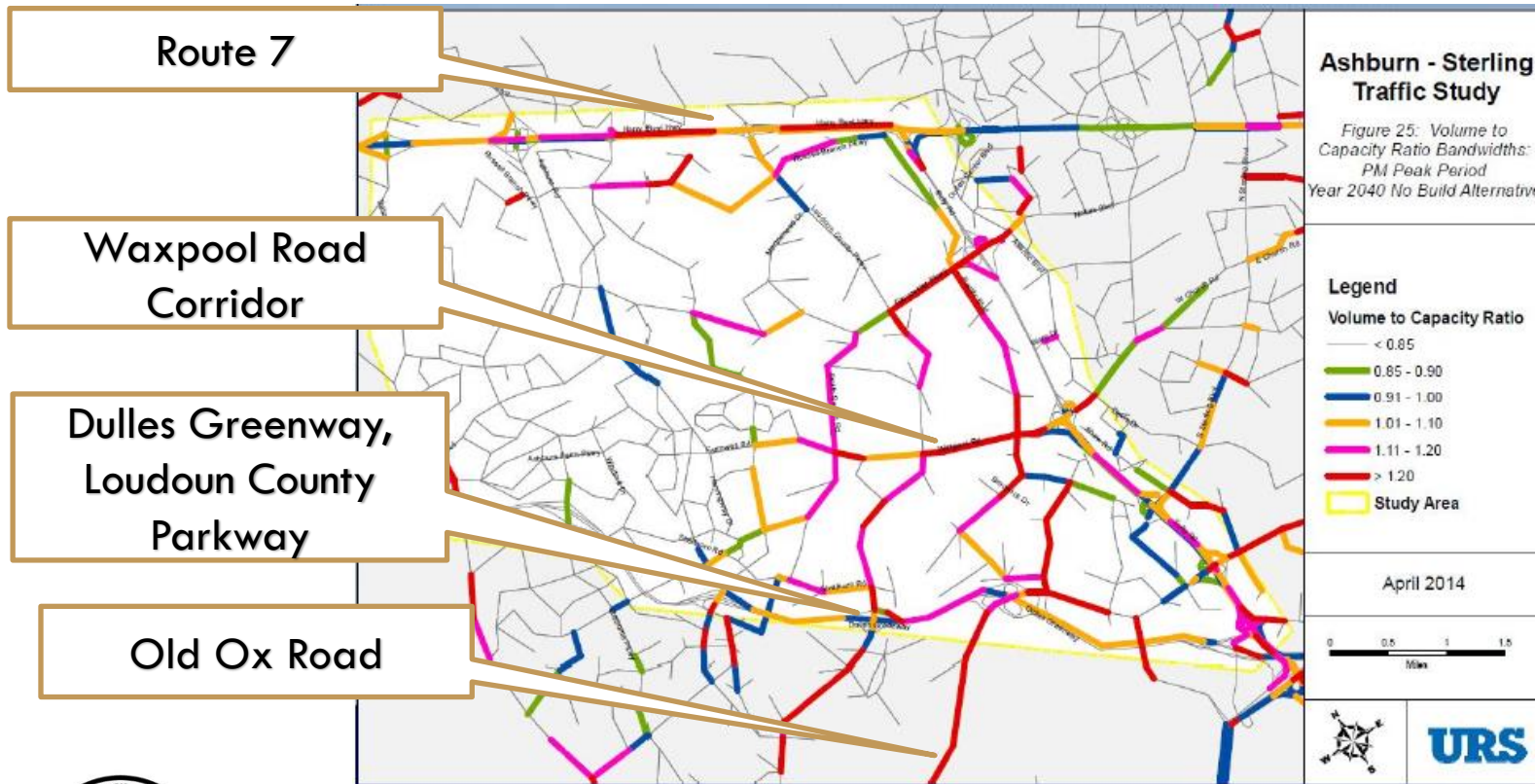
### Forecasts of Future Conditions – No Build

<u>ROADWAY</u>	<u>SEGMENT</u>	<u>2010 VOLUME</u>	<u>2040 VOLUME</u>
Route 7	West of Claiborne Parkway	77,000	109,000
Route 28	South of Sterling Boulevard	122,000	167,000
Route 28	South of Waxpool Road	118,000	147,000
Route 28	South of Nokes Boulevard	71,000	112,000
LC Pkwy	South of Route 7	18,000	36,000
LC Pkwy	South of Waxpool Road	27,000	48,000
Belmont Ridge	South of Route 7	12,000	33,000
Old Ox Road	East of Dulles Greenway	42,000	67,000
<b>Gloucester Pkwy</b>	<b>East of LC Pkwy</b>	<b>N/A</b>	<b>43,000</b>
<i>Route 7</i>	<i>West of Route 28</i>	<i>88,000</i>	<i>98,000</i>
<i>Waxpool Rd</i>	<i>West of Pacific Boulevard</i>	<i>79,000</i>	<i>84,000</i>
<i>Farmwell Rd</i>	<i>West of Ashburn Village Blvd</i>	<i>28,000</i>	<i>30,000</i>
<u>Dulles Grnway</u>	<u>West of Old Ox Road</u>	<u>44,000</u>	<u>83,000</u>

Volume doubles for the No-Build



## 2040 No-Build



- V/C ratios for PM peak hour



## Forecasts of Future Conditions- CTP Build

### Forecasts of Future Conditions – CTP Build

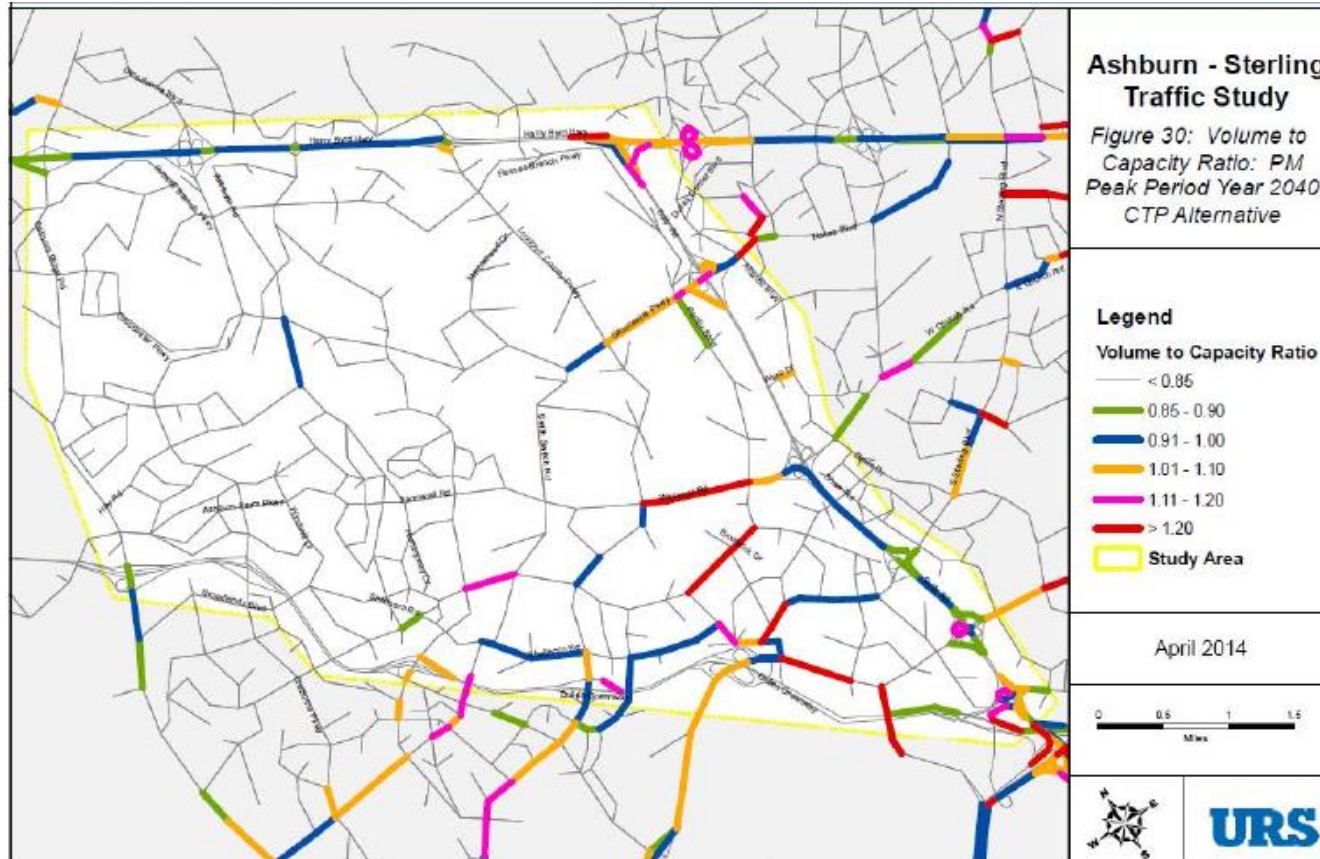
<u>ROADWAY</u>	<u>SEGMENT</u>	<u>2040 NO BUILD</u>	<u>2040 CTP BUILD</u>
Route 7	West of Claiborne Pkwy	109,000	161,000
Route 7	West of Route 28	98,000	123,000
Route 28	South of Sterling Blvd	167,000	165,000
Route 28	South of Waxpool Road	147,000	144,000
Route 28	South of Nokes Blvd	112,000	117,000
LC Pkwy	South of Route 7	36,000	47,000
LC Pkwy	South of Waxpool Road	48,000	42,000
Belmont Ridge	South of Route 7	33,000	29,000
Belmont Ridge	North of Dulles Greenway	22,000	39,000
Old Ox Road	East of Dulles Greenway	67,000	64,000
<u>Dulles Grnway</u>	<u>West of Old Ox Road</u>	<u>83,000</u>	<u>47,000</u>
Gloucester Pkwy	East of Loudoun Cty Pkwy	43,000	61,000

Volume reduces compared to no-build





## 2040 Conditions- CTP Build



- V/C ratios for PM peak hour



## Comparison of No-Build and CTP-Build

**Table ES-4**  
**Comparison of No-Build and CTP Alternatives**  
**Signalized Intersections Capacity Analysis**

#	Intersection	AM Peak				PM Peak			
		No-Build		CTP		No-Build		CTP	
		LOS	V/C > 1	LOS	V/C > 1	LOS	V/C > 1	LOS	V/C > 1
1	Waxpool Rd at Pacific Blvd	F	1.62	D	None	F	2.14	D	None
2	Waxpool Rd at Broderick Dr	F	1.22	C	None	F	1.27	C	None
3	Waxpool Rd at Loudoun Cty Pkwy	F	1.63	D	None	F	1.73	D	None
4	Waxpool Rd at Smith Switch Rd	F	1.63	D	None	F	1.34	D	None
5	Farmwell Rd at Ashburn Village Blvd	F	1.37	D	None	F	1.56	D	None
6	Farmwell Rd at Ashburn Rd	C	0.73	C	None	D	1.08	C	None
7	Ashburn Farm Pkwy at Claiborne Pkwy	E	1.17	D	None	F	1.86	D	None
8	Ashburn Farm Pkwy at Belmont Ridge Rd	D	0.79	D	None	D	0.95	D	None
9	Ashburn Village Blvd at Gloucester Pkwy	F	1.81	D	None	F	1.89	C	None
10	Nokes Blvd at Atlantic Blvd	D	0.96	D	None	F	1.29	E	None
11	West Church Rd at Davis Dr	F	1.31	D	None	F	1.18	D	None
12	Sterling Blvd at Shaw Rd	D	1.12	C	None	E	1.04	D	None
13	Old Ox Rd at Shaw Rd	E	1.12	D	None	F	1.23	D	None
14	Old Ox Rd at Pacific Blvd	F	1.63	D	None	F	1.72	D	None
15	Old Ox Rd at Ariane Way	E	1.16	C	None	F	1.56	D	None
16	Old Ox Rd at Dulles Greenway	F	1.44	D	None	F	2.37	D	SBL
17	Ashburn Village Blvd at Shellhorn Rd	C	0.63	C	None	F	1.48	D	None
18	Ashburn Village Blvd at Dulles Greenway	B	0.48	B	None	E	1.08	C	None
21	Loudoun Cty Pkwy at Russell Branch Pkwy	F	1.34	D	None	F	0.73	D	None

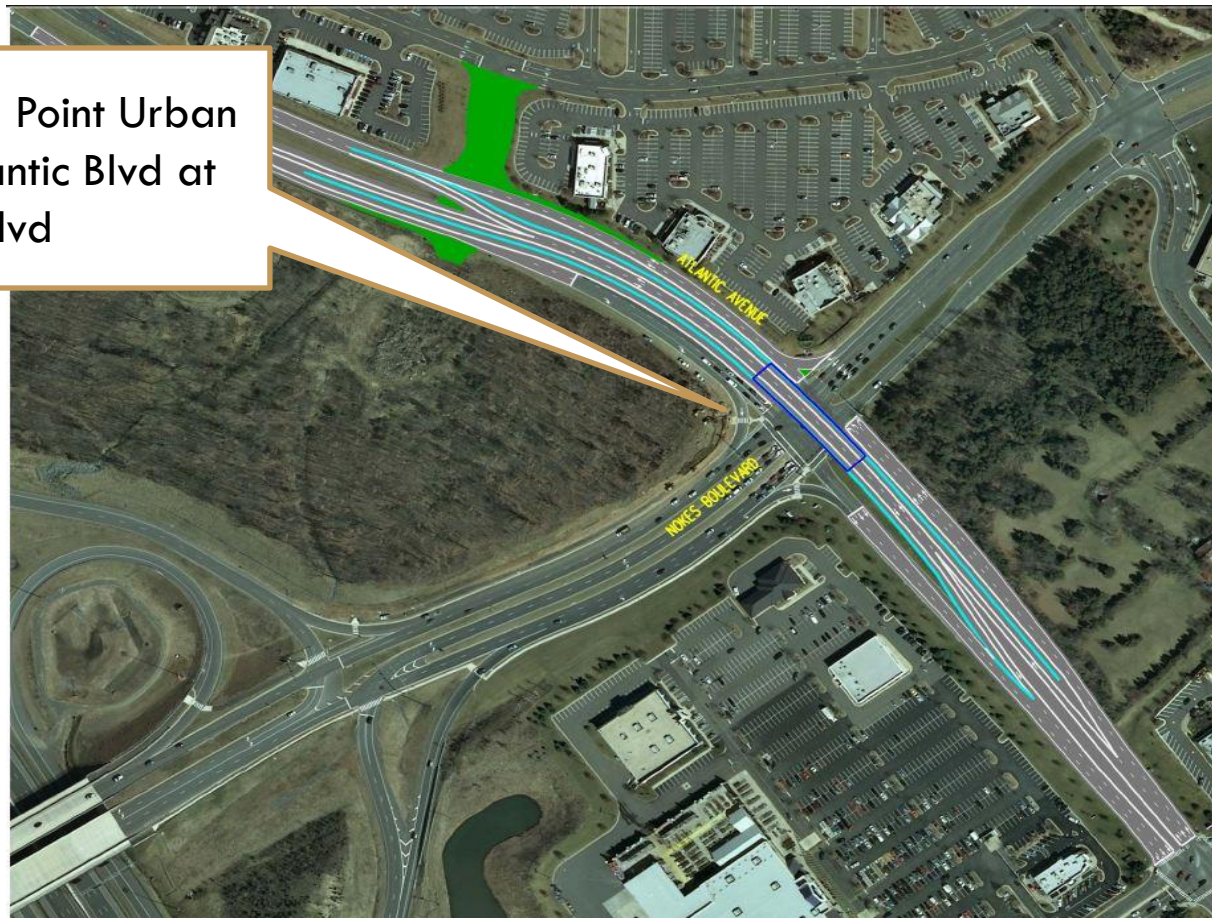


# Forecast of Future Conditions- CTP Build



## Recommended Improvement Alternative

Conceptual Single Point Urban  
Interchange Atlantic Blvd at  
Nokes Blvd



## Key Findings- CTP Build

1. When compared with the 2040 No-Build Alternative, the forecasted conditions analyzed were found to address every major forecasted roadway deficiency;
2. Service levels on all but one intersection (Nokes Blvd at Atlantic Blvd) are forecast to function at LOS D or better;
3. Waxpool Road and Farmwell Road corridors are forecast to move at average speeds exceeding 21 MPH, or LOS D; and,
4. Interchange movements are forecast to exhibit service levels of D\* or better.



## Recommendations

1. Continue with implementation of improvement and access management measures along Route 7 to upgrade the facility to a freeway;
2. Continue with implementation of improvements as recommended in the *Revised 2010 Countywide Transportation Plan (Amended May 2, 2012)*;
3. As part of the next *2010 CTP* update, include the installation of an urban interchange at the intersection of Nokes Boulevard and Atlantic Boulevard; and,
4. Include the analysis of intersection geometry to ensure the inclusion of appropriate turn lanes with the design and construction of roadway widening improvements.



Note: All Graphics and content have been used from the Ashburn-Sterling  
Traffic Analysis Report-URS-July 2014



Shweta Dixit: [shweta.dixit@loudoun.gov](mailto:shweta.dixit@loudoun.gov)

Jill Kaneff: [Jill.kaneff@loudoun.gov](mailto:Jill.kaneff@loudoun.gov)

***Thank You!***

