east county science center master plan

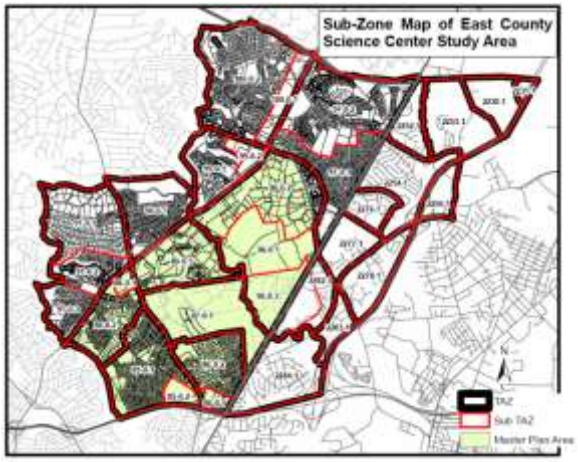
Transportation Modeling Overview

Presentation to the East County Science Center Master Plan CAC

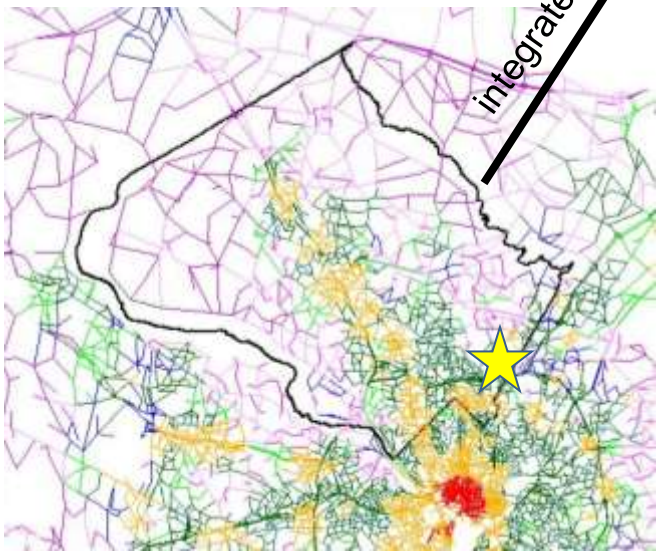
September 20, 2011

Regional Model/Local Model Relationship

Local Model



Regional Model



Local Model

More Detailed "Fine Grain" Analysis

Output - Critical Lane Volumes (CLVs) for Intersections - including "Four Corners" @ US 29/MD 193

Compare with established policy area standards (1475 CLV in this case)

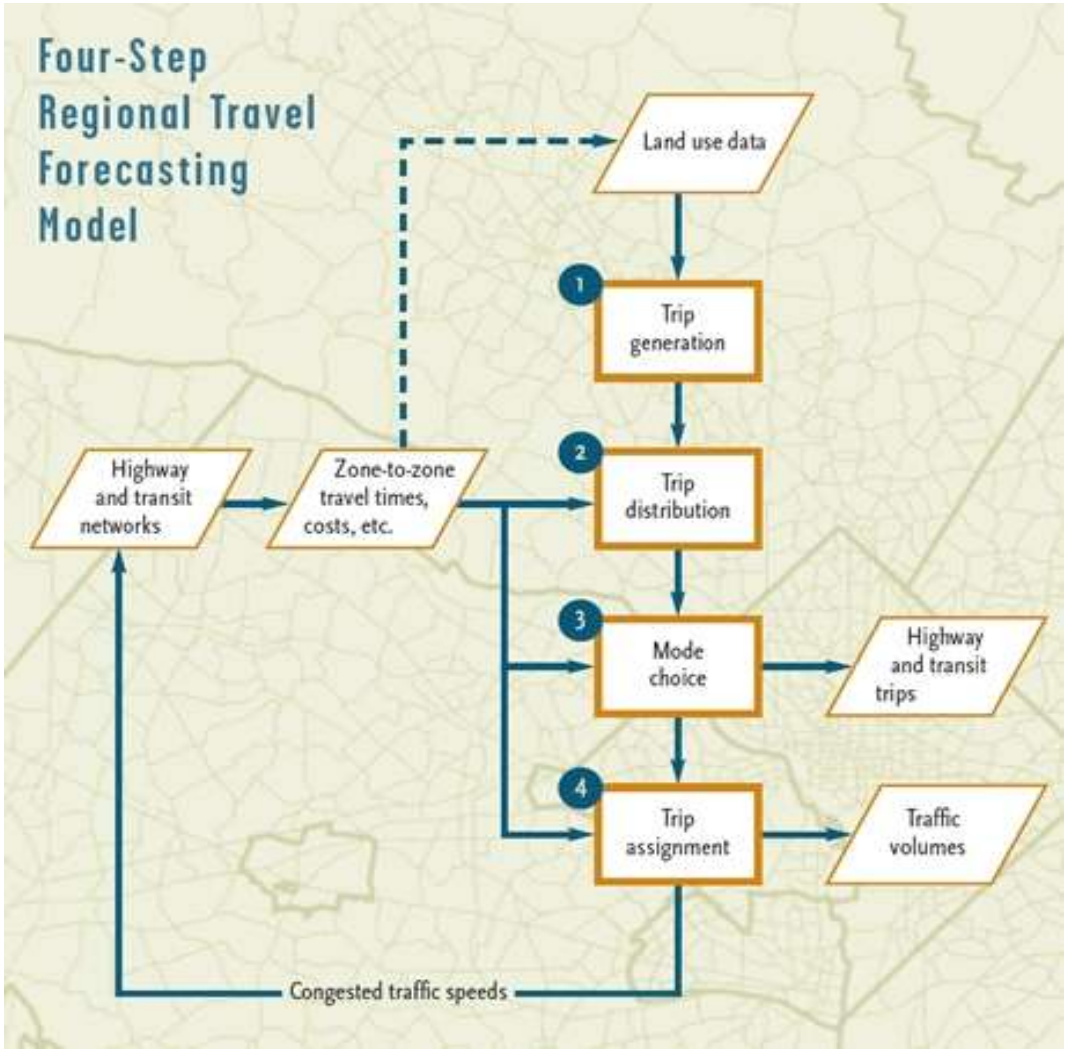
Regional Model "feeds" through trips into more detailed Local Area Model

Regional Model

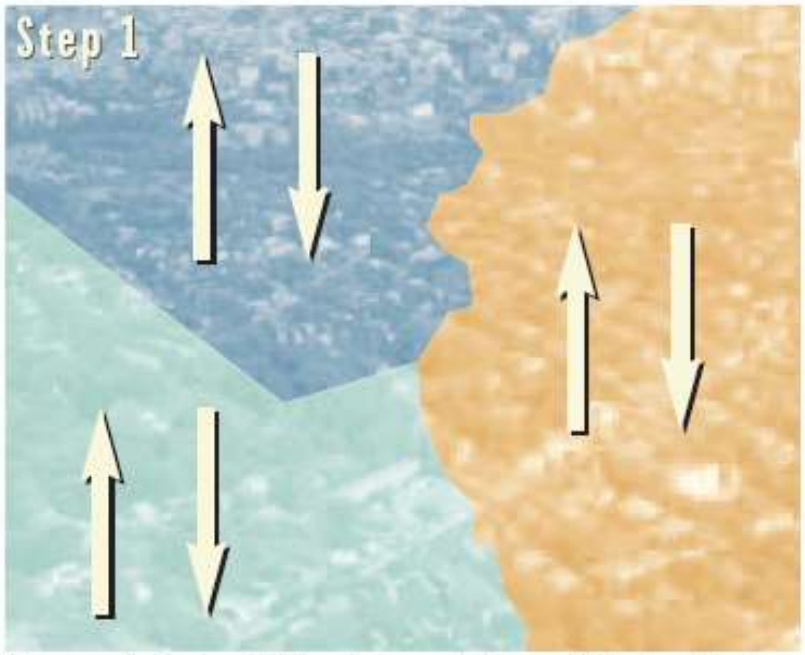
Same tool as that used by MWCOG

Reflects regional traffic effects (including those from Howard and Prince George's Counties)

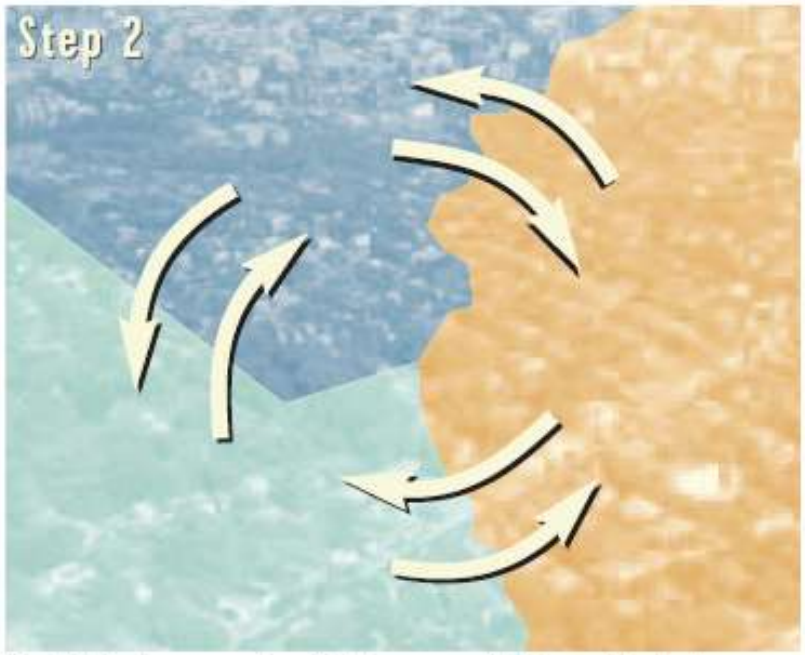
Output – PAMR results used to evaluate area-wide land use/transportation balance


Four-Step Regional Travel Forecasting Model
Land use data
1
Trip generation
2
Trip distribution
3
Mode choice
4
Trip assignment
Highway and transit networks
Zone-to-zone travel times, costs, etc.
Highway and transit trips
Traffic volumes
Congested traffic speeds

- **Trip generation:** How many trips are produced?
- **Trip Distribution:** Where are people going?

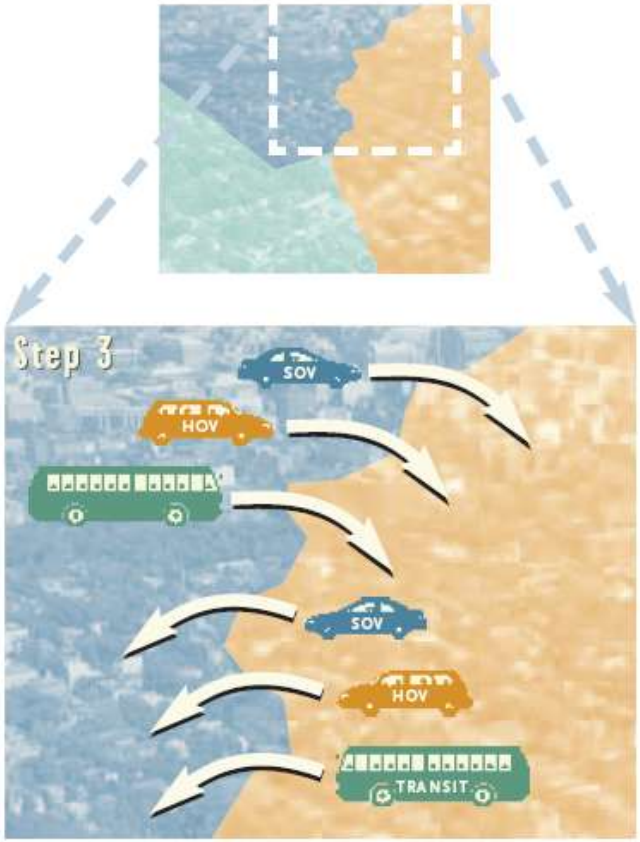


Trip generation in three fictitious traffic analysis zones: This step estimates the number of trips produced by and attracted to each zone.

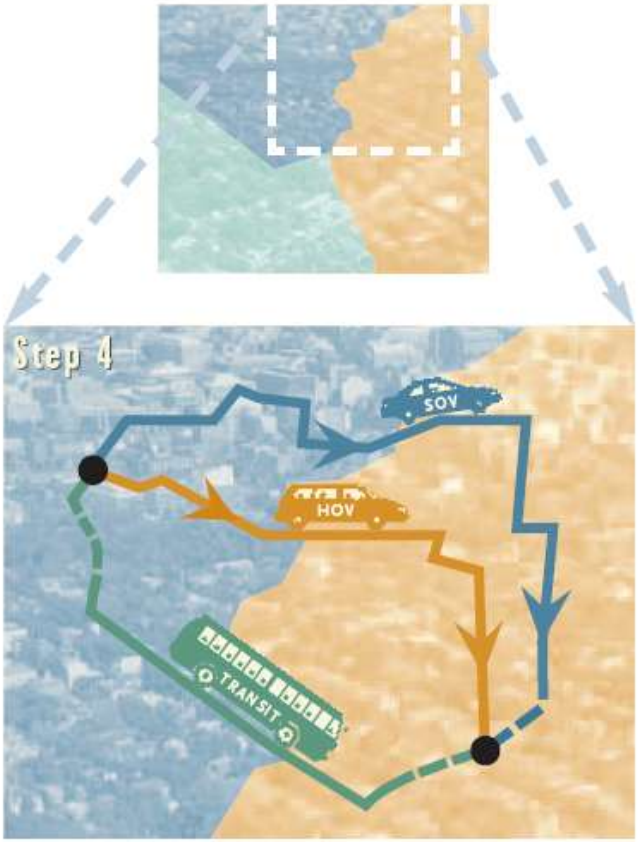


Trip distribution among three fictitious zones: This step estimates how many trips are going from zone to zone.

- **Mode Choice:** What method/mode of travel are people using?
- **Trip Assignment**: What route are people taking?



Mode choice between two fictitious traffic analysis zones: Estimating the way people get from zone to zone.

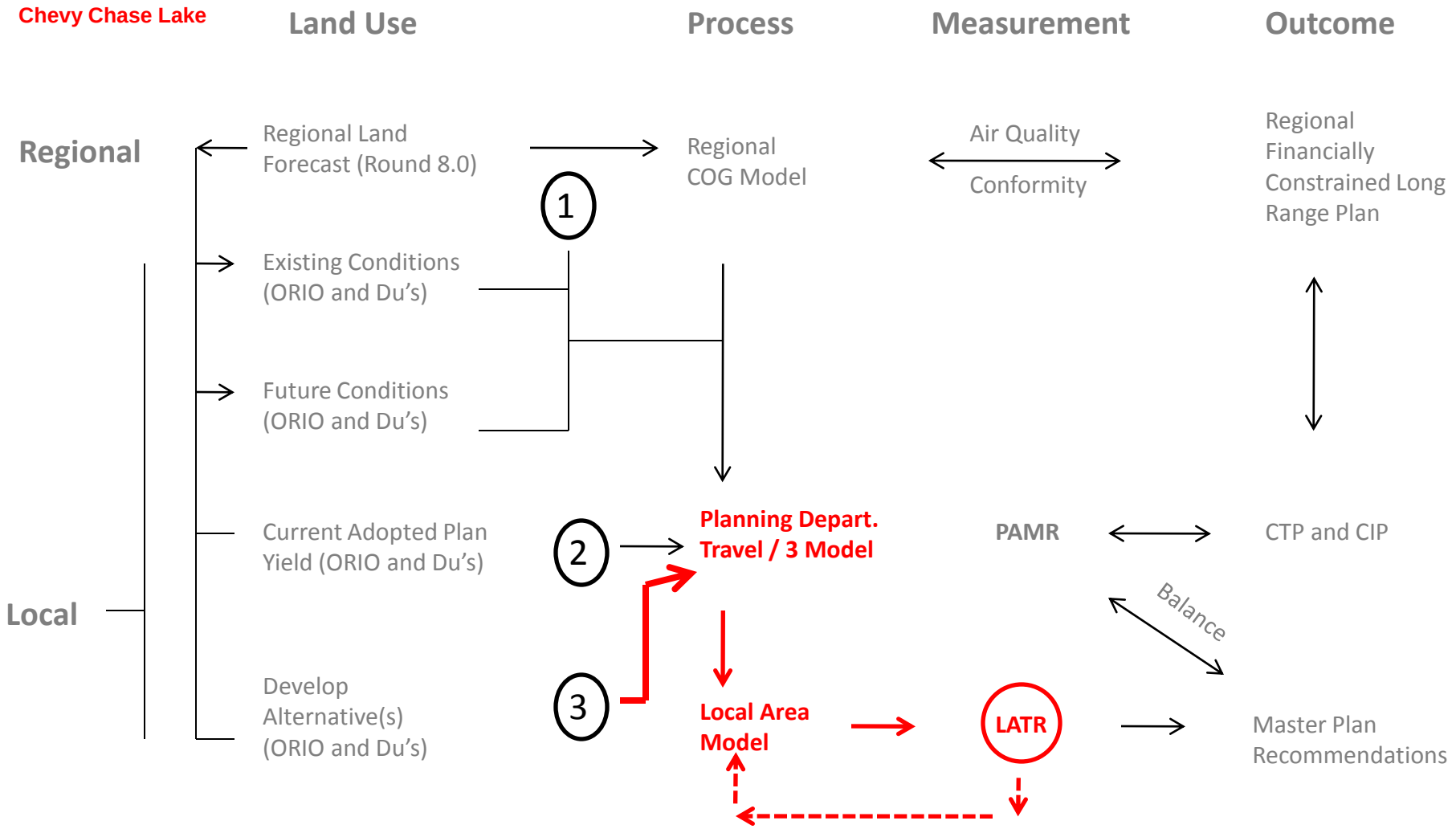


Trip assignment between two fictitious traffic analysis zones: Selecting the fastest route between zones.

Used in …

Germantown
Great Seneca Science Corridor
White Flint
Kensington
Wheaton
Chevy Chase Lake

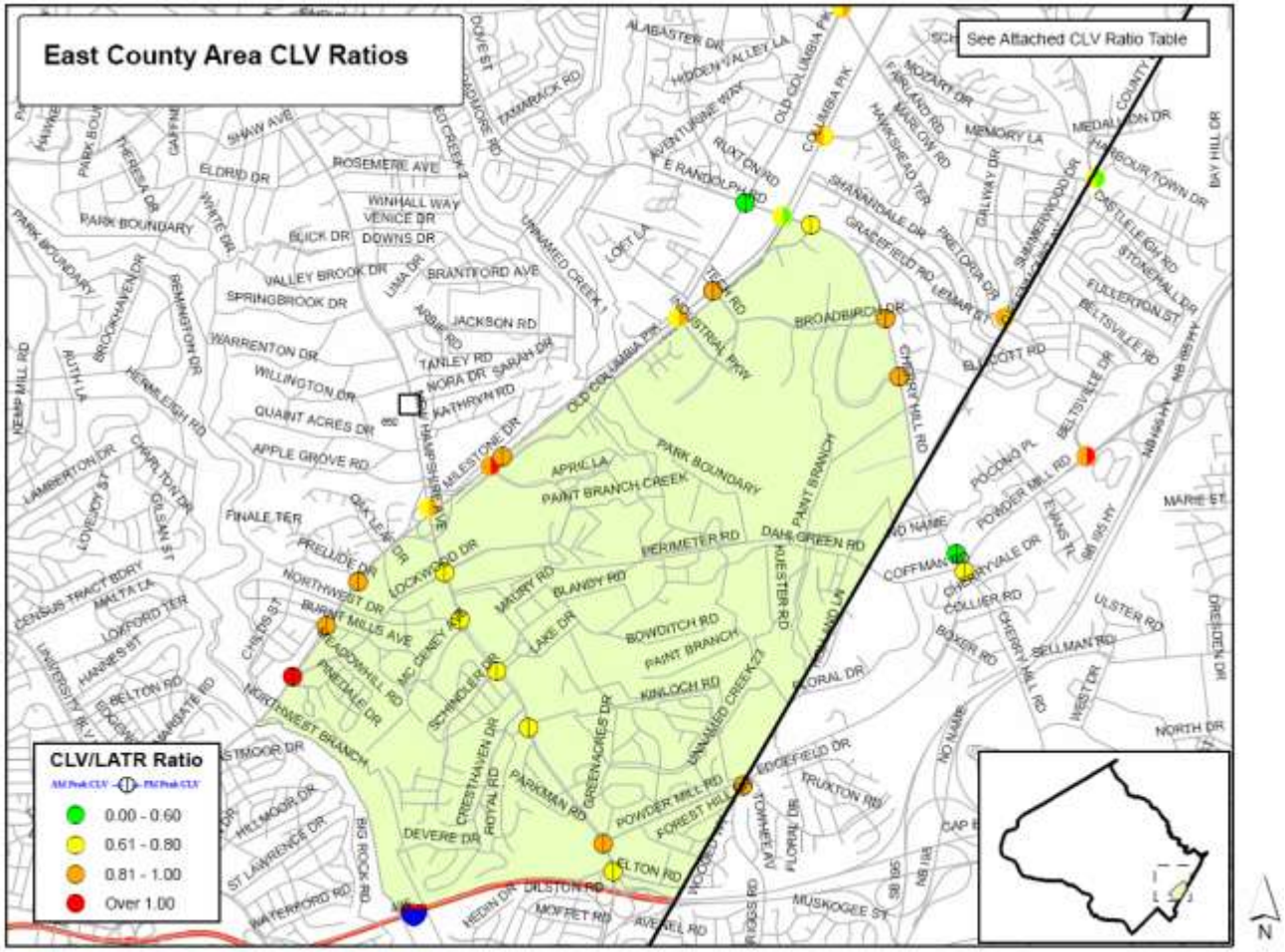
Master Plan Travel Forecasting Process



ORIO = Jobs by office, retail, industrial, and other categories
Du's = Residential Dwelling Units

◯ = Master Plan studies Land Use Alternative

East County Intersections Currently Exceeding CLV Standards



Exceeding Standard

US 29 @ Steward Lane (PM)

US 29 @ Lockwood (AM/PM)

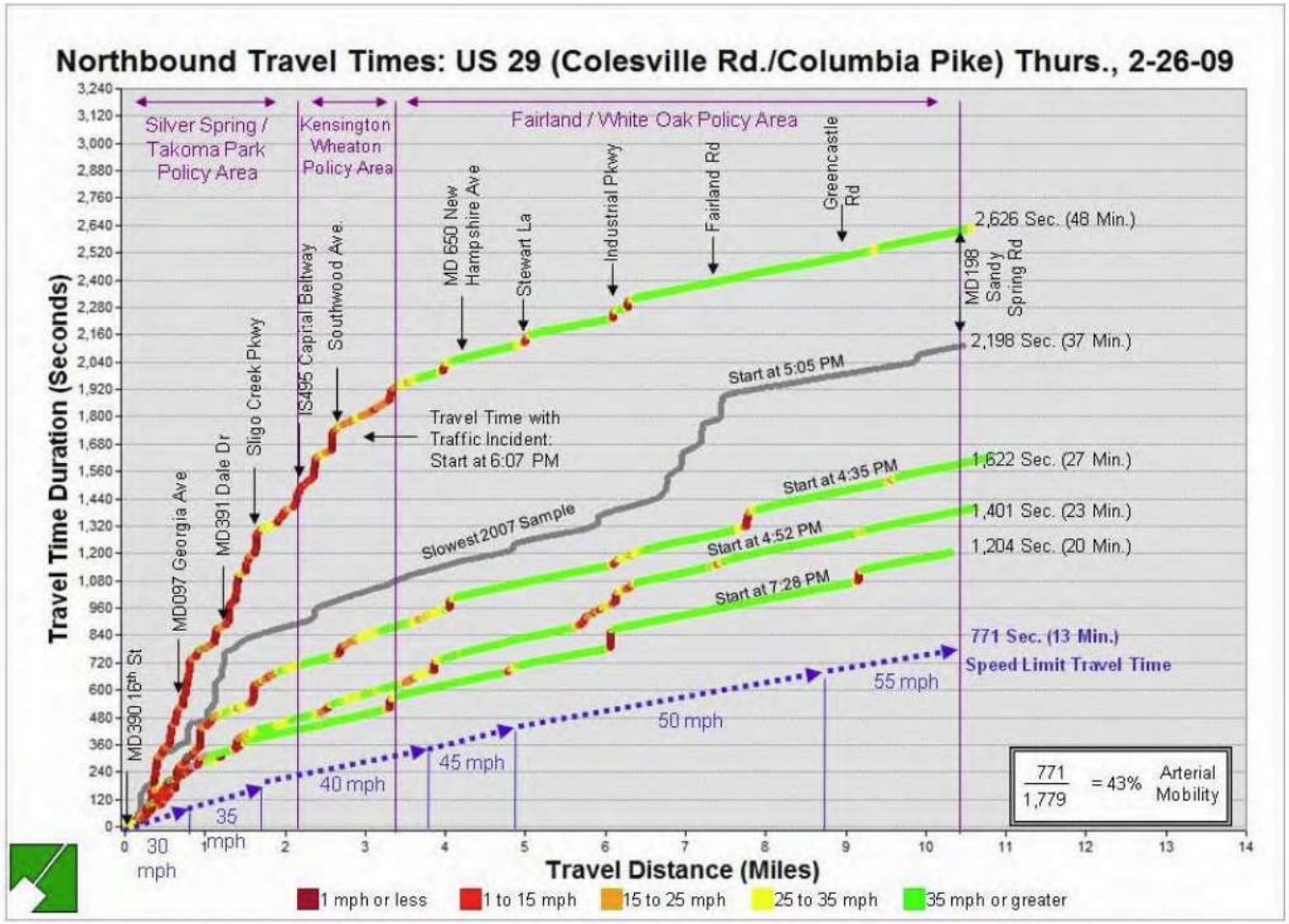
From Policy Standpoint …

Severe intersection congestion problems along US 29 addressed with grade-separated interchange improvements

CLV Ratio Table: ECSC Area

Intersection ID	Intersection Name	AM CLV	PM CLV	CLV Standard	AM Ratio	PM Ratio	AM LOS	PM LOS
281	E Randolph Rd at Old Columbia Pike	816	857	1475	0.55	0.58	A	A
286	Fairland Rd at Old Columbia Pike	1153	1238	1475	0.78	0.84	B	C
290	Columbia Pike at Musgrove Rd	1281	1132	1475	0.88	0.77	C	B
292	Columbia Pike at Industrial Pkwy	1124	1256	1475	0.76	0.85	B	C
293	Columbia Pike at Milestone/Stewart	1449	1509	1475	0.98	1.02	C	F
294	Columbia Pike at Stewart/NB Slip Ramp	1318	1371	1475	0.89	0.93	C	C
295	New Hampshire Ave at Lockwood Dr	1151	1027	1475	0.78	0.69	B	B
296	New Hampshire Ave at Schindler/Mahan	1127	1034	1475	0.76	0.70	B	B
297	New Hampshire Ave at Chalmers	1113	993	1475	0.75	0.67	B	B
298	New Hampshire Ave at Powder Mill Rd	1220	1345	1475	0.83	0.91	C	C
299	New Hampshire Ave at I-495/Elton Rd	1019	1093	1475	0.69	0.74	B	B
402	Broadbirch-Calverton-Cherry Hill	1303	1406	1475	0.88	0.95	C	C
473	Columbia Pike at Lockwood Dr	1603	1487	1475	1.09	1.01	F	F
474	Columbia Pike at Burnt Mills Ave	1374	1246	1475	0.93	0.84	C	C
589	Columbia Pike at Tech Rd	1412	1347	1475	0.96	0.91	C	C
594	Columbia Pike at Prelude Dr	1362	1406	1475	0.92	0.95	C	C
607	New Hampshire Ave at Northwest/Michelson	884	1122	1475	0.60	0.76	B	B
686	Cherry Hill Rd at Prosperity Dr	1079	1040	1475	0.73	0.71	B	B
691	New Hampshire Ave at Columbia Pk Ramps	1121	1452	1475	0.76	0.98	B	C
717	Cherry Hill Rd at Plum Orchard/Clover Patch	1301	1352	1475	0.88	0.92	C	C
811	Powder Mill & Riggs Rd	1449	1438	1475	0.98	0.98	C	C
812	Cherry Hill Rd & Powder Mill Rd	1114	1129	1475	0.76	0.77	B	B
813	Powder Mill Rd & Beltsville Rd	1337	1483	1475	0.91	1.01	C	F
814	Briggs Chaney & Fairland Rd Sawgrass Dr	1006	683	1475	0.68	0.46	B	A
815	Cherry Hill Rd & FDA Entrance	799	763	1475	0.54	0.52	A	A
817	US 29 Ramps NB SB at Cherry Hill Rd	1071	865	1475	0.73	0.59	B	A

Current Traffic – US 29

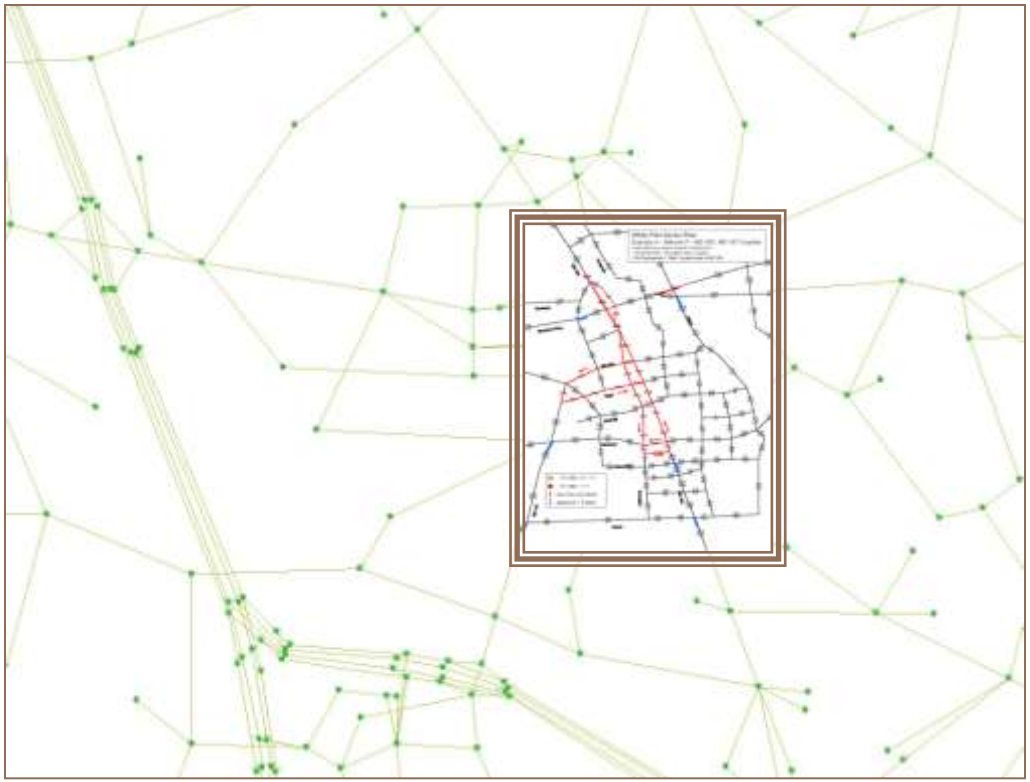


US 29 Mobility

Problems are generally at failing intersections

Definition of future relative arterial mobility adequacy can be determined with the regional model

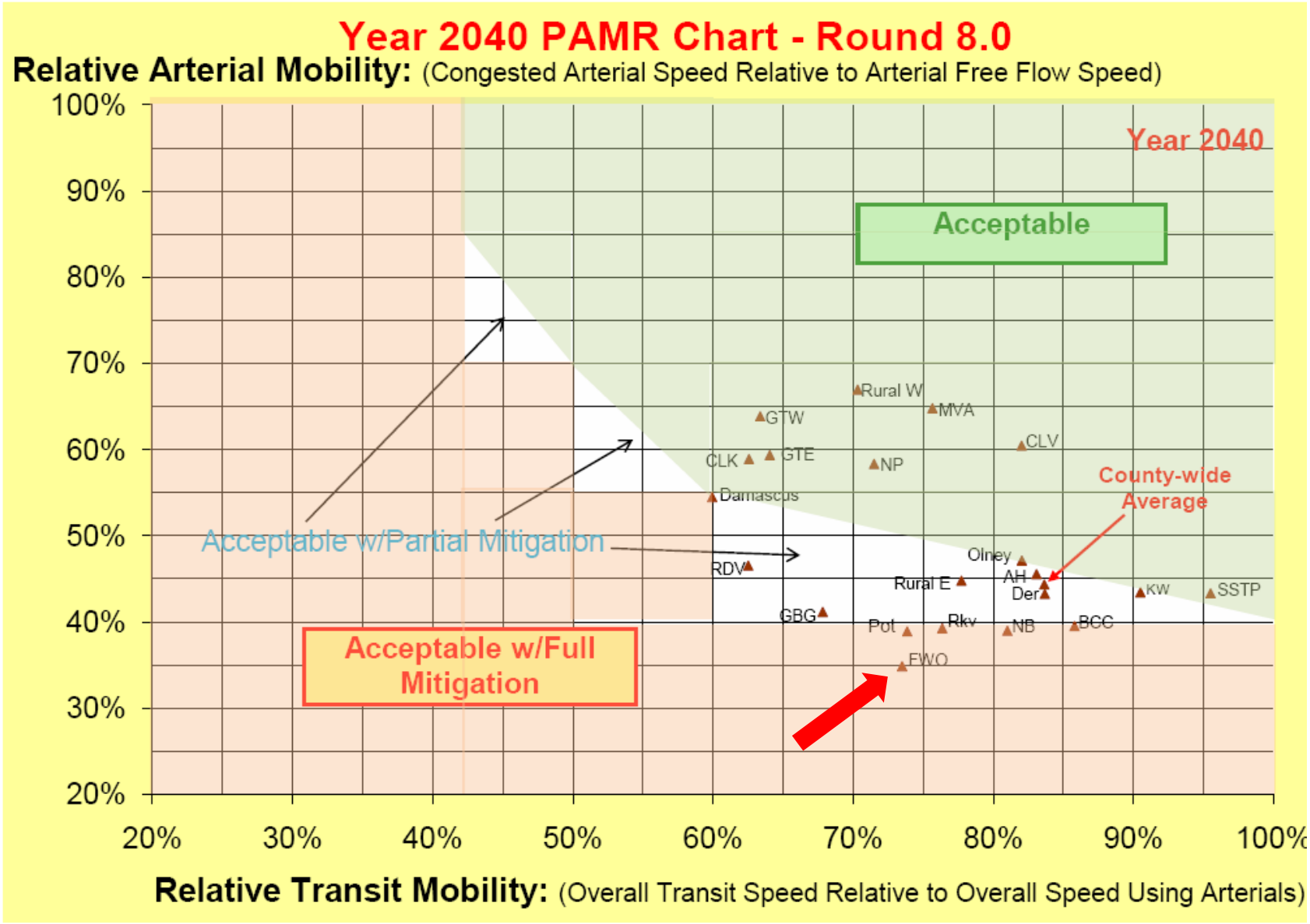
Modeling Summary



Regional and local models work in tandem

Local model efforts pragmatic for Plan area where local planning/zoning recommendations will be made

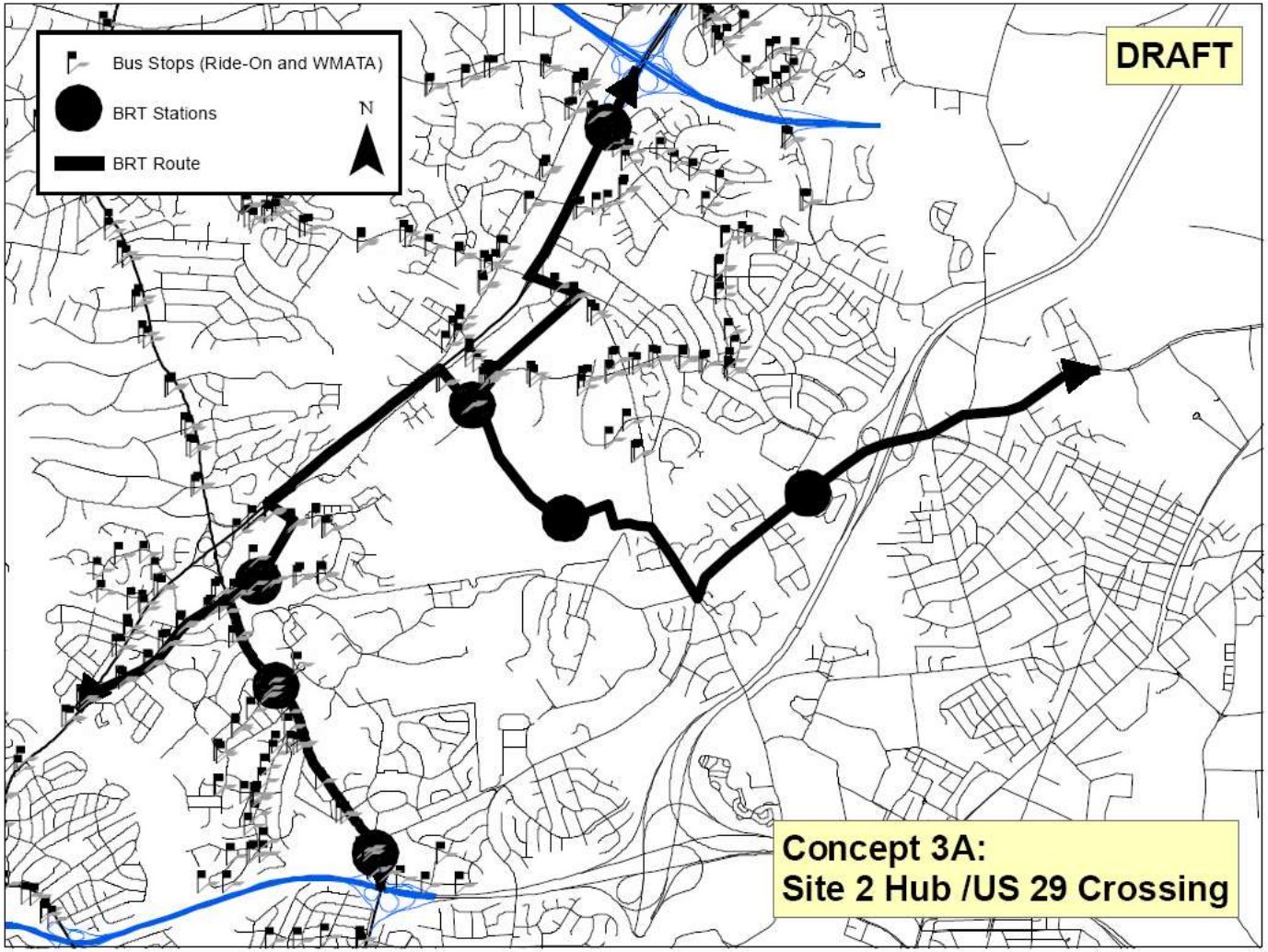
Process works for master plan level decision making as in Germantown, Great Seneca Science Corridor, and White Flint


Year 2040 PAMR Chart - Round 8.0
Relative Arterial Mobility: (Congested Arterial Speed Relative to Arterial Free Flow Speed)
100%
90%
80%
70%
60%
50%
40%
30%
20%
Year 2040
Acceptable
Acceptable w/Partial Mitigation
Acceptable w/Full Mitigation
County-wide Average
Rural W
MVA
GTW
CLV
CLK
GTE
NP
Damascus
RDV
Olney
AH
Rural E
Der
KW
SSTP
GBG
Pot
Rkv
NB
BCC
FWO
20%
30%
40%
50%
60%
70%
80%
90%
100%
Relative Transit Mobility: (Overall Transit Speed Relative to Overall Speed Using Arterials)

Highways

Transit

ECSC BRT Alignment



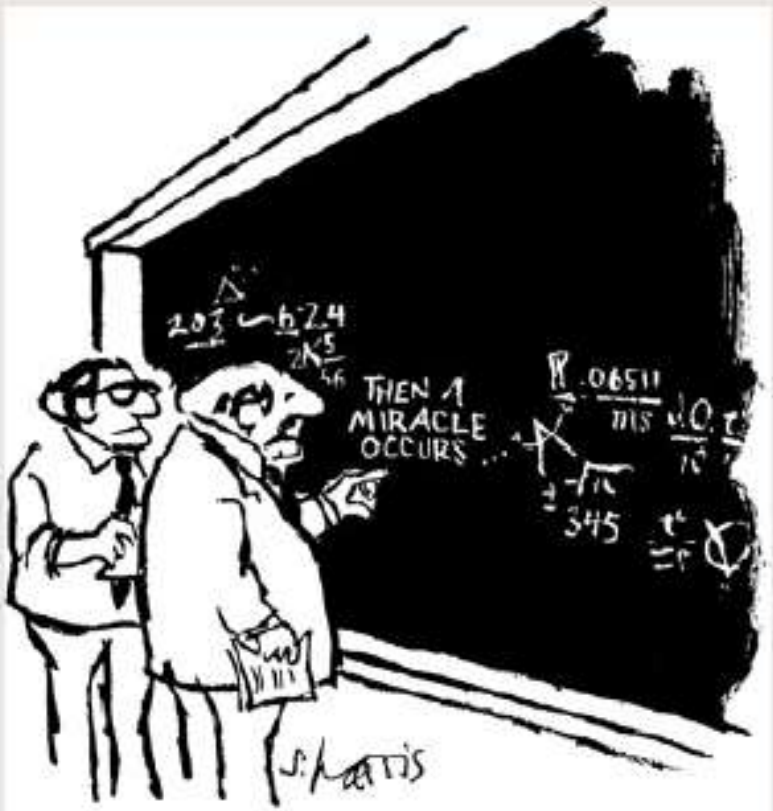
Connecting US 29 and NH Ave to Greenbelt Metro and MARC

1. **Existing Conditions:** 2010 Land Use/2010 Network

2. **Base Future Year:** 2040 Round 8.0 Land Use/CLRP Network

3. **Master Plan Alternative 1:** Scenario 2 Land Use + **"Aggressive"** Interpretation of ECSC Property Owner Vision/Scenario 2 network + BRT alignment(s) + local roadway network improvements

Questions?



"I think you should be more explicit here in step two."

“Supplemental” Slides Follow

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Master Plan of Highways & US 29 Grade-Separated Interchanges

Existing Interchanges:

- US 29/New Hampshire Avenue
- US 29/East Randolph-Cherry Hill Road
- US 29/Briggs Chaney Road
- US 29/Spencerville-Sandy Spring Road

Under Construction: US 29 at ICC

Proposed Grade-Separated Interchanges from 1997 White Oak and Fairland Master Plans:

- US 29/Stewart Lane
- US 29/Tech Road/Industrial Parkway
- US 29/Musgrove Road-Fairland Road
- US 29/Greencastle Road

East County Science Center
Master Plan of Highways/CLV/AADT