

Post-Mode-Choice Sub-Area Analysis Process

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**TPB Travel Forecasting Subcommittee
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Why Subarea Post Mode Choice Process?

Improve inputs from regional models to traffic operations tools/project development

- › Add zone and network detail
- › Refine network characteristics (speeds, capacities, turn penalties)

Improve subarea/corridor assignments

Minimize outside of study area impacts

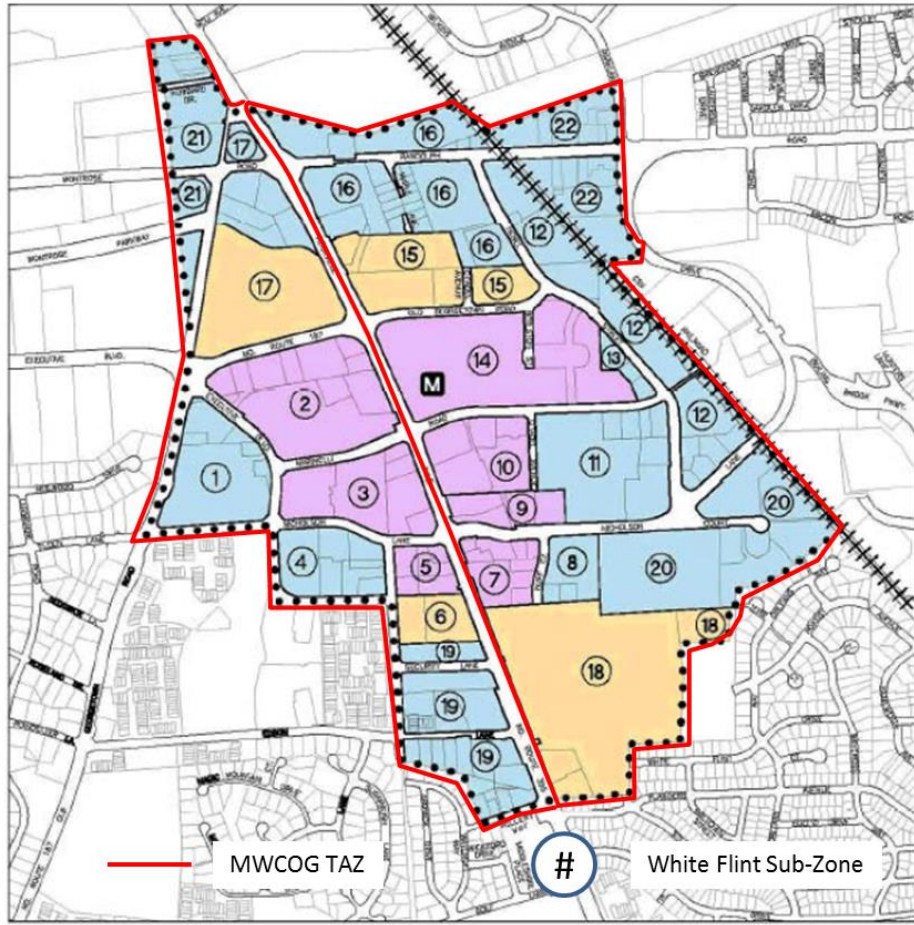
Reduce Scenario Turn Around

Builds upon:

- › MNCPPC Travel/3 LAM Process
- › Frederick County Assignment Model
- › Early Sub Area Focusing approaches

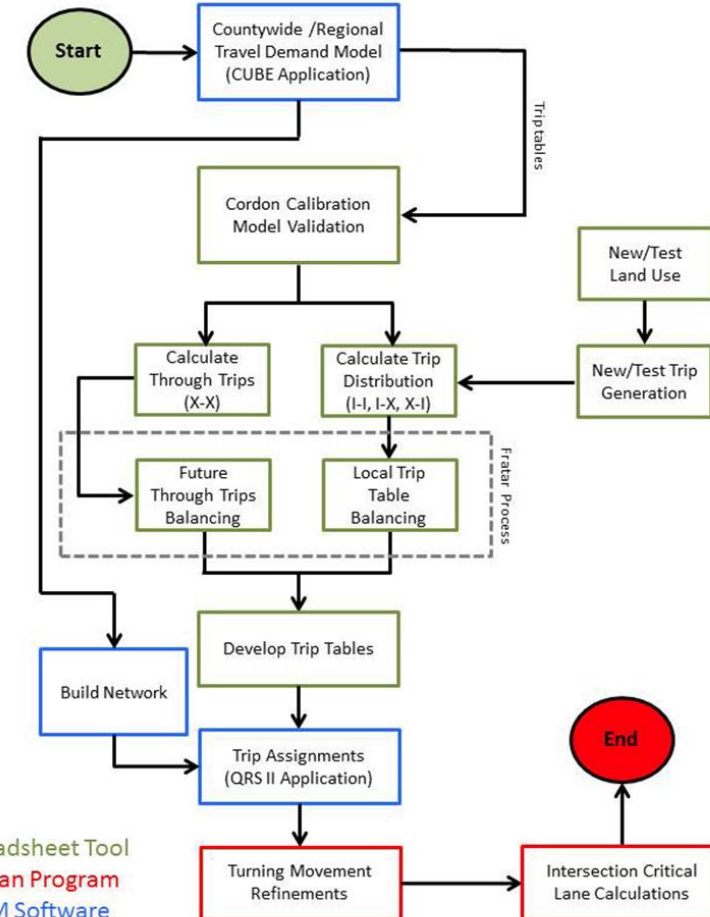
Previous Example – White Flint Sector Plan

White Flint Development Areas



•••• Sector Plan Area Boundary

Current LAM Process



- Spreadsheet Tool
- Fortran Program
- TDFM Software

Developed Toolbox Of Techniques

TAZ and Network Detail

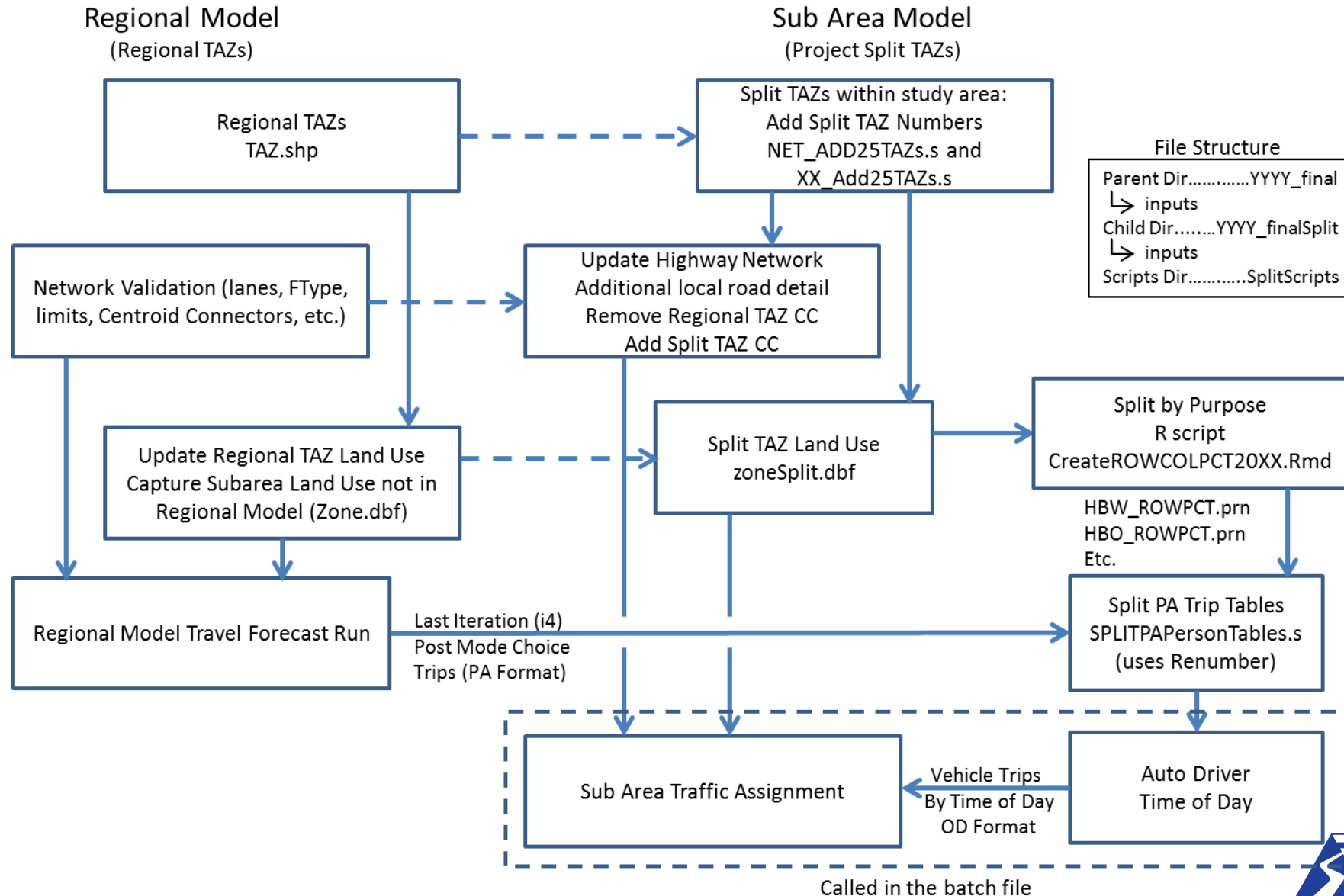
- › Originally just split trips, but now can increase/decrease trip ends based upon land use

Adjust Network Characteristics

- › Free Flow Speed (FFSNew)
- › Capacities (CPENew, CPEFac)
- › Turn Penalties
- › Time Penalties (originally just at Potomac Bridge Crossing)

Drive to Transit Assignment Process

Subarea Assignment Process



Travel Forecasting Steps

- Validation/ Current Year
 - Update Land Use for Subarea
 - Current Year Regional Model Forecast
 - Regional Model Validation Check
 - Disaggregate Land Use
 - Create Subarea Network
 - New TAZ Centroid Connectors
 - Add Network Detail
 - Add variables: new, ffsnew & cpenew
 - Turn Penalties, Time Penalties
 - Split Trip Tables to New TAZs
 - Post Mode Choice Assignment using Subarea Network & Split TAZs
 - Validate Assignment along Corridor
 - Adjust Percentage Splits
 - Adjust Speeds
 - Adjust Capacities
 - Adjust Centroid Connectors
- Horizon Year Forecast (2040)
 - Update Land Use for Subarea
 - Horizon Year Regional Forecast
 - Disaggregate Land Use
 - Modify Horizon Year Network
 - New TAZ Centroid Connectors
 - Add Network Detail
 - Add variables: new, ffsnew & cpenew
 - Turn Penalties, Time Penalties
 - Split Trip Tables to New TAZs
 - Post Mode Choice Assignment Using Subarea TAZs and Validation Values
 - Develop Growth Rates for Operational Analysis

Create Row & Column % in R

Splits PA trips based upon land use in subzones
Row Column Percent files by purpose.

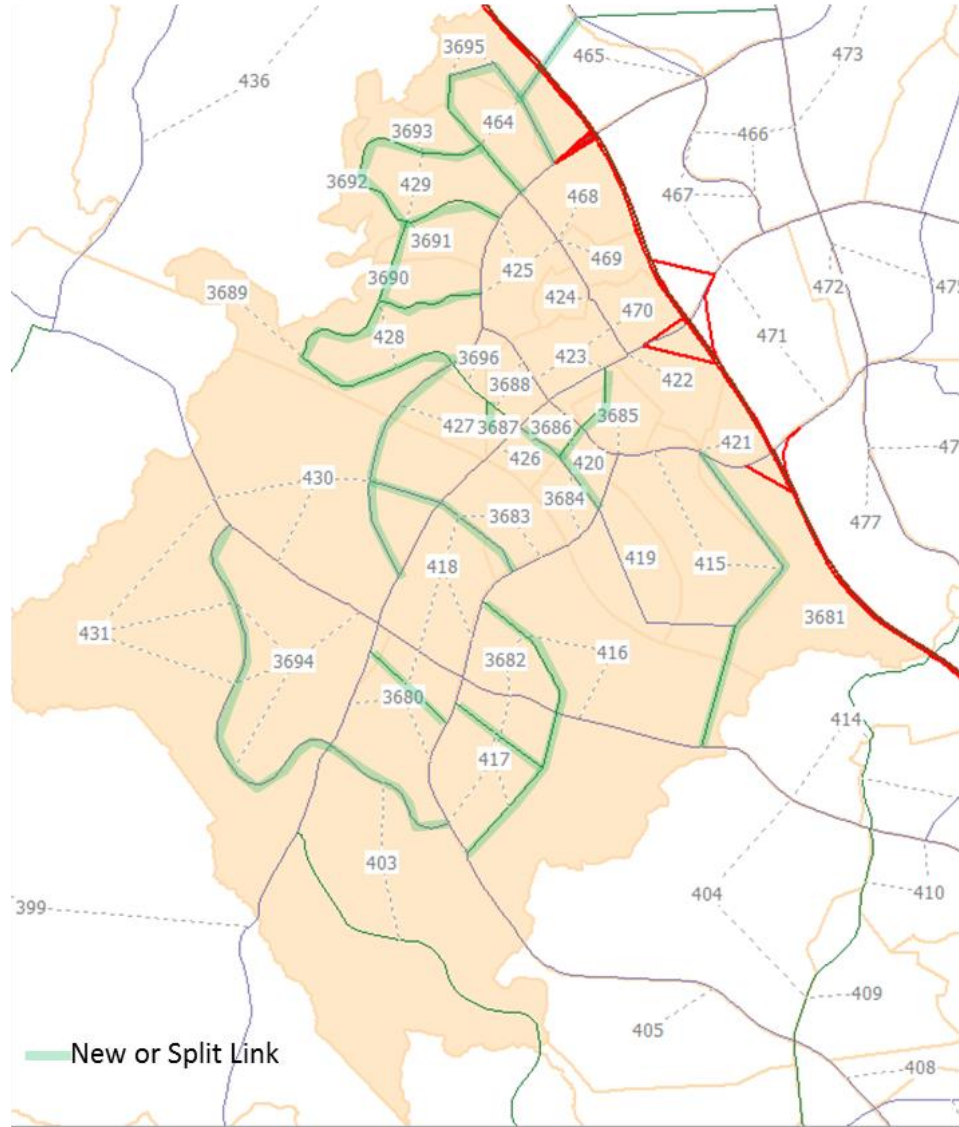
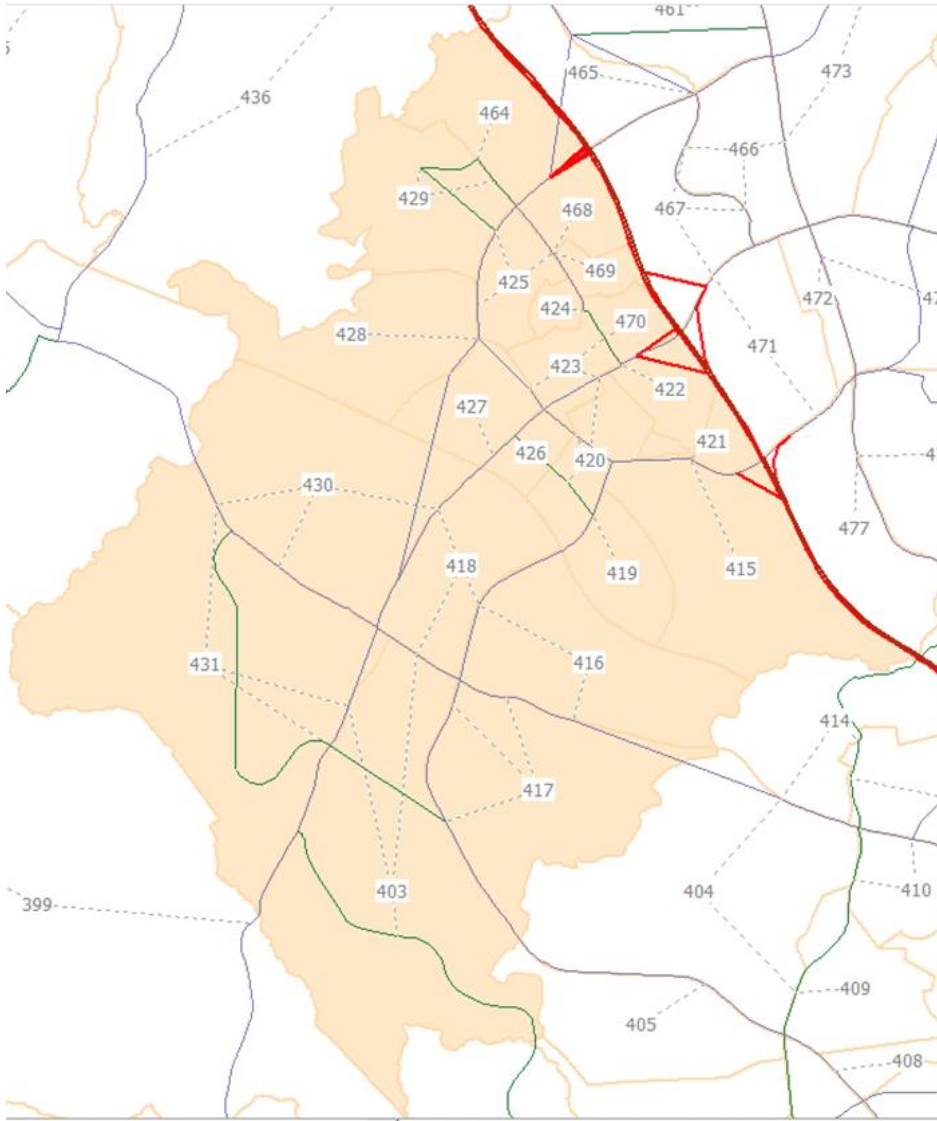
Chapter 4 (19-25) of the MWCOCG Calibration Report: Simplified

```
HH_P <- HH
HBW_A <- TOTEMP
HBS_A <- RETEMP*2.5 + TOTPOP*0.3
HBO_A <- (TOTEMP-RETEMP) + RETEMP*0.5 + TOTPOP*0.8
NHW_PA <- RETEMP*0.9 + OFFEMP*0.55 + OTHEMP*0.6
NHO_PA <- (TOTEMP-RETEMP)*0.15 + RETEMP*2 + TOTPOP*0.25
COM_PA <- INDEMP*0.056 + OFFEMP*0.168 + RETEMP*0.494 + OTHEMP*0.082 + HH*0.130
TRK_PA <- INDEMP*0.125 + OFFEMP*0.005 + RETEMP*0.125 + OTHEMP*0.02 + OFFEMP*0.005 + HH*0.10
TAXI_VISI_PA <- TOTEMP
SCH_PA <- HH
```

Example: German Town Sector Plan

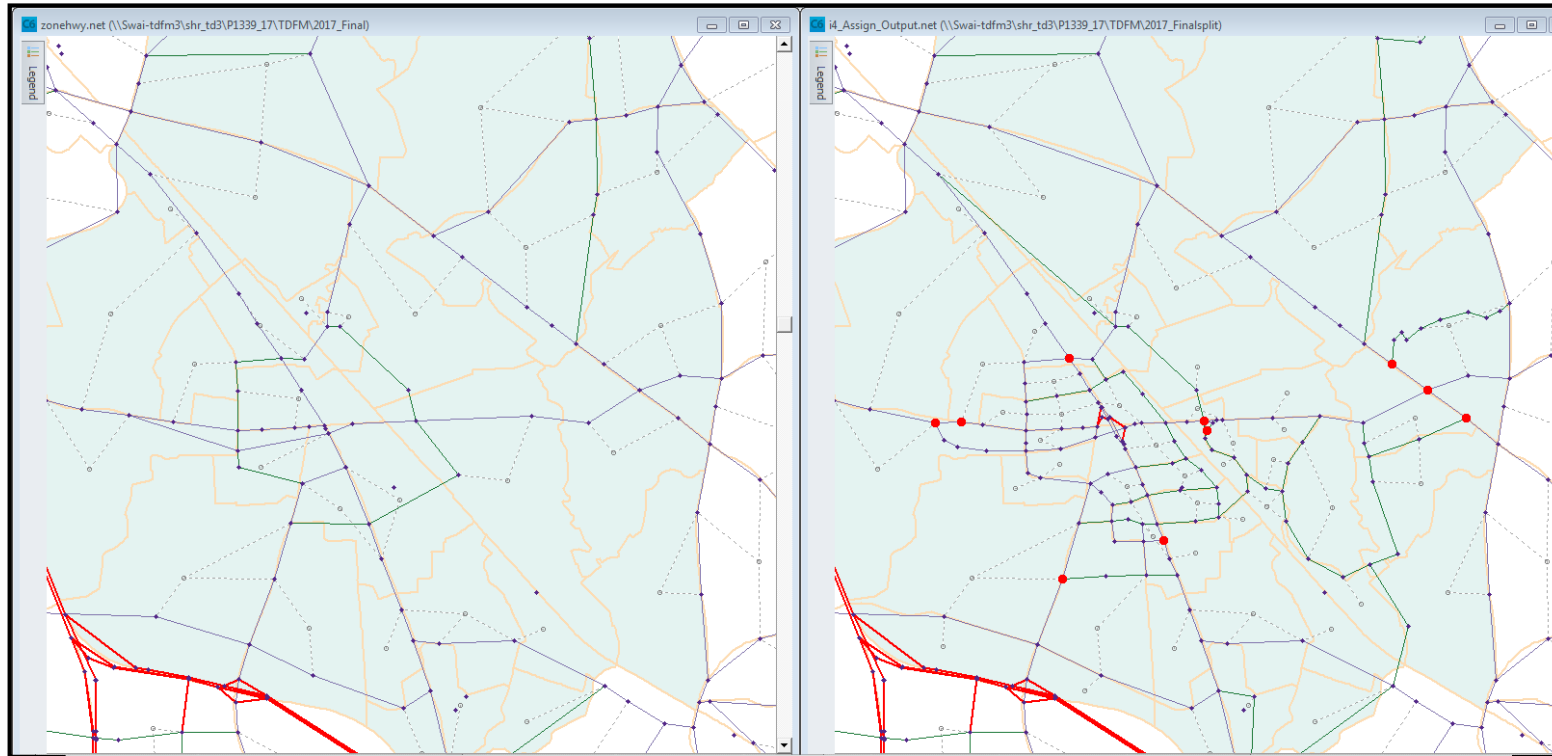
MWCOG

Subarea with Detail



- Land use Scenarios
- Split TAZs
- Added Network
- Adjusted Factors
- Added MARC Trips
- More detailed assignment to traffic models
- Better loads on Middlebrook and Wisteria
- Could not overcome overall under assign in area.

Example: Montrose Extension Analysis

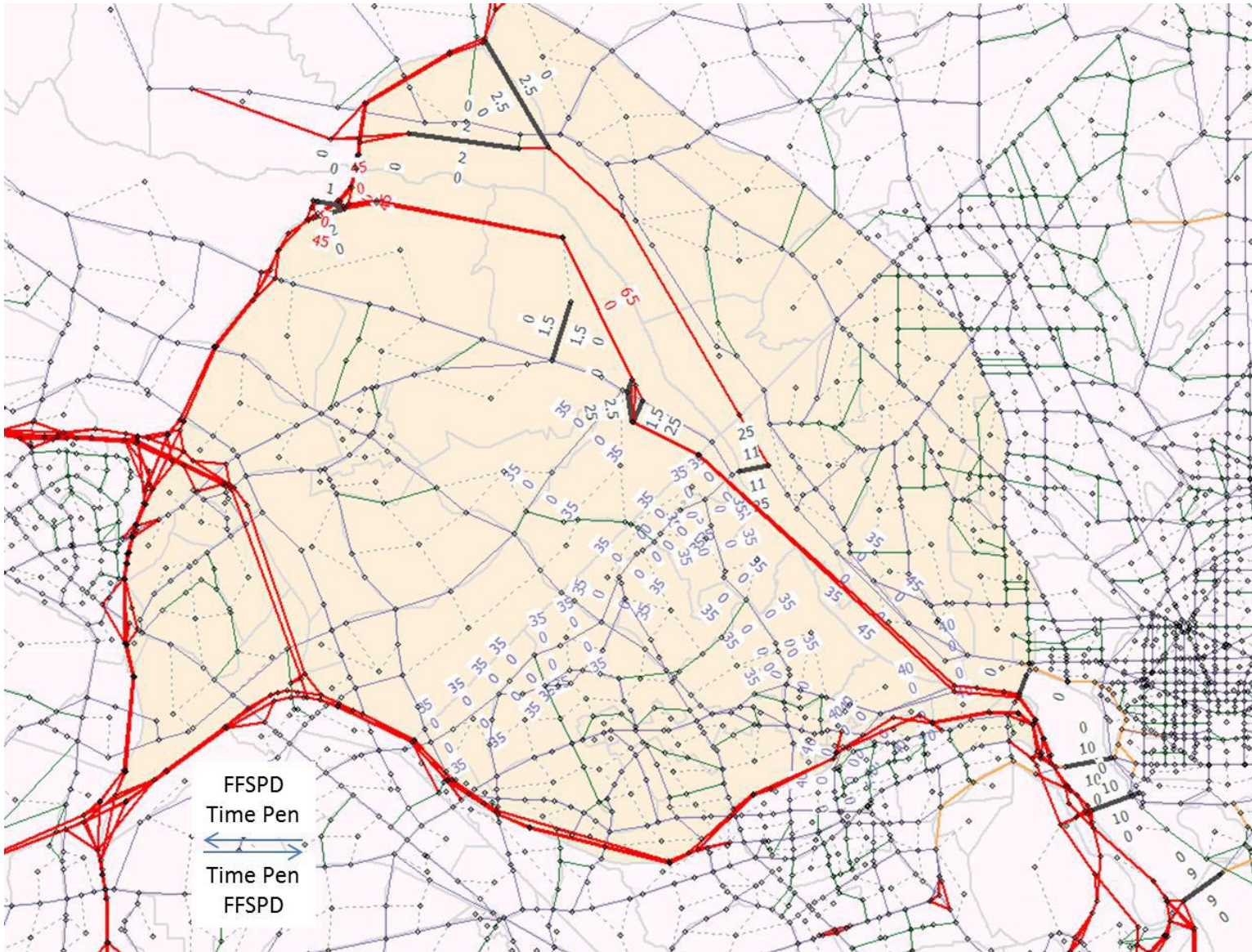


- Split TAZs
- Added Network
- Adjusted Factors
 - Turn Penalties

Spot AADT Checks for the Montrose Parkway Extension Study Area

No.	ROAD NAME	AADT 2016	AADT 2017	MWCOG 2017 ASN	Dif	% Dif	SPLIT 2017 ASN	Dif	% Dif
1	Veirs Mill Road	39,831	40,428	43,849	3,421	8%	43,454	3,026	7%
2	Randolph Road	24,111	24,473	40,231	15,758	64%	26,627	2,154	9%
3	Rockville Pike	47,221	47,929	42,635	-5,294	-11%	42,021	-5,908	-12%
4	Veirs Mill Road	42,671	43,311	48,634	5,323	12%	48,804	5,493	13%
5	Rockville Pike	52,251	53,035	54,206	1,171	2%	51,790	-1,245	-2%
6	Parkland Drive	6,834	6,937	8,361	1,424	21%	8,181	1,244	18%
7	East Jefferson Street	24,132	24,494	13,951	-10,543	-43%	22,817	-1,677	-7%

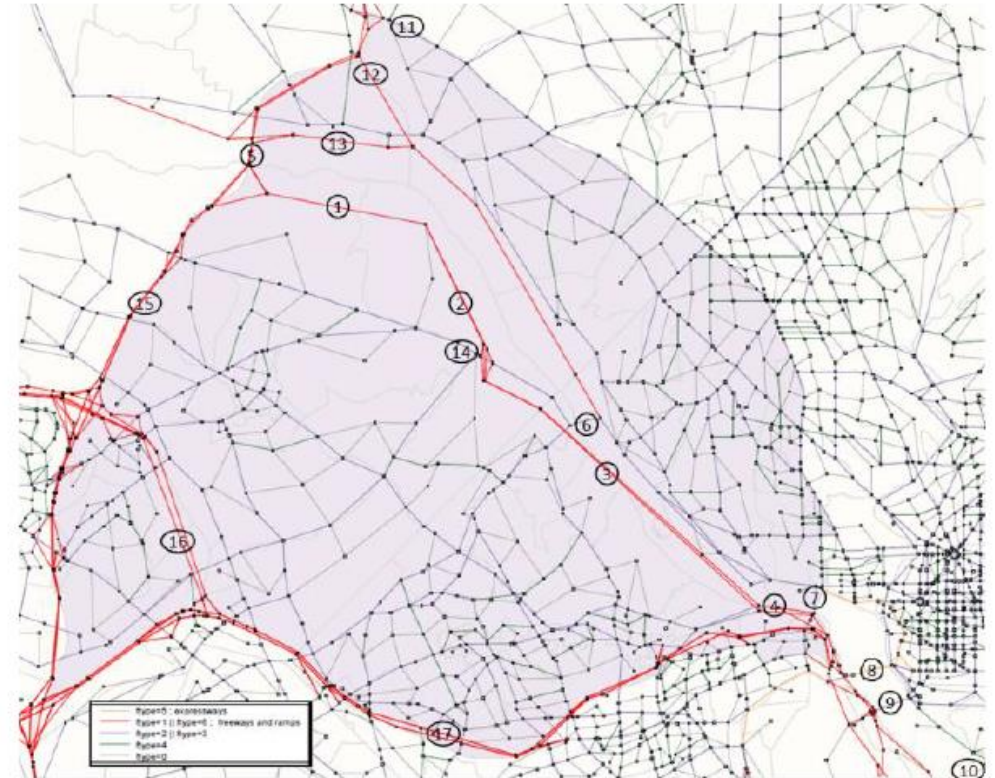
Example: George Washington Parkway Diversion Analysis



- Did Not Split TAZs
- Added Network
- Adjusted Factors
 - Free Flow Speed
 - Time Penalties
 - Turn Penalties

Example: George Washington Parkway Diversion Analysis

#	Facility	Location	2015 AAWDT	MWCOG 2015 24 Hr Vol	MWCOG % Error	GWMP 2015 24 Hr Vol	GWMP % Error
1	GWMP	East of I 495	57,000	62,600	9.80%	54,500	-4.31%
2	GWMP	North of VA 123	53,000	56,700	6.91%	56,900	7.38%
3	GWMP	South of VA 123	65,500	90,600	38.25%	70,800	8.08%
4	GWMP	South of Spout Run	85,000	105,700	24.39%	93,800	10.36%
5	I 495	American Legion Bridge	232,800	281,100	20.72%	272,200	16.94%
6	VA 123	Chain Bridge	29,300	39,800	35.81%	32,700	11.69%
7	Key Bridge		51,800	52,200	0.70%	53,800	3.93%
8	I 66	Theodore Roosevelt Bridge	95,200	97,700	2.55%	96,500	1.36%
9	Arlington Memorial Bridge		53,900	58,300	8.20%	48,100	-10.83%
10	I 395	14th Street Bridge	237,400	181,400	-23.58%	221,000	-6.90%
11	River Road	East of I 495	45,300	50,000	10.39%	54,500	20.23%
12	Cabin John Pkwy	East of I 495	23,900	70,200	193.04%	27,500	14.65%
13	Clara Barton Pkwy	East of I 495	16,400	43,700	165.99%	16,200	-1.24%
14	VA 123	W of GWMP	36,000	53,300	48.04%	37,200	3.29%
15	I 495	North of VA 267	164,000	223,600	36.36%	213,700	30.28%
16	VA 267	North of I 66	57,000	57,500	0.80%	59,200	3.91%
17	I 66	Between Fairfax Dr and Sycamore St	117,300	106,600	-9.07%	116,600	-0.57%
AAWDT rounded to nearest 100							



Drive To Transit Assignment

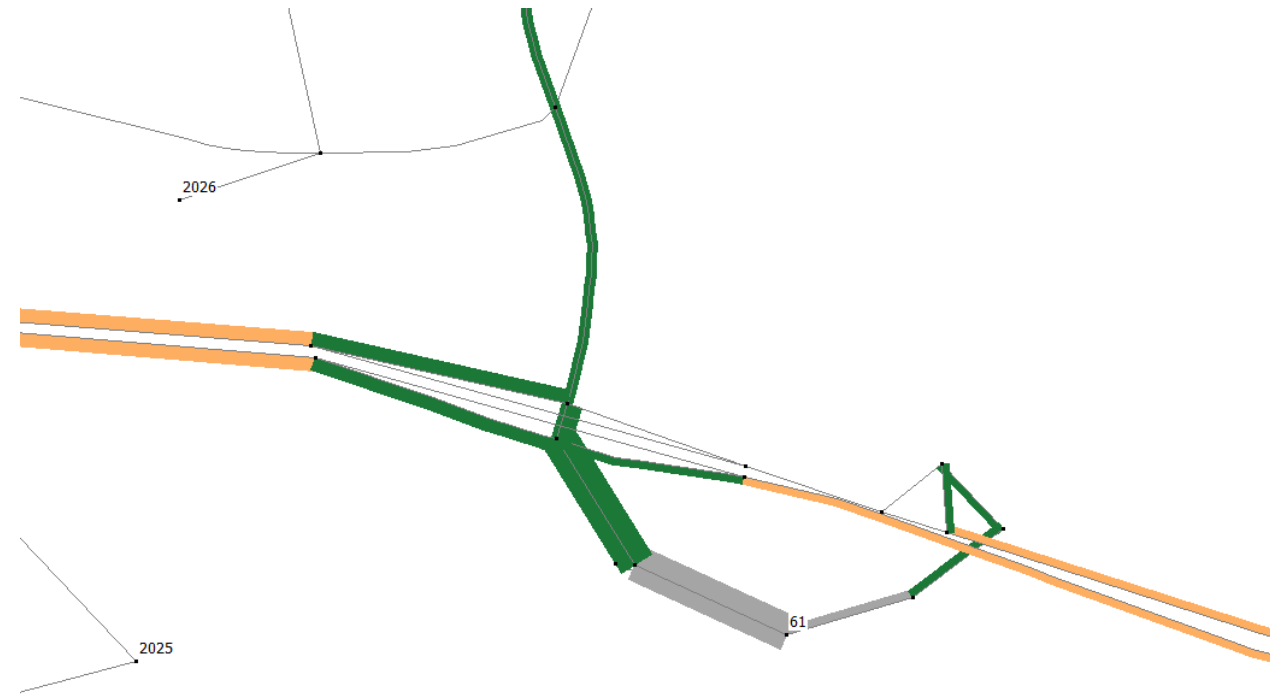
Convert Drive to Transit trips to OD format

- › Kiss and Ride – Both directions in Am and Pm Peak Periods
- › Park and Ride – Home to Parking Lot in AM, Parking Lot to Home in Pm

Replace station and parking lot nodes with unconnected TAZ number (e.g. 61) and move to location

Carry out Drive Access Assign after regular assignment.

- › Assumes normal traffic loads first.



Drive Access Volumes

Observations

Appropriate when examining projects that are NOT regionally significant

- › Subarea/Corridor operational or roadway improvements
- › Zoning changes that will not significantly change mode splits.
- › Near term changes that will not impact locational decisions permanently

Can help reduce unreasonable impacts away from study corridor

Can improve turnaround time (runs 4 to 5 hours)

Thank you

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